

DOCKETED

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Project Title:	Abengoa Mojave Compliance
TN #:	203444-2
Document Title:	Part 1 Nov 2014 Monthly Compliance Report
Description:	N/A
Filer:	Dale Rundquist
Organization:	Abengoa Mojave Solar
Submitter Role:	Applicant
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ABENGOA SOLAR

Mojave Solar LLC

42134 Harper Lake Road
Hinkley, California 92347

Phone: 636.519.3680 Ext. 80710

SUBMITTED ELECTRONICALLY

Subject: 09-AFC-5C
Condition: COMPLIANCE - 6
Description: Monthly Compliance Report for November 2014
Date: November 12, 2014
Distribution: Dale Rundquist, CEC; Carol Hammel-Smith, US DOE; Wendy Campbell, DFW; Ray Bransfield, FWS

Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street
Sacramento, California 95814

Dear Mr. Rundquist,

The attached Monthly Compliance Report for November 2014 is submitted for your review as part of ongoing reporting required by the California Energy Commission's Conditions of Certification for the Mojave Solar Project. This monthly report will be added to the archival site on Box.com.

Sincerely,
William "Bill" Grisolia
Compliance Management
(303) 885-2036 Cell

Attachment: Monthly Compliance Report

Mojave Solar Project Monthly Compliance Report



November 2014 Reporting Period

Prepared for:

Mojave Solar LLC
42134 Harper Lake Road
Hinkley, California 92347

Introduction

During construction of the Mojave Solar Project, monthly compliance reports are provided to the California Energy Commission (CEC) as required by Condition of Certification COMPLIANCE-6 of the Commission Decision, docket number 09-AFC-5C. This is the Monthly Compliance Report (MCR) for November 2014.

In November, construction activities occurred in all project sectors, with the highest concentration in the Alpha and Beta power block areas. Construction activities included fire protection system installation, water treatment plant (WTP) electrical equipment installation, balance of plant (BOP) piping assembly and heat trace installation. In both Alpha and Beta, ground disturbance activities included various foundations, trenching and grounding.

Construction within the power blocks included insulation installation. Steam system tests were conducted in the Beta power block. Both Alpha and Beta cooling towers cascaded water during November. MSP discharged water into a single evaporation pond in both Alpha and Beta in November. Bird deterrents were installed at both the Alpha and Beta evaporation ponds. Collector (trough) commissioning continued, and heat transfer fluid (HTF) was circulated through the solar fields and power blocks during defocus and tracking / focus testing of collectors.

The following table provides a summary of all areas covered in this report.

Mojave Solar Project Monthly Compliance Reporting	
Condition of Certification (COC) Topics	Appendix
Air Quality	See Appendix A
Biological Resources	See Appendix B
Cultural Resources	See Appendix C
Paleontological Resources	See Appendix D
Waste Management	See Appendix F
Worker Safety	See Appendix E
Soil and Water	See Appendix F
General Conditions	See Appendix F
Civil	See Appendix F
Structural	See Appendix F
Mechanical	See Appendix F
Electrical	See Appendix F
Transmission System Engineering	See Appendix F
Compliance Matrix	See Appendix G

MOJAVE SOLAR LLC

42134 Harper Lake Rd
Hinkley, CA 92347

Subject:	09-AFC-5C
Condition Number:	COMPLIANCE-6
Description:	Monthly Compliance Report – November, 2014
Submittal Number:	COMPLIANCE6-02-00

12/12/2014

Dale Rundquist, CPM
(09-AFC-5C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

As required by the California Energy Commission ("CEC") Condition of Certification COMPLIANCE-6, the following is an update including Mojave Solar LLC ("MSLLC") submittals to and approvals by the CEC as well as a listing of any MSLLC filings submitted to, or permits issued by, other governmental agencies during the month of November, 2014.

Submittals\Approvals

AQ-25

On 11/5/2014, AQ25-00-00 was approved by the CEC for TDS Meter Specs & Calibration after submittal on 10/31/2014.

AQ-26

On 11/17/2014, AQ26-01-00 was submitted to the CEC for a revised Cooling Tower TDS Measurement and Emissions Calculation Protocol.

BIO-15

On 11/18/2014, BIO15-05-03 Response to Information Request re Compensation Mitigation LOC Release Request and BIO-15 Completion was submitted to describe the method used to calculate various amounts of money for land enhancement and endowment.

BIO-19

CEC provided staff comments for the BIO-19 Evaporation Pond Plan on 11/25/2014. The Evaporation Pond Plan is being edited for resubmittal

CUL-1

On 11/18/2014, CUL1-15-00 was approved naming the new Cultural Resources Specialist (John Dietler).

Other Permits\Filings

On 11/18/2014, a Temporary Certificate of Occupancy for the Mojave Solar Project was issued by Bureau Veritas, Department of Building Inspection.

There were no other permits issued to or filings made by MSLLC for the month of November.

Please contact me with any question.

Sincerely,

William F. Grisolia

ABENGOA SOLAR LLC

42134 Harper Lake Rd

Hinkley, CA 92347

(303) 885-2036

Appendix A
Air Quality Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

November 2014 Reporting Period



CH2M HILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA
95833-2937
Tel: 916.920.0300
Fax: 916.920.8463

December 5, 2014

Dale Rundquist, CPM
California Energy Commission
Siting, Transmission & Environment Protection (STEP) Division
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

RE: AQ-SC3, AQ-SC4, AQ-SC5, and WORKER SAFETY-8 Monitoring and Mitigation
Activities at Mojave Solar Project (09-AFC-5C) for November 1 through November 30,
2014

Dear Mr. Rundquist:

This letter is to update you on the air quality construction monitoring occurring at the Mojave Solar Project (MSP) site during November 2014. Compliance with the WORKER SAFETY-8 condition was also monitored. Construction activities occurred November 1 through 30, 2014. Compliance monitoring was performed by Jose Manuel Bravo Romero of Abengoa; who is the full-time onsite Air Quality Construction Mitigation Manager (AQCMM). I, Christopher Waller of CH2M HILL, am the designated AQCMM delegate and visited the site on November 25, 2014, to ensure compliance with record keeping and conditional requirements.

Overview

Construction activities in November included fire protection system installation, water treatment plant (WTP) electrical equipment installation, balance of plant (BOP) piping assembly, heat trace installation, power block grounding, and miscellaneous foundation construction. In addition, commissioning activities began in November 2014. Construction was monitored for compliance with Conditions of Certification (COCs) AQ-SC3, AQ-SC4, AQ-SC5, and WORKER SAFETY-8. New equipment brought onsite during November was issued a tag in accordance with AQ-SC5a, and evaluated for compliance with AQ-SC5b through AQ-SC5d. A summary of the compliance with the Air Quality Construction Mitigation Plan (AQCMP) is provided in the following sections. Daily, weekly, and monthly observation logs and other site inspection forms are maintained onsite and available upon request.

Compliance Assessment

AQ-SC3 – Fugitive Dust Control

All of the AQ-SC3 COCs were in effect during November 2014. The following section summarizes each COC and describes the level of compliance.

- **AQ-SC3a: Soil stabilizers on main access roads and delivery areas**

Soil stabilizers have been applied to finished access roads and delivery areas. Main roads in Beta have been paved.

- **AQ-SC3b: Watering of disturbed areas**

Watering of actively disturbed areas was performed for all construction activities with the potential to create airborne dust plumes. When necessary, watering was intensified as directed by the onsite AQCM and construction managers.

- **AQ-SC3c: Speed limits**

The required speed limits have been enforced onsite.

- **AQ-SC3d: Speed limit signage**

Speed limit signage has been posted and is clearly visible at all site entrances.

- **AQ-SC3e: Tire inspection and washing prior to exiting to paved roadway**

Although tire washing stations have not been installed, all construction vehicles are inspected for dirt and other debris prior to exiting to paved public roadways.

- **AQ-SC3f: Tire washing station**

As stated above, no tire washing stations have been installed. However, tires of construction vehicles are inspected for dirt and other debris prior to exiting to paved public roadways.

- **AQ-SC3g: Unpaved exit treatment**

Rumble plates are installed at all site exits.

- **AQ-SC3h: Construction vehicles use approved entrances only**

When traveling between sites, construction vehicles use approved entrances only.

- **AQ-SC3i: Run-off onto public roadways**

Earthmoving activities have resulted in run-off being directed away from paved public roadways. In addition, fiber rolls have been placed where the potential for run-off onto public roadways exist. Watering has not resulted in run-off onto public roadways.

- **AQ-SC3j: Sweeping of paved roads within construction site**

Sweeping of paved roads within the site is performed as necessary.

- **AQ-SC3k: Sweeping of public paved roadways with access to the MSP site**

Sweeping of Harper Lake Road and Lockhart Road is performed as necessary.

- **AQ-SC3l: Stabilization of storage piles**

Earthmoving activities performed during November 2014 included minor trenching and excavation activities in the power blocks. Areas disturbed during trenching or excavation were sufficiently watered during all construction activities. Storage piles generated as a result of excavation activities will be used as backfill. Additional storage piles exist to the east of the Alpha evaporation pond. These storage piles are watered

frequently, and will be re-distributed at a later date. All other soil piles are temporary excavation spoils or grading excesses that are re-distributed prior to exceeding the 10-day limit for cover or treatment.

- **AQ-SC3m: Stabilization of transported solid bulk material**

Transported solid bulk materials are sufficiently watered, and at least one foot of freeboard is provided during transportation.

- **AQ-SC3n: Wind control techniques**

Wind fencing has been installed in Alpha East, Alpha West, and Beta along the eastern and western borders of each area.

AQ-SC4 – Dust Plumes & WORKER SAFETY-8 – Site Worker Fugitive Dust Protection

The following construction activities were performed during the November 1 to November 30, 2014 reporting period:

- Instrument and controls installation
- Miscellaneous foundation construction
- Power block insulation installation
- Power block grounding
- BOP piping assembly
- WTP electrical equipment installation
- Miscellaneous foundation construction
- Cable tray and cable tray insulation installation
- Heat trace installation
- Fire protection system installation

Certain activities were suspended on multiple occasions in November 2014 due to high wind events (wind gusts of at least 25 mph). The following table summarizes the stoppage events and the construction activities stopped during each event.

Table 1
November 2014 High Wind Conditions

Date	Time	Description of Construction Activity Stoppage	Maximum Recorded Wind Speed (mph)
11/13/2014	14:00	Operations stopped.	25
11/14/2014	13:00	Operations stopped.	25

Soil stabilization has been implemented on finished haul roads and delivery areas. In addition, main roads in Beta and Harper Lake Road south of Lockhart Road have been paved. Unfinished areas and haul roads without soil stabilizers are watered daily to mitigate against the formation of fugitive dust. A truck washing station has not been installed. However, rumble plates are installed at all site entrances/exits, and the tires of construction vehicles are inspected for dirt and other debris and swept clean as needed prior to exiting the site onto paved roadways.

AQ-SC5 – Diesel-Fueled Engine Control

Attachment 1 to this letter contains a list of equipment operated onsite during November 2014. The list contains equipment information including manufacturer, model, California Air Resources Board (CARB) Equipment Identification Number (EIN), engine model year, engine horsepower, and U.S. Environmental Protection Agency (USEPA) certified tier level.

The following list summarizes each COC for AQ-SC5 and describes the level of compliance.

- **AQ-SC5a: Equipment Tags**

A visible air quality tag with a unique number (AQ #) was issued and adhered to all equipment that arrived onsite between November 1 and November 30, 2014.

- **AQ-SC5b: USEPA Engine Tier Requirement**

All construction equipment that arrived onsite between November 1 and November 30, 2014 had Tier 3 engines.

- **AQ-SC5c: Retrofit Control Termination**

No equipment with retrofit control technology was brought onsite.

- **AQ-SC5d: Maintenance Records**

Maintenance records for all vehicles are available upon request.

- **AQ-SC5e: "All diesel heavy construction equipment shall not idle for more than five minutes."**

Idle time was monitored by the activity managers and AQCMM. This condition was met during this reporting period.

- **AQ-SC5f: Electric motors**

The use of construction equipment with electric motors was not feasible for current construction activities.

Please feel free to call (714) 435-6268 for questions, clarifications, or additional information.

Sincerely,

CH2M HILL



Christopher Waller
Staff Environmental Engineer
AQCMM Delegate
christopher.waller@ch2m.com

c: Jose Manuel Bravo Romero / Abengoa, AQCMM
Christopher Waller / CH2M HILL, AQCMM Delegate

Attachment 1
Construction Equipment Mojave Solar Project

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
CATERPILLAR	950G	GH6Y78	2005	183	2	Rubber-Tired Loader	2011		GFE Received
DEERE	200D	KF4B33	2011	159	3	Excavator	2011		
CATERPILLAR	CS683E	TX8P94	2005	173	2	Roller	2011		GFE Received
CATERPILLAR	834B	VF5F83	2010	440	3	Rubber-Tired Dozer	2011		
CATERPILLAR	325DL	JB4V37	2006	168	2	Excavator	1/3/2012		GFE Received
DEERE	410J	BB3T68	2011	97	4	Tractor/Loader/Backhoe	1/5/2012		
SKYTRAK	8042	HY9R57	2008	110	3	Forklift	1/23/2012		
CATERPILLAR	651B	JA9X63	2006	540	3	Scraper	3/9/2012		
CATERPILLAR	651B	TR7R75	2006	540	3	Scraper	3/9/2012		
CASE	580_SM	BJ8N36	2007	95	2	Tractor/Loader/Backhoe	4/23/2012		GFE Received
DEERE	310J	DA4B63	2007	75.1	2	Tractor/Loader/Backhoe	4/23/2012		GFE Received
CATERPILLAR	631C	JW5C94	2010	452	3	Scraper	4/23/2012		
CATERPILLAR	140H	HM5E53	2005	165	2	Grader	6/19/2012		GFE Received
DEERE	328	AA9M73	2007	82	2	Skid Steer Loader	8/10/2012		GFE Received
SKYTRAK	8042	KP9P46	2007	110	3	Forklift	8/17/2012		
P&H	453-130	BY3X34	2008	139	3	Crane	9/5/2012		
CATERPILLAR	414E	WJ4X56	2006	92	2	Tractor/Loader/Backhoe	9/5/2012		GFE Received
A&L	210LJ	HK4M87	2011	84	4	Tractor/Loader/Backhoe	10/5/2012		
DEERE	310J	SS4K74	2011	84	4	Tractor/Loader/Backhoe	10/5/2012		
TEREX	RT230-1	TB3E79	2006	130	2	Crane	10/5/2012		GFE Received
GROVE	RT518	XE8V88	2008	142	3	Crane	10/5/2012		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
TEREX	RT 780	KT4X64	2005	275	2	Crane	10/05/12		GFE Received
TEREX	RT665	NB5R93	2007	215	3	Crane	10/25/2012		
DEERE	310SJ	SP4F87	2011	100	4	Tractor/Loader/Backhoe	10/25/2012		
CATERPILLAR	450E	UB3H55	2008	136	3	Tractor/Loader/Backhoe	10/25/2012		
DIECI	45.17 Icarus	EP4W64	2013	195	4	Rough Terrain Forklift	11/1/2012		
DEERE	210LJ	JW3M53	2011	74	4	Tractor/Loader/Backhoe	11/14/2012		
JLG	G10-55A	WR3G83	2011	130	3	Forklift	11/14/2012		
SKY TRACK	10054	HB6Y56	2012	100	4	Rough Terrain Forklift	11/19/2012		
TEREX	RT780	HR3X86	2006	275	3	Crane	11/19/2012		
GROVE	RT650E	YH5P85	2007	165	3	Crane	11/19/2012		
GENIE	GTH-1056	BJ6A33	2012	139	4	Forklift	11/30/2012		
DEERE	410J	LX6M39	2011	99	4	Tractor/Loader/Backhoe	11/30/2012		
HYSTER	H120FT	NM9Y89	2011	74	4	Forklift	11/30/2012		
JLG	G9-43A	PW7E85	2011	99	4	Forklift	11/30/2012		
GENIE	1056	WG4N88	2010	139	3	Forklift	11/30/2012		
GRADALL	534D9	LG6P89	2011	99	3	Forklift	12/10/2012		
SKY TRAK	10054	YW7Y65	2008	110	3	Forklift	12/10/2012		
CATERPILLAR	315D	BX7C54	2011	115	3	Excavator	12/19/2012		
CATERPILLAR	430E	CT9E46	2011	110	3	Backhoe	12/19/2012		
CATERPILLAR	966H	CU4A75	2008	261	3	Loader	12/19/2012		
JLG	10054	AW6L59	2011	110	3	Forklift	12/27/2012		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
NEW HOLLAND	B95	DS7V79	2007	95	3	Backhoe	12/27/2012		
TEREX	GTH1056	PP3H77	2011	116	3	Forklift	12/27/2012		
SKYJACK	8042	CE4F84	2008	110	3	Forklift	1/3/2013		
CATERPILLAR	321D	CK7S75	2011	147	3	Excavator	1/3/2013		
TEREX	RT 780	VA3N64	2005	275	3	Crane	1/3/2013		
CATERPILLAR	140M2	XA6E55	2012	264	3	Graders	1/3/2013		
SKYTRAK	8042	HE9X93	2008	110	3	Forklift	1/7/2013		
CATERPILLAR	420F	AE5W73	2012	99.9	3	Backhoe	1/9/2013		
HAMM	3307	GC6S79	2012	74	3	Roller	1/11/2013		
BOMAG	BW177DH	TJ4G76	2010	110	3	Roller	1/11/2013		
CATERPILLAR	420F	AX9E77	2012	99.9	3	Backhoe	1/15/2013		
BOBCAT	S160	KY3G93	2003	56	3	Skid steer	1/15/2013		
KOBELCO	SK70SR	TK3Y36	2005	55	3	Excavator	1/15/2013		
SKYTRAK	10054	WS4M75	2012	100	3	Forklift	1/16/2013		
INGERSOLL - RAND	SD40	WM7E75	2000	80	3	Roller	1/18/2013		
VOLVO	SD100D	AH4W67	2008	130	3	Roller	1/23/2013		
DEERE	210LJ	UC9P95	2011	99.9	3	Backhoe	1/23/2013		
KOMATSU	WA380-6	US8T79	2006	191	3	Loader	1/23/2013		
DEERE	710J	XF3R63	2008	123	3	Backhoe	1/23/2013		
KOMATSU	Fd100t-8	KP8W75	2009	173	3	Forklift	1/23/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
HYUNDAI	160D-7E	NG7L33	2011	160	3	Forklift	2/2/2013		
DEERE	410J	TF9M89	2007	98	3	Backhoe	2/2/2013		
SKY_TRAK	6036	WK4S78	2006	75	3	Forklift	2/2/2013		
CASE	850L_LGP	MB4W34	2011	99	3	Dozer	2/2/2013		
JLG	G10-55A	LK4C88	2010	101	3	Forklift	2/2/2013		
CATERPILLAR	430F	TP8K57	2012	115.2	3	Backhoe	2/2/2013		
DEERE	210LE	YW3W53	2006	78	3	Backhoe	2/5/2013		
DEERE	135D	YF8D78	2008	97	3	Excavator	2/5/2013		
SKYJACK	VR-843D	UK9H48	2008	110	3	Forklift	2/5/2013		
TEREX	PT100	TT7L43	2010	99.9	3	Loader	2/8/2013		
DEERE	310J	MU8F49	2011	93	3	Backhoe	2/8/2013		
CATERPILLAR	420F	PJ4S33	2012	99.9	3	Backhoe	2/8/2013		
CATERPILLAR	420F	SH5P56	2012	99.9	3	Backhoe	2/11/2013		
OTHER	TJ-5000	MR6P63	2011	220	3	Trucks	2/11/2013		
JLG	G10-55A	KS9K64	2012	250	3	Forklift	2/11/2013		
JLG	G10-55A	Ty9H64	2012	150	3	Aerial Lift	2/11/2013		
HYSTER	H120FT	NM9Y89	2011	74	3	Forklift	2/11/2013		
JLG	660SJ	PC5J79	2012	49	3	Aerial Lift	2/11/2013		
CATERPILLAR	TL943	VT9L56	2011	99	3	Forklift	2/11/2013		
GENIE	Z45/25J	DK3J49	2012	49	3	Aerial Lift	2/19/2013		
TEREX	RT780	VT7C39	2008	275	3	Cranes	2/19/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
JLG	400S	UV6D76	2006	49	3	Aerial Lift	2/19/2013		
CATERPILLAR	226B3	NS7R98	2011	61	3	Skid-steer-loaders	2/19/2013		
DEERE	135D	YF8D78	2008	97	3	Excavator	2/19/2013		
JLG	G6-42A	TJ4R94	2011	99	3	Forklift	2/19/2013		
GENIE	GTH-5519	JD8F98	2011	67	3	Forklift	3/16/2013		
JLG	10054	CW3C83	2012	85	3	Forklift	3/16/2013		
SKY-TRAK	10054	VA9U73	2008	110	3	Forklift	3/16/2013		
OTHER	XRM1254	EP7D46	2006	122	2	Aerial Lift	3/16/2013		GFE Received
TEREX	RT780	LP9U53	2007	275	3	Cranes	3/16/2013		
HITACHI	ZX300LC	PF9G47	2005	200	2	Excavator	3/16/2013		GFE Received
VOLVO	BL60	BK6U58	2012	83	3	Backhoes	3/18/2013		
JLG	G10-55A	NJ3A43	2013	130	3	Forklift	3/18/2013		
HYSTER	H360HD2	BF6N74	2012	155	3	Forklift	3/18/2013		
GRADALL	544D	MN3Y45	2005	200	2	Forklift	3/19/2013		GFE Received
CASE	580SM/2	SH8S69	2007	95	2	Backhoes	3/22/2013		Onsite but not In use
CARELIFT	ZB20044-44	KV9A38	2011	160	3	Forklift	3/25/2013		
VOLVO	ECR88	RL9G83	2012	57	3	Excavator	3/28/2013		
JLG	G10-55A-CAB	WU9J47	2011	130	3	Forklift	3/28/2013		
CASE	580-SN	RT9H99	2011	97	3	Backhoes	3/29/2013		
JLG	G10-55A	WW6W44	2011	130	3	Forklift	3/29/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
CATERPILLAR	TL1255	SU4H58	2011	138	3	Forklift	3/29/2013		
HYSTER	H210	KH9A63	2004	195	2	Forklift	3/29/2013		GFE Received
JLG	G6-42A	JT4R94	2011	99	3	Forklift	3/16/2013		
JLG	G10-55A	UB3R85	2007	140	3	Forklift	3/26/2013		
GENIE	TH1056C	HX5Y45	2005	125	2	Forklift	3/29/2013		GFE Received
VOLVO	ERC145DL	RB7E53	2012	114	3	Excavator	4/2/2013		
INGERSOLL-RAND	SD45D/F	ES5C78	2006	80	2	Roller	4/2/2013		GFE Received
VOLVO	SD43D/F	TY8A44	2007	80	2	Paver	4/2/2013		GFE Received
CATERPILLAR	D8T	WJ8T88	2006	310	3	Tractors/Loaders/Backhoes	4/2/2013		
SKY-TRAK	10054	KB9Y73	2012	110	3	Forklift	4/2/2013		
DEERE	200D	AB7M73	2011	159	3	Excavator	4/2/2013		
LIEBHERR	LTM_1220-5.1	AD6Y38	2008	496	3	Crane	4/3/2013		
CATERPILLAR	345DL	EC8J65	2008	410	3	Excavator	4/3/2013		
VOLVO	L90G	UM9N34	2012	161	3	Tractors/Loaders/Backhoes	4/3/2013		
VOLVO	L90G	KR7W43	2012	161	3	Tractors/Loaders/Backhoes	4/3/2013		
VOLVO	SD-100D	VU9S58	2008	130	3	Roller	4/4/2013		
DEERE	JD450JLT	KM3W94	2010	77	3	Other	4/4/2013		
GRADALL	G6-42P	VH3R63	2005	99	2	Other	4/4/2013		GFE Received

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
GRADALL	G6-42A	AR6S85	2006	99.9	2	Forklift	4/4/2013		GFE Received
KOMATSU	PC400LC-7EO	TA7R86	2006	353	3	Backhoe	4/4/2013		
INGERSOLL-RAND	SD116DX	HT4J67	2007	160	3	Roller	4/4/2013		
OTHER	TJ-5000	VG9N57	2012	220	3	Truck	4/5/2013		
TEREX	RT-780	TH9R77	2005	275	2	Other	4/9/2013		GFE Received
MANITOWOC	16000	WC8X98	2010	500	3	Crane	4/11/2013		
TEREX	RT-230	SP8M78	2012	130	3	Crane	4/11/2013		
CATERPILLAR	328D	ME3U69	2010	204	3	Excavator	4/12/2013		
SANY-HEAVY-IND	SRC840_RT	VE4C37	2012	408	3	Crane	4/12/2013		
GENIE	Z45/25J-DSL-4WD	NK9E56	2006	48	2	Aerial Lift	4/17/2013		GFE Received
GENIE	GTH-1056	BG9E85	2012	139	3	Forklift	4/17/2013		
JLG	10054	JR6U95	2008	110	3	Forklift	4/17/2013		
DEERE	318D	LW3B46	2011	76.1	3	Tractors/Loaders/Backhoes	4/17/2013		
SKY-TRAK	SJ46AJ	MY4T53	2012	49	3	Aerial Lift	4/17/2013		
SKY_TRAK	10K_RCHLFT	KV5C43	2007	110	3	Forklifts	5/1/2013		
VOLVO	ECR305CL	VT9L86	2010	205	3	Excavator	5/2/2013		
DEERE	210LJ	UC3K76	2008	99	3	Backhoes	5/2/2013		
TEREX	RT345	JS3S84	2011	160	3	Cranes	5/6/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
MASSEY-FERGUSON	6255	GA8S84	2003	93	1	Tractor	5/8/2013	5/16/2013	Offsite
GRADALL	544D	EU9X67	2000	130	1	Forklifts	5/9/2013	5/10/2013	Offsite
BOBCAT	T190	WS8X94	2010	66	3	Loaders	5/13/2013		
CATERPILLAR	966H	WM3B35	2007	261	3	Loaders	5/17/2013		
SKY_TRAK	10K_RCHLFT	RA7A36	2007	110	3	Forklifts	5/20/2013		
CATERPILLAR	297C	BT6X94	2007	94	2	Loaders	5/30/2013	6/5/2013	Offsite
CATERPILLAR	TH460B	EH3K78	2005	100	1	Lifts	6/4/2013	6/6/2013	Offsite
SKY_TRAK	10054	CS5E84	2012	100	3	Forklifts	6/5/2013		
JCB	527-55	TJ8X64	2012	75	3	Forklifts	6/5/2013		
LJG	G10-55A	BJ5B48	2012	130	3	Forklifts	6/6/2013		
GEHL	DL11L-55	US9P64	2008	115	3	Forklifts	6/6/2013		
JLG	800S	CY3K64	2007	65	2	Lifts	6/7/2013	6/17/2013	Offsite
DEERE	326D	CX5A73	2011	75	3	Loaders	6/7/2013		
LINK-BELT	RTC 8075	FN9D69	2009	225	3	Cranes	6/7/2013		
JLG	120AJP_125A RT	JE6P64	2011	74	3	Lifts	6/7/2013		
SNORKEL	T65RTCU	EG4G76	2008	65	3	Lifts	6/7/2013		
GENIE	Z-80/60J-W/GEN	AX5A64	2010	73	3	Lifts	6/10/2013		
JLG	800AJ	CY4A37	2011	50	3	Lifts	6/10/2013		
DEERE	310SJ	MC7U99	2010	93	3	Backhoes	6/14/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
DEERE	544K	SR5B39	2010	167	3	Backhoes	6/14/2013		
DEERE	310SJ	CE6E43	2007	93	2	Backhoes	6/14/2013	6/18/2013	Offsite
CASE	821F	PB4E64	2011	169	3	Backhoes	6/14/2013		
GROVE	RT765E-2	LV6V74	2013	240	3	Cranes	6/17/2013		
DEERE	310SG	NA3P73	2006	93	2	Backhoes	6/18/2013	6/19/2013	Offsite
TEREX	RT_780	UA6T98	2006	275	3	Cranes	6/19/2013		
CATERPILLAR	D8T	JB5X88	2004	310	2	Tractors	7/1/2013	7/8/2013	Offsite
KOMATSU	PC308USL_3	WG8P59	2005	189	2	Excavators	7/1/2013	7/9/2013	Offsite
CATERPILLAR	D8T	XF9M63	2006	310	3	Tractors	7/2/2013		
GENIE	Z-13570	YK7C77	2010	74	3	Lifts	7/8/2013		
TEREX	RT555	WS6S45	2005	185	2	Cranes	7/8/2013	7/18/2013	Offsite
SKY JACK	SJ66T	BP6P88	2012	64	3	Lifts	7/11/2013		
JLG	800AJ	CS9L37	2008	62	3	Lifts	7/16/2013		
DEERE	210KEP	BY5Y84	2012	70	3	Backhoes	8/5/2013		
HITACHI	225	AF8C99	2011	159	3	Excavators	8/5/2013		
CATERPILLAR	325DL	AN8W58	2008	204	3	Excavators	8/5/2013		
SKY-TRAK	10054	MM7D49	2007	110	3	Forklifts	9/4/2013		
TEREX	RT780	LD9M99	2007	275	3	Cranes	9/4/2013		
CATERPILLAR	450E	XH8D54	2007	157	3	Backhoes	9/4/2013		
DEERE	210LE	PA4G55	2006	78	2	Backhoes	9/10/2013	9/17/2013	
DEERE	624K	XP9L79	2008	146	3	Loaders	9/10/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
SKY-TRAK	10054	XK6T97	2004	110	2	Lifts	9/13/2013	10/11/2013	GFE could not be obtained. Equipment was removed from site.
SNORKEL	TB-85J	RL5M33	2007	64	2	Lifts	9/13/2013	9/17/2013	
SANY-HEAVY-IND	SRC865-RT	TS5P46	2010	250	3	Cranes	9/13/2013		
JLG	800AJ-80ART-BO	DV7H57	2011	56	3	Lifts	9/17/2013		
JLG	SKYTRK-10K-RCH	SA4S95	2007	110	3	Forklifts	9/17/2013		
LIEBHERR	LR1200SX	AH8E76	2007	362	3	Cranes	9/17/2013		
GENIE	GTH-5519	NA4U95	2012	67	3	Forklifts	9/17/2013		
SKY-TRAK	1054-10,000-RCH	EU8D48	2006	82	2	Forklifts	9/19/2013	10/11/2013	GFE could not be obtained. Equipment was removed from site.
VOLVO	SD45	HE8X95	2011	99	3	Rollers	9/19/2013		
LIEBHERR	LR1200SX	SY5B57	2006	362	3	Cranes	9/19/2013		
DEERE	310SJ	WX9R94	2011	75	3	Backhoes	9/20/2013		
SKY-TRAK	10054	GL9X33	2010	110	3	Forklifts	9/20/2013		
GEHL	DL1240	DV3U39	2013	115	3	Forklifts	9/20/2013		
GRADALL	534D9	WM5W94	2011	110	3	Forklifts	9/23/2013		
SKY-TRAK	8042	EU5S37	2012	71	3	Forklifts	9/23/2013		
JLG	G12-55A	SW6X98	2011	130	3	Forklifts	9/24/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
VOLVO	MCT135C	MS7Y68	2011	91	3	Loaders	9/26/2013		
JLG	SKYTRK-10K-RCH	AJ66D98	2007	110	3	Forklifts	9/27/2013		
GENIE	Z-80/60	PJ3W77	2008	74	3	Lifts	9/27/2013		
GENIE	GHT-1056	TR6F45	2013	121	3	Forklifts	9/27/2013		
CASE	580N	SX5S95	2011	84	3	Backhoes	10/2/2013		
GROVE	RT880E	BN6H96	2013	275	3	Cranes	10/2/2013		
JLG	G6-42A	XR9V66	2011	69	3	Forklifts	10/2/2013		
CATERPILLAR	TL1255C	DX9N76	2013	141	3	Forklifts	10/4/2013		
JLG	800AJ	MY6J77	2012	62	3	Lifts	10/4/2013		
JLG	G-1055A	LU4S88	2008	125	3	Forklifts	10/7/2013		
JLG	600S	DA7J87	2012	49	3	Lifts	10/7/2013		
Other	XRM1254	NV8S66	2005	122	2	Lifts	10/7/2013	10/17/2013	Offsite
TEREX	RT780	CJ4V77	2012	260	3	Cranes	10/7/2013		
LIEBHERR	LR1200	RA6Y75	2006	362	3	Cranes	10/9/2013		
SKY-TRAK	1054-10,000-RCH	MC9W76	2007	110	3	Forklifts	10/10/2013		
LIEBHERR	LR1200SX	NU9L79	2007	362	3	Cranes	10/10/2013		
CATERPILLAR	430E	FE4P69	2008	95	3	Backhoes	10/16/2013		
SKY-TRAK	8042-CAB	SG3T73	2011	110	3	Forklifts	10/16/2013		
DEERE	310K	WG6W88	2013	56	3	Backhoes	10/16/2013		
JLG	6042	FA7K37	2013	85	3	Forklifts	10/18/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
JLG	G5-19A	AB8T34	2006	100	3	Forklifts	10/18/2013		
GENIE	GTH-1056	PL9W36	2013	121	3	Forklifts	10/22/2013		
TOYOTA	50-4FDK160	WK4X75	2011	168	3	Forklifts	10/22/2013		
CASE	580N	TX5K58	2011	84	3	Backhoes	10/23/2013		
LINK-BELT	225MSR	KG3E74	2011	163	3	Excavators	10/25/2013		
GENIE	S65	TH8R79	2012	49	3	Lifts	11/4/2013		
JLG	10054	KL5S59	2012	100	3	Forklifts	11/7/2013		
BOMAG	BW120AD_4	VU8F45	2006	34	2	Rollers	11/8/2013	11/15/2013	Offsite
GROVE	TM9120	VC3C38	1993	460	0	Cranes	11/12/2013	11/14/2013	Offsite
CASE	580N	TX5K58	2011	84	3	Backhoes	11/12/2013		
SKY-TRAK	10054	HL8E83	2012	110	3	Forklifts	11/25/2013		
JCB	3CX14-4EC	TP4C93	2011	68	3	Backhoes	11/25/2013		
HYSTER	H360HD	CU5C99	2007	155	3	Forklifts	11/25/2013		
DEERE	310J_EP	TP5F67	2013	70	3	Backhoes	11/26/2013		
JLG	G6-42A	DL9T78	2011	69	3	Forklifts	11/27/2013		
TREX	RT345XL	JS3S84	2011	160	3	Cranes	11/27/2013		
JLG	G10-55A	TY9H64	2012	130	3	Aerial Lifts	12/12/2013		
JLG	G10-55A	UC3F55	2012	174	3	Forklifts	12/12/2013		
JCB	550-170	PW7E59	2012	99	3	Forklifts	12/16/2013		
JLG	800AJ	VD8B84	2013	61.6	3	Aerial Lifts	12/16/2013		
GEHL	DL1155	XB7G76	2013	115	3	Forklifts	12/16/2013		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
TEREX	RT450	MT8A46	2011	275	3	Cranes	12/16/2013		
SKY-TRAK	10054	BD7B67	2008	110	3	Forklifts	12/20/2013		
JLG	600AJ	WV7C48	2007	65	3	Aerial Lifts	12/23/2013		
GENIE	Z-80	BE5Y85	2010	74	3	Aerial Lifts	12/23/2013		
OTTOWA	TJ-1000	SH9Y35	2010	220	3	Trucks	1/3/2014		
Other	TJ-5000	PV5L96	2007	280	3	Tractors	1/7/2014		
Other	TJ-5000	BY5E66	2007	280	3	Tractors	1/8/2014		
TRAK	8042	UN8Y65	2012	100	3	Forklifts	1/13/2014		
TRAK	10054	HF8X98	2006	110	2	Forklifts	1/18/2014	1/28/2014	Offsite
GEHL	DL 1155	UT5Y35	2012	115	3	Forklifts	1/20/2014		
SKY-TRAK	10054L	DV4V97	2012	100	3	Forklifts	2/3/2014		
JLG	800S	CY3K64	2007	65	2	Lifts	2/5/2014	2/12/2014	Offsite
SKY-TRAK	10054	MX6V88	2013	100	3	Lifts	2/5/2014		
CATERPILLAR	TL 1055C	DT8W55	2012	125	3	Forklifts	2/10/2014		
JLG	10K	PJ9M37	2007	110	3	Forklifts	2/12/2014		
TEREX	RT_780_80TON	MR9U89	2005	275	2	Cranes	2/14/2014	2/19/2014	Offsite
GENIE	GTH_5519	BD9T36	2012	67	3	Forklifts	2/18/2014		
TEREX	TX5519	TU3D58	2006	62	2	Forklifts	2/18/2014	2/25/2014	Offsite
DEERE	210K	AE9V73	2013	56	3	Backhoes	3/10/2014		
JLG	10054	RC6M93	2012	75	3	Forklifts	3/12/2014		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
DEERE	310K	NL6C48	2013	130	3	Backhoes	3/12/2014		
CASE	580N	SX5S95	2011	84	3	Backhoes	3/18/2014		
OTHER	TJ-5000	VT5V79	2007	280	3	Tractors	3/20/2014		
JLG	C6-42A	TX8D67	2012	100	3	Forklifts	3/20/2014		
OTHER	XRM1254	EK9A69	2008	99	3	Lifts	3/21/2014		
SKY-TRAK	10054	GM7C76	2013	100	3	Forklifts	3/25/2014		
JLG	800AJ	JF5J83	2002	64.5	0	Lifts	3/25/2014	3/28/2014	Offsite
JLG	G6-42A	UH3U65	2011	99	3	Forklifts	3/27/2014		
JCB	930	XN9J99	2011	84	3	Forklifts	3/27/2014		
SKY-TRAK	10054	PY8P48	2012	74	3	Forklifts	5/7/2014		
JLG	6042	JT4H67	2014	85	3	Forklifts	5/7/2014		
SKY-TRAK	10054	XL9A84	2007	110	3	Forklifts	5/8/2014		
GENIE	GTH-1056	YE9N46	2011	114	3	Forklifts	5/9/2014		
JLG	1200SJP	WK5B84	2012	74	3	Boom	5/16/2014		
SKY-TRAK	8042	CH6F45	2013	75	3	Forklifts	6/6/2014		
JCB	930	FR8A79	2012	134	3	Forklifts	7/15/2014		
JLG	1250AJP	KU3R59	2011	82	3	Lifts	7/16/2014		
JLG	Z-135/70	TS4F37	2008	74	3	Lifts	7/16/2014		
Genie	280-60	BE5Y85	2010	74	3	Lifts	7/16/2014		
JCB	510-56	BE8P43	2014	75	3	Forklifts	7/16/2014		
SKY-TRAK	10054	TW6E87	2012	100	3	Forklifts	7/17/2014		

Construction Equipment for Mojave Solar Project – November 2014 Equipment Inventory									
Manufacturer	Model	EIN	Engine Year	Horse Power	Engine Tier	Vehicle Type	Date Arrived	Date Left Site	Comments
Genie	S45	BP5H59	2012	49	3	Lifts	7/18/2014		
JLG	1250AJP	CJ9K73	2011	75	3	Lifts	8/1/2014		
JLG	800AJ	CW6P85	2007	65	3	Lifts	8/1/2014		
SKY-TRAK	10054	PP9P73	2012	75	4	Forklifts	8/1/2014		
JLG	1250AJP	KU3R59	2011	82	3	Lifts	8/1/2014		
CASE	580N	VG9E35	2011	84	3	Tractors	10/1/2014		
Genie	S-125	MR3T54	2007	74	3	Booms	10/14/2014	10/15/2014	Offsite
Genie	Z80/60-D-4WD	WT5V59	2008	74	3	Lifts	11/6/2014	11/7/2014	Offsite
DEERE	310J-WT-D/L-CAB	GE6B68	2010	99	3	Backhoes	11/10/2014		

**Appendix B
Biological Resources**

**Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California**

November 2014 Reporting Period

Biological Resources
Monthly Monitoring Report
Conditions of Certification
BIO-2, BIO-3, BIO-4, BIO-5, BIO-7,
BIO-11, BIO-14, BIO-18, BIO-19

November 2014 Reporting Period

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December 2014

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- 1 Agency Approval Status of Biological Staff
- 2 WEAP Attendance Summary and Training Logs
- 3 Non-Compliance Notification
- 4 Monthly Common Raven Monitoring Results
- 5 Observed Wildlife Species List
- 6 Evaporation Pond Monitoring Data Sheets

1 Introduction

Per the California Energy Commission's (CEC) Abengoa Mojave Solar Project Commission Decision, CEC-800-2010-008-CMF, Docket Number 09-AFC-5C, this monthly compliance report (MCR) summarizes compliance with biological resource protection requirements during construction activities from November 1 through November 30, 2014, on the Mojave Solar Project (MSP) in San Bernardino County, California (see Figure 1, figures are at the end of this report).

This report does not repeat information provided in previous MCRs and assumes environmental compliance was met unless otherwise noted.

As provided in the CEC Final Decision, the following biological conditions of certification pertaining to monitoring activity covered by this MCR include, but are not limited to:

- BIO-2 Designated Biologist Duties
- BIO-3 Biological Monitor Selection, Qualifications and Duties
- BIO-4 Designated Biologist and Biological Monitor Authority
- BIO-5 Worker Environmental Awareness Program (WEAP)
- BIO-6 Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) Development and Compliance
- BIO-7 Impact Avoidance and Minimization Measures
- BIO-11 Desert Tortoise (*Gopherus agassizii*) Exclusion Fencing, Clearance Surveys, and Translocation Plan
- BIO-14 American Badger (*Taxidea taxus*) and Desert Kit Fox (*Vulpes macrotis*) Impact Avoidance and Minimization Measures
- BIO-18 Common Raven (*Corvus corax*) Monitoring, Management, and Control
- BIO-19 Evaporation Pond Monitoring and Adaptive Management Plan

This MCR is also being provided to California Department of Fish and Wildlife (CDFW) and United States Fish and Wildlife Service (USFWS).

1.1 Status of Biological Staff

Attachment 1 provides a summary table of the biological staff submitted for approval on this project and the status of their agency approvals. Two CEC-approved biological monitors, Mark Bratton and Ed Morgan, are pending USFWS approval as desert tortoise Authorized Biologists.

2 Ongoing Construction Monitoring

This section summarizes biological monitoring activities conducted by CH2M HILL throughout November 2014.

Please refer to sections "Desert Tortoise," "Invasive Weed Species," "Kit Fox and Other Mammals," "Nesting Birds," "Raven Monitoring, Management, and Control," "Wildlife Injury and Mortalities," and "Observed Species" for specific information about wildlife and plants found by biological monitors in November. Temporary implementation of the avian monitoring at the evaporation ponds continued through November and is discussed in the "Evaporation Pond Monitoring" Section.

The MSP requires that all onsite staff receive the WEAP training (via DVD) and a brochure prior to start of work. A total of 28 new staff went through WEAP training in November 2014. Attachment 2 provides an ongoing summary table of the project's WEAP attendance and the hard copy sign-in training logs for November 2014.

On a typical construction day, the biological monitor or designated biologist:

- Monitors Harper Dry Lake Road prior to increased traffic levels during morning and evening shift changes. Due to desert tortoise observations on Harper Lake Road in October and sustained temperatures ideal for tortoise activity periodically throughout November, biological staff monitored the road on a more frequent basis as necessary;
- Monitors active construction areas, parking lots, laydown yards, and any areas of potential threat to vegetation, soils, or wildlife;
- Monitors the evaporation ponds several times a day;
- Inspects desert tortoise exclusion fences and tortoise guards as required;
- Inspects potential entrapment areas (e.g., trenches, vaults, basins, buildings);
- Monitors for formation of potential standing water;
- Inspects kit fox exclusion buffers and downloads photos from motion-sensor cameras at shelter sites;
- Conducts raven observations and bi-weekly point-count surveys;
- Conducts point counts at evaporation ponds and adjacent wetlands;
- Investigates reports of hazardous waste spills;
- Inspects pipes greater than 3 inches in diameter that are less than 8 inches above the ground surface; and
- Performs other special biological-resources-related activities, as required.

2.1 Construction Activities

In November, construction activities occurred in all project sectors, with the highest concentration in the Alpha and Beta power block areas. Steam system tests were conducted in the Beta power block. Both Alpha and Beta cooling towers cascaded water during November. MSP discharged water into a single evaporation pond in both Alpha and Beta in November. However, water remained in the unused basin in Beta East from earlier testing. Bird deterrents were installed at both the Alpha and Beta evaporation ponds (see Section 3.2, Daily Evaporation Pond Monitoring).

In both Alpha and Beta, ground disturbance included various foundations, trenching, and grounding. Collector (trough) commissioning continued, and heat transfer fluid (HTF) was circulated through the solar fields and power blocks during defocus and tracking/focus testing of collectors. Construction within the power blocks also included insulation installation and fire protection system.

Trash removal continued during the month and maintenance of desert tortoise guards and exclusion fences occurred on an as-needed basis. The construction schedule includes day and night shifts during the regular work week and limited shifts on weekends.

2.1.1 Desert Tortoise Exclusion Fence Repairs

In November, biological staff made comprehensive weekly inspections of the perimeter desert tortoise exclusion fence in the course of conducting other required activities, which is more frequent than the monthly fence inspections required by BIO-11 and the Biological Opinion. No new breaches were noted.

2.2 Rain Events

No rain events occurred in November.

2.3 Hazardous Material Spills

Five hazardous material spills were reported to biological staff in November for diesel, HTF, and hydraulic fluid. Abeinsa (AEPC) provided immediate spill reports to the biological staff per BIO-7 requirements in November.

Biological staff checked each spill and confirmed that the cleanup was sufficient to remove or reduce the risk to wildlife.

2.4 Non-compliance Notifications and Reports

Biological staff did not issue any new non-compliance reports (NCR) in November. However, a non-compliance notification (NCN 06-2014) was issued to AEPC on November 21 for activities intending to disturb wildlife.

Two NCRs, NCR-5 regarding trash and NCR-7 regarding unauthorized road use, are pending formal acceptance of CEC for the implementation of MSP-proposed resolutions.

2.4.1 NCN 06-2014: Activities intending to disturb wildlife

On November 21, a biological monitor observed AEPC staff driving a forklift and a truck harassing a coyote (*Canis latrans*) in Alpha East. Two individual coyotes have been observed foraging on garbage and moths underneath generator lights on MSP since October. AEPC staff were driving with intention to haze the individual citing health and safety concerns. This is in direct violation of the BIO-5 WEAP, which states that "there will be no handling, feeding, or disturbing wildlife." The biological monitor immediately stopped this activity. A

non-compliance notification (NCN 06-2014) was issued and states that if the coyote does pose a risk to health and safety, the Designated Biologist needs to be informed and involved regarding any actions or activities relating to disturbing wildlife that may require agency and/or animal control involvement. As required by the BRMIMP, the original notification is included as Attachment 3.

2.4.2 NCR-5: Trash Resolution

Despite improvements to trash disposal, NCR-5 filed on 5 March, 2014, remained unresolved. AEPC subcontractors were still working to achieve trash management objectives specified in the NCR-5 resolution. Food-related trash is still providing subsidies to wildlife and project-related trash has blown onto the BLM-managed Harper Dry Lake Area of Critical Environmental Concern (ACEC). Biological staff have notified MSP personnel of the ongoing trash issues.

NCR-5 is pending formal acceptance of CEC for the implementation of MSP proposed resolutions.

2.4.3 NCR-7: Unauthorized Road Use Resolution

On May 16, the CEC accepted the resolution requiring MSP to staff additional security guards at locations where unauthorized road use was occurring, provided that they are sent daily and weekly summary notifications of any unauthorized road use. On August 5, during a CEC site visit, Staff Biologist Ann Crisp agreed to decrease reporting for NCR-7 to the MCR (if no violations are observed) and resume daily reporting if any infractions occur. No unauthorized road use was observed in November.

2.5 Compliance Concerns

Biological staff managed several other biological compliance issues. They are described below:

2.5.1 Offsite Parking

Temporary and long-term offsite parking has decreased but was still observed by biological staff in November. MSP staff were observed temporarily parking offsite along Lockhart Road to load and unload shipments, stage construction vehicles, or speak on the phone. Both biological and AEPC staff engaged the operators of the vehicles and instructed them to conduct construction business within the desert tortoise guards or to inspect underneath the vehicle for desert tortoise prior to moving. In cases of long-term storage, when the operator was not present, biological staff placed a written warning on the vehicle and deferred to AEPC who flagged the vehicle with a notice of the violation.

2.5.2 Standing Water

Standing water issues continued in November. The issues were primarily located within Alpha and Beta power blocks. The power block standing water issues were caused by

leaking valves, broken tanks and increased testing of fire suppression systems. Significant standing water issues have resulted from the cascading of water in the cooling towers. Wind blows cascading water out of the structure before it reaches the catch basin, which prompted AEPC to construct earthen dams to collect water as it flowed away from the cooling towers. Upon daily notification from biological staff, construction personnel swept water around to disperse it, or filled low spots with gravel, in an attempt to restricted wildlife access to the standing water.

A non-compliance report (NCR-9) was filed on December 1 for escalating standing water issued observed in November. This NCR will be discussed in the December Biological Resources MCR.

2.6 Desert Tortoise

In November, no construction activities required desert tortoise clearance surveys. No tortoises were observed within the boundaries of MSP or in the project vicinity.

2.7 Invasive Weeds

In November, two invasive weeds were observed. London rocket (*Sisymbrium irio*) is a target invasive weed observed during preconstruction surveys and identified in the project's *Tamarisk Eradication, Monitoring and Reporting Program* (Tamarisk Plan). An additional species, iceplant (*Carpobrotus edulis*) was not observed during preconstruction surveys, but meets the Tamarisk Plan's definition of an invasive species was also observed in November. The Tamarisk Plan's definition of an invasive species is that it is included in the California Invasive Plant Council (Cal-IPC) "high" or "moderate" dispersal or establishment rating.

London rocket is an annual species and only the old stalks from spring 2014 were observed.

Iceplant is a succulent perennial and was observed actively growing in the Alpha power block. This species occurs primarily in coastal habitats and is not likely to cause significant establishment risk once removed.

Two other weed species, Russian thistle (*Salsola tragus*) and fivehook bassia (*Bassia hyssopifolia*), were also observed onsite. Both of these species have only one of the Cal-IPC dispersal or establishment rating as "high" or "moderate." According to the BIO-16 Tamarisk Plan, and guidance provided by CEC staff biologist Ann Crisp via email on May 28, 2014, these two species are considered "exotic;" and exotic species must infest less than 5 percent of MSP for BIO-16 to meet its success criteria goals. In addition to having exotic species in less than 5 percent of the area at MSP, the overall site expectation from the Tamarisk Plan is that the site will be devoid of vegetation during operations. Therefore, all target noxious weeds and other exotic plant species will ultimately need to be removed.

AEPC is no longer applying Roundup, but are manually removing weeds within the site boundaries in preparation for the start of facility operations.

2.8 Kit Fox and Other Mammals

As of the end of November, there are two active kit fox shelter sites within two exclusion buffers, DKF Site #8 and #9 (Figure 2). DKF Site # 8 is located in a construction laydown area near the north boundary of Alpha West. DKF Site # 9 is located near the diversion channel in a relatively unused area on the southeast corner of the Alpha East solar field.

Biological staff inspected the integrity of the two exclusion buffers and downloaded the photos from the motion-sensor cameras. Cameras recorded consistent activity by at least two kit foxes in November. Biological staff received numerous reports of kit foxes observed throughout site by construction personnel, but the locations were not specific enough to be mapped. Biological staff also observed direct and indirect observations of kit fox activity at the shelter sites in November.

Biological staff monitored all activities within the exclusion buffers throughout November. Prior to working within the buffer areas, construction crews signed a protocol verifying their understanding of correct procedure within an exclusion buffer. Additionally, all construction crews were verbally briefed before entering the buffer.

2.9 Nesting Birds

No nesting bird behavior was observed throughout the site in November.

2.10 Raven Monitoring, Management, and Control

Common raven monitoring activities continued on the MSP site per BIO-18 and as outlined in the *Common Raven Monitoring, Management and Control Plan*. The November Monthly Common Raven Monitoring Results report provides information on monitoring activities, survey methods, maps, incidental raven observations, point count survey results, and datasheets (Attachment 4).

2.11 Wildlife Injuries and Mortalities

2.11.1 Migratory Bird Treaty Act Protected Species

Biological staff had five encounters with MBTA-protected species at MSP in November.

On November 1, biological staff found a dead ruddy duck (*Oxyura Jamaicensis*) on the edge of Lockhart Road near Beta West (Figure 2) near an overhead transmission line and it is presumed to have died as a result of a collision. The duck had blood spots near the mouth but no other outward injuries. The carcass was placed in MSP's onsite freezer for collection by the USFWS's Office of Law Enforcement (OLE).

On November 4, biological staff found a dead western grebe (*Aechmophorus occidentalis*) in the western-most Alpha evaporation pond (Figure 2). The grebe showed no outward signs of injury or trauma and cause of death is unknown. Several other waterfowl species were present at the same location and exhibited normal behavior. The carcass was placed in MSP's onsite freezer for collection by the USFWS's OLE.

On November 10, biological staff found a dead American wigeon (*Anas americana*) in the western-most Alpha evaporation pond (Figure 2). Only a small laceration on the leg was evident. No other outward signs of injury or trauma were noted and cause of death is unknown. Several other waterfowl species were present in the same location and exhibited normal behavior. The bird was placed in MSP's onsite freezer for collection by the USFWS's OLE. Upon the death of this individual, CEC directed deterrents to be deployed on the evaporation ponds (see Section 3.2, Daily Evaporation Pond Monitoring, for further details).

On November 21, an American coot (*Fulica americana*) was found standing on Lockhart Road approximately 20 feet from the northern boundary Beta West fence (Figure 2). The bird appeared confused and was not paying attention to traffic or other disturbances. When approached by a biological monitor, the bird walked quickly away. The bird flew away approximately 100 feet when monitors attempted to capture it, but could only fly a few feet above the ground. Upon landing, the bird appeared exhausted and confused. The biologists noted that the bird's flight was regular and gave no indication of injury. Monitors captured the bird when it took shelter in a large box that was tipped on its side. A qualified avian biologist inspected it, and upon direction from Designated Biologist, it was released into the Harper Lake ACEC wetland. Once released, the bird walked into the water, took several drinks, and swam away normally.

On November 24, biological staff found a dead California gull (*Larus californicus*) on the south boundary road of Alpha East (Figure 2). The carcass was located within 12 feet of both a solar trough and a transmission line. The carcass was found decapitated and eviscerated through a large hole in its right side. The bird most likely died after collision with the overhead transmission lines and was then scavenged, likely by ravens. The carcass was placed in MSP's onsite freezer for collection by the USFWS's OLE.

On July 3, MSP was issued an interim 6-month USFWS Migratory Bird Special Purpose Utility Salvage Permit – Solar (SPUT permit) that authorizes project staff to collect, transport, and possess carcasses of species protected by the MBTA. This SPUT permit expires January 3, 2015. MSP anticipates requesting another extension due to ongoing construction activities.

2.11.2 Special-status Species

No additional special-status species were found injured or dead in November. At the time of this MCR, CDFW did not yet have the necropsy results for either of the kit foxes killed on June 28 or August 18. When the designated biologist receives the results from the necropsy, they will be reported in the MCR.

2.11.3 Other Species Mortalities

One road-killed black-tailed jack rabbit (*Lepus californicus*) was found on Harper Lake Road. The remains were buried offsite by the biological staff.

2.12 Observed Species

A list of wildlife species observed in November is included in Attachment 5. In addition to desert kit fox, several special-status species were observed at MSP:

- Horned Lark (*Eremophila alpestris*), CDFW Watch List
- Loggerhead Shrike (*Lanius ludovicianus*), CDFW Species of Concern
- Northern Harrier (*Circus cyaneus*), CDFW Species of Concern
- Peregrine Falcon (*Falco peregrinus anatum*), Federally and State Delisted, CDFW Fully Protected, USFWS Bird of Conservation Concern
- White-Faced Ibis (*Plegadis chihi*), CDFW Watch List

Three California invasive wildlife species were also observed at MSP: House sparrow (*Passer domesticus*), brown-headed cowbird (*Molothrus ater*), and European starling (*Sturnus vulgaris*). House sparrows have taken up residence in the power blocks and have been observed foraging in the parking lots and solar fields on trash and weeds, using the cascading water in the cooling tower to bathe, and foraging on moths around the generator lights provided for night-time work.

A pair of coyotes has been observed on MSP on a frequent basis foraging on garbage and moths that are attracted to generator lights.

3 Operations Monitoring

3.1 Biweekly Evaporation Pond Monitoring

During the transition between construction and operations phases of the project, CEC's Compliance Project Manager (CPM), Dale Rundquist, gave conditional approval for MSP to discharge water into the evaporation ponds without an approved Evaporation Pond Management and Monitoring Plan (Evaporation Pond Plan) in place. Conditions of this approval were that biological staff must implement draft monitoring protocols provided to CEC on July 21, which include biweekly avian point counts at evaporation ponds. The Evaporation Pond Plan had not been approved by CEC when this MCR was written.

Two sets of evaporation pond point counts were conducted by qualified avian biologist, Jason Brooks, on November 4 and 30 at approved point count locations, including the ACEC (Figure 3). In response to CEC comments on the draft Evaporation Pond Plan, the four evaporation ponds were designated according to their respective locations: Alpha East east (AE-E), Alpha East west (AE-W), Beta West east (BW-E) and Beta West west (BW-W) (Figure 3). Table 1 provides the results of the point count surveys and Attachment 6 contains the field datasheets for both surveys.

Table 1
Summary of Evaporation Point Count Observations

Date: Start Time	Station	Species Observed (number of) *	Location Description	Activity Observed
First Point Count Survey				
11/04/2014: 07:17	#1	WEGR (1)	Alpha East	Swimming
11/04/2014: 07:26	#2	EAGR (1), WEME (1)	Alpha East	Swimming, Perched
11/04/2014: 07:36	#3	CORA (2)	Alpha East	Flying
11/04/2014: 08:09	#4	NSHO (5), MALL (1), RUDU (1), EAGR (1)	Alpha East	Swimming
11/04/2014: 07:57	#5	No species observed	Alpha East	-
11/04/2014: 07:48	#6	YRWA (1)	Alpha East	Flying
11/04/2014: 08:57	#7	HOSP	Beta West	Heard
11/04/2014: 09:06	#8	SAPH (1)	Beta West	Perched
11/04/2014: 09:17	#9	LBDO (2), HOSP (1), KILL (1), HOFI (8)	Beta West	Flying, Feeding
11/04/2014: 09:49	#10	No species observed	Beta West	-
11/04/2014: 09:39	#11	HOFI (11), AMPI (1)	Beta West	Flying, Feeding
11/04/2014: 09:27	#12	No species observed	Beta West	-
11/04/2014: 06:41	#13	MAWR (2), WEME (1), WCSP (1)	Harper Lake ACEC	Perched, Flying
11/04/2014: 06:30	#14	SABS (1), CORA (1), AMPI (20)	Harper Lake ACEC	Perched, Flying
11/04/2014: 06:15	#15	AMCO(25), GADW (2), MAWR (1), NSHO (4), EAGR (2), LESC (5), WFIB (1), HOME (4), AMRO (1), MAWR (1), NOHA (1)	Harper Lake ACEC	Swimming, Perched, Flying
Second Point Count Survey				
11/30/2014: 08:14	#1	No species observed	Alpha East	-
11/30/2014: 08:22	#2	AMCO (1), BUFF (3)	Alpha East	Swimming
11/30/2014: 08:31	#3	LOSH (1)	Alpha East	Perched
11/30/2014: 08:55	#4	No species observed	Alpha East	-
11/30/2014: 08:48	#5	BUFF (2)	Alpha East	Swimming
11/30/2014: 08:39	#6	No species observed	Alpha East	-
11/30/2014: 09:58	#7	No species observed	Beta West	-
11/30/2014: 10:06	#8	No species observed	Beta West	-
11/30/2014: 10:15	#9	HOLA (10)	Beta West	Flying
11/30/2014: 10:40	#10	CORA (1)	Beta West	Flying

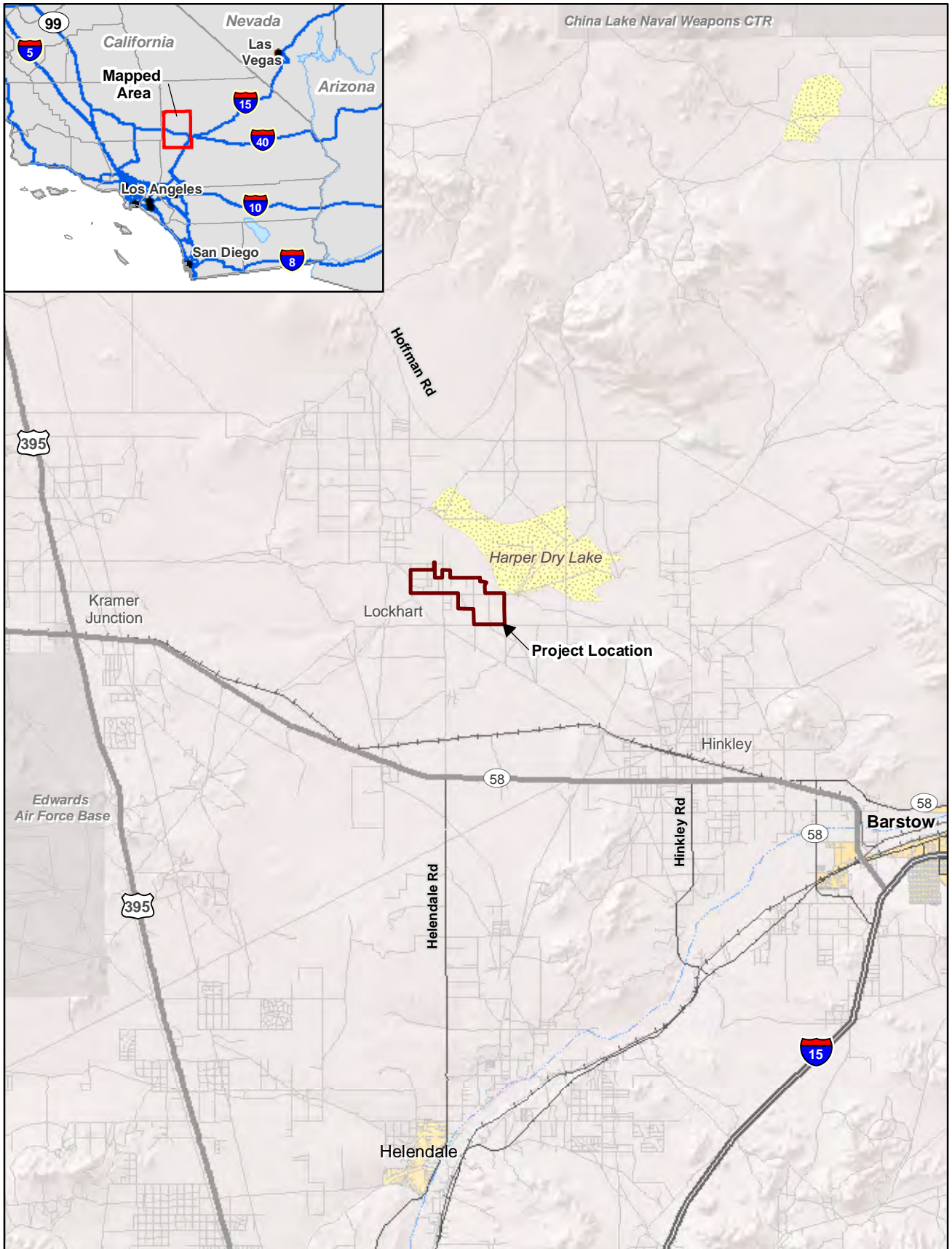
Table 1
Summary of Evaporation Point Count Observations

Date: Start Time	Station	Species Observed (number of) *	Location Description	Activity Observed
11/30/2014: 10:32	#11	No species observed	Beta West	-
11/30/2014: 10:24	#12	No species observed	Beta West	-
11/30/2014: 07:31	#13	CORA (3), AMPI, SABS (2), MAWR (1)	Harper Lake ACEC	Flying, Perched, Feeding
11/30/2014: 07:22	#14	WEME (1), SABS (1)	Harper Lake ACEC	Perched
11/30/2014: 07:10	#15	AMCO (15), MAWR, HOFI (10)	Harper Lake ACEC	Swimming, Feeding, Perched
* Four letter codes of avian species are defined in Attachment 5, Observed Wildlife Species List.				

3.2 Daily Evaporation Pond Monitoring

As a result of two birds found dead in the MSP evaporation ponds (see Section 2.11.1), the CEC, via email sent on November 12, directed MSP to implement bird deterrent measures according to specifications outlined in the BIO-19 draft Evaporation Pond Monitoring Plan. Measures include the deployment of 20 Scare Eye balloons (balloons) and a single Zon propane cannon (cannon) on each pond. From November 16 through 18, fifteen balloons were deployed over each of the four ponds and cannons were deployed on November 19 on AE-W, BW-W and BW-E. The AE-E pond does not contain discharge water and, therefore, did not warrant the use of a cannon. Cannons were deactivated on November 21 because of construction staff's failure to consult with biological staff on appropriate firing frequencies, failing to moderate decibel levels, and to refrain from night-time use as specified in the draft Evaporation Pond Plan. A wind event subsequently dislodged many of the balloons on November 22. Balloons were redeployed on November 24, and cannons were redeployed following draft Evaporation Pond Plan requirements on November 25. Balloons were not redeployed on BW-E citing the intent to take the pond out of service. Biological staff noted approximately 10 to 12 inches of discharge water and frequent bird use in the BW-E pond. Construction staff was advised to implement the balloon deterrents as directed or to pump the remaining discharge water out of the pond. No action was taken as of the end of November.

As part of the draft Evaporation Pond Plan requirements, daily bird point counts were conducted at each evaporation pond by a qualified avian biologist for two weeks after deterrents are deployed in conformance with the requirements of the draft Evaporation Pond Plan. A separate report will be submitted with results from the daily point counts at the end of the two-week monitoring period.



LEGEND

Project Boundary

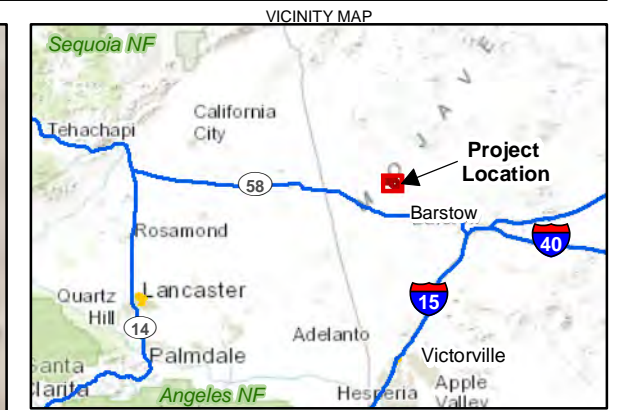
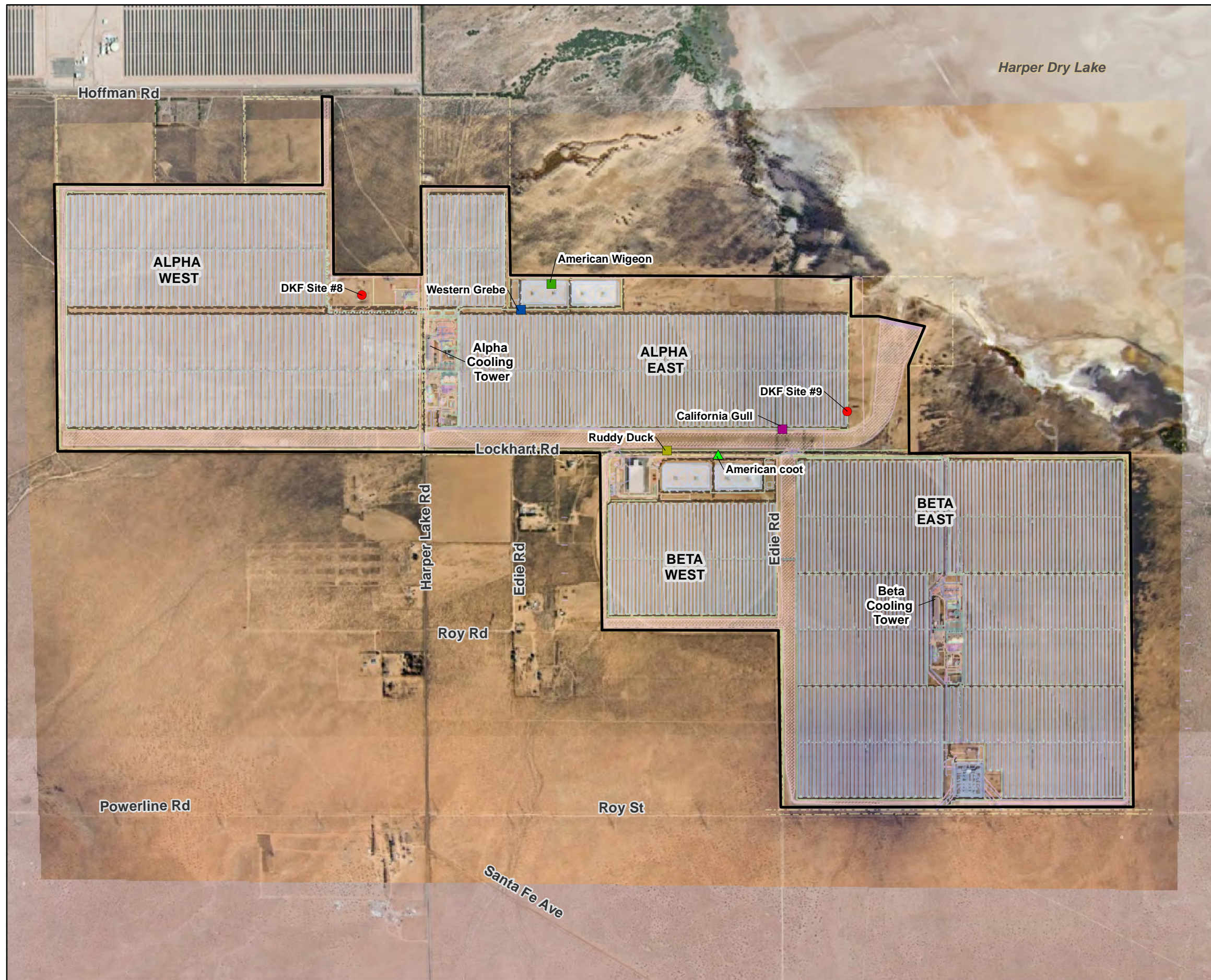


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Miles

FIGURE 1

Regional Map

Abengoa Mojave Solar Project
San Bernardino County, California



- LEGEND**
- Desert Kit Fox
 - Shelter Site
 - Wildlife Injury
 - ▲ American coot
 - Wildlife Mortality
 - American Wigeon
 - California Gull
 - Ruddy Duck
 - Western grebe
 - Project Boundary

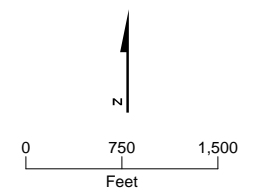
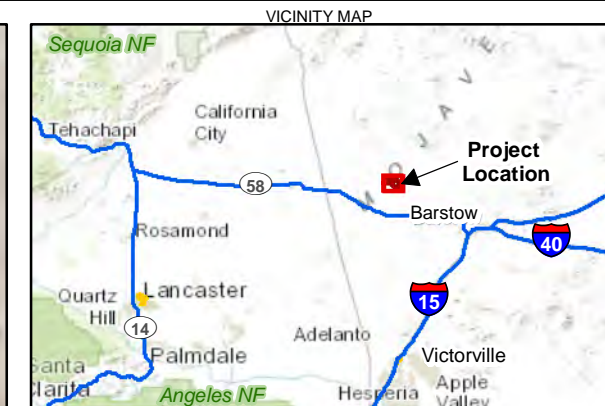
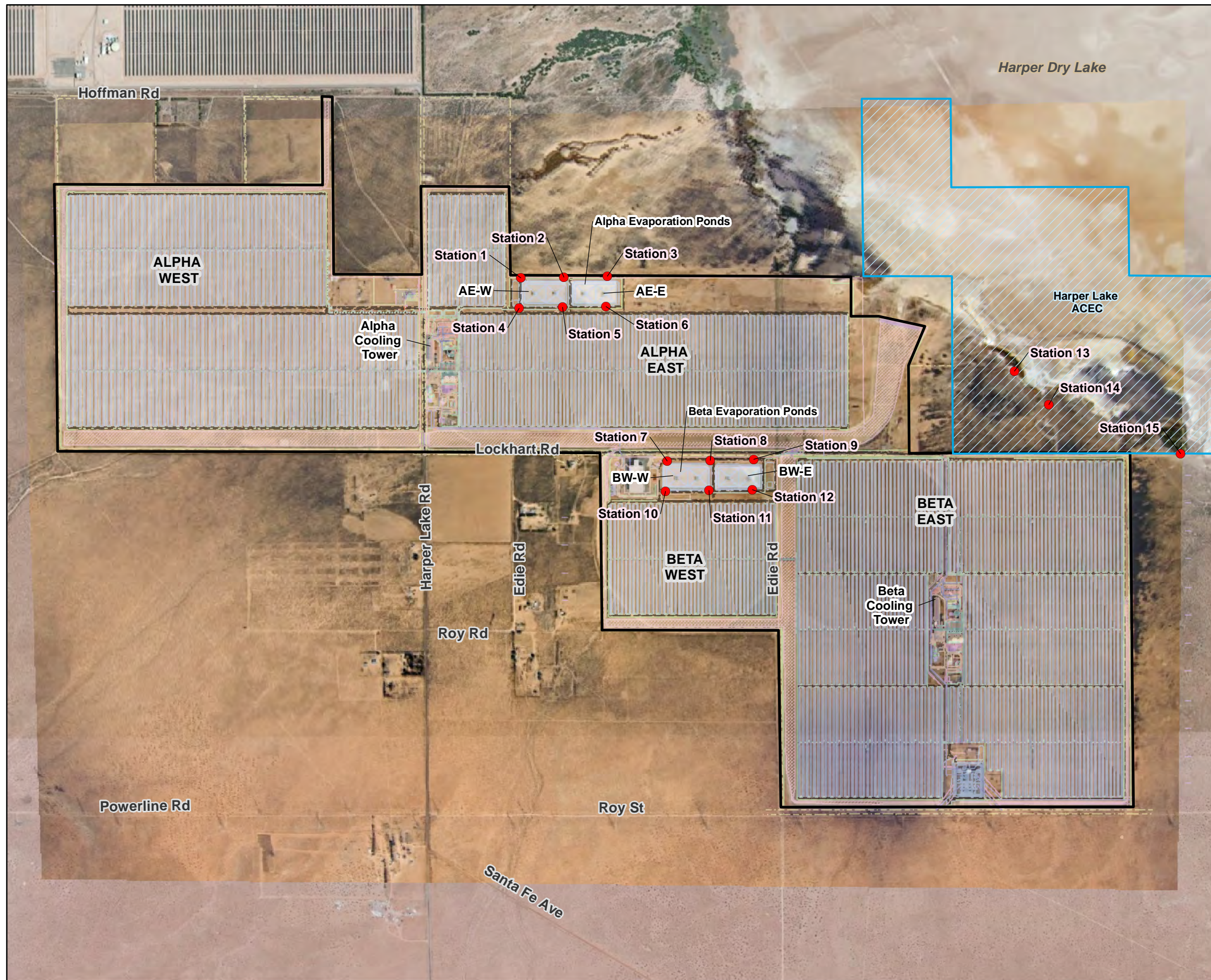


FIGURE 2
Biological Resources, November 2014
 Abengoa Mojave Solar Project
 San Bernardino County, California



- LEGEND**
- Project Boundary
 - Permanent Survey Point
 - Evaporation Pond Station
 - BLM Area of Critical Environmental Concern (ACEC)
 - Harper Lake ACEC

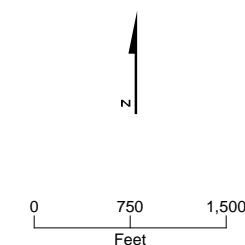


FIGURE 3
Evaporation Ponds, Survey Points and
Associated Features
 Abengoa Mojave Solar Project
 San Bernardino County, California

Attachment 1
Agency Approval Status of Biological Staff

Agency Approval Status of Biological Monitor and Designated Biologist Abengoa Mojave Solar Project

Biologist	CEC				CDFW				USFWS	
	BM		DB		BM		DB		AB	
	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved
Brent Finley	5/6/2013	5/9/13	—	—	—	—	—	—	5/14/2013; Retracted 2/7/14	NA
Tim Hamaker	5/9/2013	5/9/13	—	—	—	—	—	—	—	—
Josh Holloway	—	—	5/10/2013	5/13/13 (Alt-DB)	—	—	—	—	5/14/2013	5/20/13
Morgan King	—	—	5/2/2013	5/9/13 (DB)	—	—	—	—	9/4/2013	9/17/13
Linda Sands	5/9/2013	5/9/13	5/2/2013	Denied as Alt-DB 5/9/13	—	—	—	—	5/14/2013; Retracted 2/7/14	NA
Bruce Weise			5/10/2013	5/13/13 (Alt-DB)	—	—	—	—	5/14/2013	5/20/13
Amy Trexler	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; Retracted 2/7/14	NA
Catherine Wangen	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; Retracted 2/7/14	NA
Cindy Newman	6/21/2013	7/30/13	—	—	—	—	—	—	—	—
Susan Carlton	6/21/2013	7/30/13	—	—	—	—	—	—	6/26/2013; Retracted 2/7/14	NA
Ursula Rogers (Carliss)	6/21/2013	7/8/13	—	—	—	—	—	—	6/26/2013; Retracted 2/7/14	NA
Eric Somers	7/30/2013	8/6/13	—	—	—	—	—	—	8/19/2013; ; Retracted 2/7/14	NA
Joey Verge	7/30/2013	8/6/2013	—	—	—	—	—	—	3/11/2011	4/4/11

Agency Approval Status of Biological Monitor and Designated Biologist Abengoa Mojave Solar Project

Biologist	CEC				CDFW				USFWS	
	BM		DB		BM		DB		AB	
	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved	Submitted	Approved
William Clark	8/29/2013	9/4/2013	—	—	—	—	—	—	8/29/2013	9/17/13
Josh Utter	8/29/2013	9/4/2013	—	—	—	—	—	—	—	—
Michael Garvey	8/29/2013	9/4/2013	—	—	—	—	—	—	8/29/2013	9/17/13
Erich Green	3/11/2011	3/11/2011	—	—	—	—	—	—	3/11/2011	4/4/11
Ed Morgan	2/20/2014	3/7/14	—	—	—	—	—	—	2/20/2014	Pending
Mark Bratton	2/20/2014	3/7/14	—	—	—	—	—	—	2/20/2014	Pending
John Brooks Hart	3/11/2011	3/11/2011	3/11/2011 (Alt-DB)	Submitted	—	—	—	—	3/11/2011	3/11/2011
Jason Brooks	7/31/2014	8/27/14	—	—	—	—	—	—	—	—
Robert Hernandez	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Russell Kokx	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Chris McDaniel	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Onkar Singh	7/31/2014	8/20/14	—	—	—	—	—	—	—	—
Legend: CEC= California Energy Commission CDFW=California Department Fish and Wildlife USFWS= United States Fish & Wildlife Service BM= Biological Monitor AB=Authorized Biologist Alt-DB = Alternate Designated Biologist DB=Designated Biologist										

Attachment 2
WEAP Attendance Summary and Training Logs

WEAP Summary Table through November 30, 2014
Mojave Solar Project

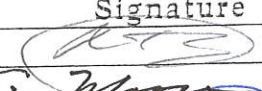


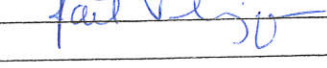
Month Training Conducted	Monthly Total of WEAP Attendees*
Mar-11	50
Apr-11	9
May-11	18
Jun-11	2
Jul-11	27
Aug-11	63
Sep-11	82
Oct-11	75
Nov-11	41
Dec-11	68
Jan-12	52
Feb-12	112
Mar-12	116
Apr-12	158
May-12	208
Jun-12	167
Jul-12	156
Aug-12	271
Sep-12	276
Oct-12	268
Nov-12	93
Dec-12	137
Jan-13	183
Feb-13	195
Mar-13	255
Apr-13	295
May-13	408
Jun-13	341
Jul-13	244
Aug-13	187
Sep-13	206

WEAP Summary Table through November 30, 2014 Mojave Solar Project	
Month Training Conducted	Monthly Total of WEAP Attendees*
Oct-13	387
Nov-13	213
Dec-13	454
Jan-14	642
Feb-14	866
Mar-14	560
Apr-14	376
May-14	428
Jun-14	230
Jul-14	170
Aug-14	121
Sep-14	142
Oct-14	171
Nov-14	28
Total	9,551
* Attendance is based on training sign-in sheets	

11/24/14

Certification of Completion Worker Environmental Awareness Program Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Richard Tirado Betancourt	Supervisor / Electrical	
2.	Eric Moreno	JW / Abacus	
3.	Juan Vergara	Abacus	
4.	Joel Velazquez	Abacus	
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Biological Trainer: _____ Signature: _____ Date: ____/____/____

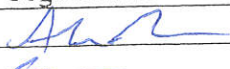

Cultural Trainer: _____ Signature: _____ Date: ____/____/____

Paleo Trainer: _____ Signature: _____ Date: ____/____/____

11/17/14

Certification of Completion Worker Environmental Awareness Program Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	ALEX PACHECO	EQUIPMENT OPERATOR/ABACUS	
2.	Carlos Lorenzo Locmis	ABACUS	
3.	JORGE L. ESCOBAR	ABACUS	Jorge L-E
4.			
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Biological Trainer: _____ Signature: _____ Date: ____/____/____

Cultural Trainer: _____ Signature: _____ Date: ____/____/____

Paleo Trainer: _____ Signature: _____ Date: ____/____/____

Certification of Completion Worker Environmental Awareness Program Mojave Solar Project (09-AFC-5)

10/18/14

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	MITCHELL WILSON	MILLWRIGHT/ETHOS	Mitchell Wilson
2.			
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Biological Trainer: _____ Signature: _____ Date: ____/____/____

Cultural Trainer: _____ Signature: _____ Date: ____/____/____

Paleo Trainer: _____ Signature: _____ Date: ____/____/____

11/6/14

Certification of Completion Worker Environmental Awareness Program Mojave Solar Project (09-AFC-5)

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	Christopher Smith	Security Guard	Christopher Smith
2.	Alex Romero	Laborer	Alex Romero
3.	JONATHAN CONANT	ABACUS	Jonathan Conant
4.			
5.			
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30.			

Biological Trainer: _____ Signature: _____ Date: ____/____/____

Cultural Trainer: _____ Signature: _____ Date: ____/____/____

Paleo Trainer: _____ Signature: _____ Date: ____/____/____

Certification of Completion
Worker Environmental Awareness Program
Mojave Solar Project (09-AFC-5)

11/3/14

This is to acknowledge these individuals have completed a mandatory California Energy Commission-approved Worker Environmental Awareness Program (WEAP). The WEAP includes pertinent information on biological, cultural, and paleontological resources for all personnel (that is construction supervisors, crews, and plant operators) working on site or at related facilities. By signing below, the participant indicates that he/she understands and shall abide by the guidelines set forth in the program materials. Include this completed form in the Monthly Compliance Report.

No.	Employee Name	Title/Company	Signature
1.	JOSE FRANCISCO DELATORRE	JTW ⁴³³ /ABACUS	[Signature]
2.	Chris nash	IRONWORKER ⁴³³ /ABACUS	[Signature]
3.	MICHAEL RAY JONES	Insulator/ABACUS	[Signature]
4.	CARLOS CAMPOS	ABACUS	[Signature]
5.	Robert Solares	insulator/Abacus	[Signature]
6.	RAUL ALVAREZ	insulator/Abacus	[Signature]
7.	Mike Connors	insulator/ABACUS	[Signature]
8.	Eder Plascencia	insulator/Abacus	[Signature]
9.	RYAN WATKINS	INSULATOR/ABACUS	[Signature]
10.	Mario Betancourt	Scaffold	Mario Betancourt
11.	Ogner Gonzalez	INSULATOR/Abacus	[Signature]
12.	Ismael Horta	SCAFFOLD	Ismael Horta
13.	EDSON ROMO	PF/ABACUS	Edson Romo
14.	Chris Plascencia	PF/ABACUS	[Signature]
15.	Francisco Larios	PF/ABACUS	[Signature]
16.	Christopher Shafer	Teamster/ABACUS	[Signature]
17.	Robert Green	Teamster/ABACUS	[Signature]
18.			
19.			
20.			
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26.			
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28.			
29.			
30.			

Biological Trainer: _____ Signature: _____ Date: ____/____/____

Cultural Trainer: _____ Signature: _____ Date: ____/____/____

Paleo Trainer: _____ Signature: _____ Date: ____/____/____

Attachment 3

Non-Compliance Notification

NOTIFICATION FORM

MOJAVE SOLAR, LLC

MOJAVE SOLAR PROJECT

Notification Number: **06-2014** Date: 11/21/2014 Issued to: Abeinsa EPC (AEPC)

Monitor: Jason Brooks – Biological Monitor Time: _____

Station Numbers: _____ to _____ Structure Number: _____

Milepost: _____ Map Number: _____

BE AWARE THAT THE FOLLOWING PROJECT CONDITIONS (e.g., COCs, Local, State or Federal Permits) ARE NOT BEING MET:

BIO-5 WEAP – There will be no handling, feeding, or disturbing wildlife.

On November 21, a biological monitor observed AEPC staff driving a forklift and a truck harassing a coyote in Alpha East. This coyote has been observed foraging on garbage and moths at MSP since October. AEPC staff were driving with intention to disturb and had potential to endanger the individual. Desert kit fox are also in this area and since the workers had the intention to disturb coyote, they have potential to also harass desert kit fox.

Biological monitor immediately stopped this activity. AEPCs response was that coyote are a risk to H&S.

TO FIX OR CORRECT THE CONDITION YOU MUST:

If the coyote does pose a risk to H&S, the Designated Biologist needs to be informed and involved regarding any actions or activities relating to disturbing wildlife which may require agency and/or animal control involvement.

If this condition is not resolved satisfactorily by 11/24/2014, a non-compliance report will be issued.

Your prompt attention to this matter is appreciated.

Notification
Resolved:

(SIGNATURE)

(NAME—PLEASE PRINT)

(DATE)

Attachment 4
Monthly Common Raven Monitoring Results

**Monthly Common Raven Monitoring Results for
Abengoa Mojave Solar Project
San Bernardino County, California**

**Monthly Compliance Report
for November 2014**

Prepared by:

CH2MHILL®

**2485 Natomas Park Drive
Sacramento, California 95833**

December 2014

Table of Contents

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2.0 Construction Monitoring Activities	1
3.0 Methods.....	1
4.0 Results.....	2
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2 Summary of Common Raven Point Count Observations.....	4

List of Supplements

- 1 Common Raven Point Count Stations
- 2 Incidental Common Raven Observations
- 3 Point Count Data Sheets

1.0 Introduction

The Abengoa Mojave Solar Project (MSP) is required to provide a monthly report on common ravens (*Corvus corax*) to the California Energy Commission (CEC), United States Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). The CEC Final Decision includes Condition of Certification BIO-18 stating that the project owner shall implement control measures to manage its construction site and related facilities in a manner to control raven populations and to mitigate cumulative and indirect impacts to desert tortoise associated with regional increase in raven numbers. In accordance with BIO-18, the CEC approved the *Common Raven Monitoring, Management, and Control Plan* (Raven Plan) on March 26, 2012. Refer to BIO-18 and the Raven Plan for monitoring and survey protocol description.

2.0 Construction Monitoring Activities

The following section summarizes biological monitoring activities conducted by CH2M HILL throughout November 2014.

On a typical weekday, one biological monitor or designated biologist:

- Monitors Harper Dry Lake Road prior to increased traffic levels during morning and evening shift changes. Due to desert tortoise observations on Harper Lake Road in October and sustained temperatures ideal for tortoise activity periodically throughout November, biological staff monitored the road on a more frequent basis as necessary;
- Monitors active construction areas, parking lots, laydown yards, and any areas of potential threat to vegetation, soils, or wildlife;
- Monitors the evaporation ponds several times a day;
- Inspects desert tortoise exclusion fences and tortoise guards as required;
- Inspects potential entrapment areas (e.g., trenches, vaults, basins);
- Monitors for formation of potential standing water;
- Inspects kit fox exclusion buffers and downloads photos from motion-sensor cameras at shelter sites;
- Conducts raven observations and bi-weekly point-count surveys;
- Conducts point counts at evaporation ponds and adjacent wetlands;
- Investigates reports of hazardous waste spills;
- Inspects pipes greater than 3 inches in diameter that are less than 8 inches above the ground surface; and
- Performs other special biological-resources-related activities, as required.

3.0 Methods

The designated biologist ensures that the biological monitors are trained to implement the Raven Plan in both raven monitoring and management measures. Biological staff also

conduct 10-minute stationary point count surveys at seven locations around the site (Supplement 1). The purpose of the point counts is to record raven observations including date, time, location, number of individuals, age, behavior, distance from the station location, and any other pertinent notes (e.g., nesting behavior). This information is recorded on a hard copy datasheet. Point count surveys are conducted with a minimum of one week in between.

Point count surveys were positioned to monitor project-specific activities and features that have potential to attract or subsidize ravens. The Raven Plan defines six “conditions of concern” as:

1. Availability of water from evaporation ponds;
2. Potential creation of new perching/roosting/nesting sites for ravens;
3. Temporary water ponding potential from dust suppression associated with construction, operation, and maintenance;
4. Raven food sources from soil disturbance (rodents, insects, etc.) and road kill associated with construction activity;
5. Human food and waste management; and
6. Landscaping that could provide foraging, perching, and available water opportunities.

During daily monitoring activities, biological staff records incidental observations of ravens interacting with MSP. This includes any raven observation within site boundaries, flying overhead, or adjacent to the site. These observations are recorded in field notebooks and include date, general site location, global positioning system (GPS) location, number of individuals, and activity. The GPS information is also presented on a map.

The incidental observations are also used to identify potential problem areas. Problem areas are those requiring management actions. If a problem area is identified, the surveys will be increased to a weekly basis until the issue is resolved. Habitual perching sites will be identified and actions taken to discourage use. If hazing techniques are employed to discourage raven use, biologists will record information on date, time, location, habitat, number of individuals, and response to hazing. Potential or active raven nests will be documented and removed according to Raven Plan specifications. Biological staff will report on whether control measures are working and provide further recommendations in the biological monthly compliance report.

4.0 Results

Incidental Observations

In November, ravens were observed foraging on food waste in the power block and solar fields, as well as drinking and bathing in construction-related supplemental water sources. Ravens were observed in November drinking from pooled water that blows off the cascading cooling towers on a regular basis. Construction staff was notified of these issues and biological staff continues to monitor the situation.

During biological monitoring, 50 ravens were incidentally observed during 35 separate observations (Table 1). Because ravens are indistinguishable from one another, multiple

sightings of individual birds are likely to occur. Therefore, the number of observations does not reflect the number of individual birds onsite. Common ravens were observed throughout the site (Supplement 2). The most commonly observed raven behaviors were flying overhead or perched on project structures. Many ravens were observed in Alpha power block, as well as the Alpha and Beta evaporation ponds. Ravens were observed perched on fences and various transmission line poles, but were not using a habitual perch location.

Table 1
November 2014 Incidental Raven Observations

Date	Location	Number Observed	Activity
11/4/14	Alpha West	1	Flying
11/5/14	Beta West	1	Flying
11/5/14	Alpha East	2	Flying
11/5/14	Alpha East	1	Flying
11/6/14	Alpha East	1	Flying
11/7/14	Alpha West	1	Flying
11/8/14	Alpha East	1	Flying
11/9/14	Beta West	2	Flying
11/10/14	Beta East	2	Flying
11/11/14	Alpha West	1	Flying
11/12/14	Alpha West	2	Perched
11/13/14	Beta East	3	Perched
11/14/14	Alpha East	1	Flying
11/15/14	Beta West	2	Flying
11/15/14	Alpha West	1	Flying
11/16/14	Alpha West	1	Perched
11/16/14	Beta East	1	Flying
11/17/14	Beta East	2	Perched
11/17/14	Alpha West	1	Flying
11/18/14	Beta West	1	Drinking
11/20/14	Beta West	2	Flying
11/20/14	Alpha East	2	Perched
11/20/14	Beta West	3	Flying
11/21/14	Beta West	1	Flying

Table 1 November 2014 Incidental Raven Observations			
Date	Location	Number Observed	Activity
11/21/14	Alpha East	1	Drinking
11/22/14	Beta West	1	Perched
11/24/14	Alpha East	1	Flying
11/25/14	Beta East	1	Perched
11/27/14	Alpha East	1	Perched
11/28/14	Alpha East	3	Flying
11/28/14	Beta West	2	Flying
11/28/14	Beta East	1	Perched
11/28/14	Alpha East	1	Flying
11/28/14	Alpha East	1	Flying
11/29/14	Alpha East	1	Flying
Total Observations		50	

Point Count Surveys

In November, two biweekly point count surveys were conducted in accordance with the Raven Plan protocol. Point count surveys were conducted on November 5 and November 25, 2014. On November 5, two ravens were observed at station 5, and two ravens were observed at station 7. On November 25, no ravens were observed during the point counts. Point count observations did not document any nesting behavior or problem areas. The Common Raven Fixed Point Observation Data Sheets are provided in Supplement 3. Table 2 provides a summary of point count observations.

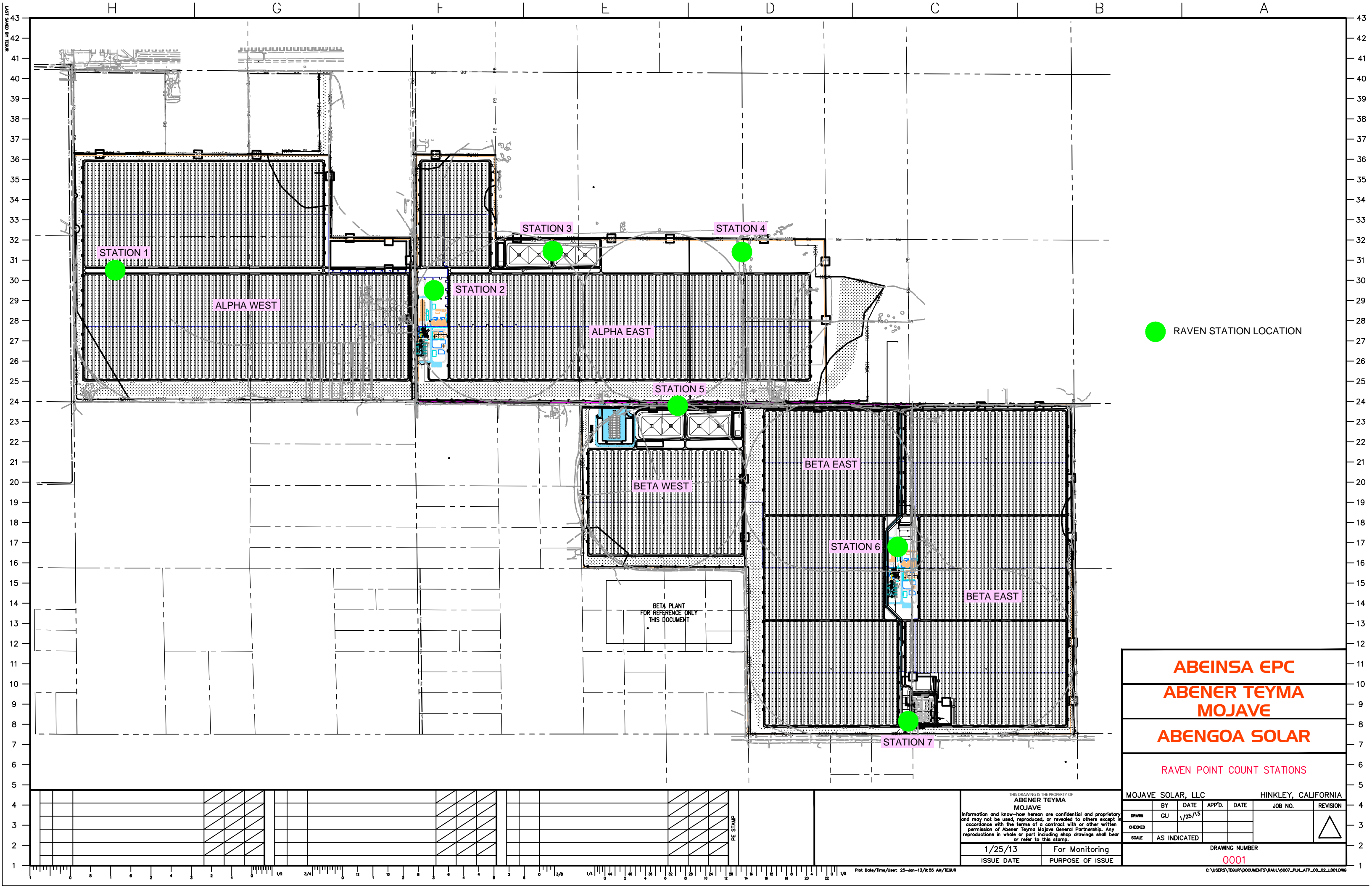
Table 2 Summary of Common Raven Point Count Observations				
Date: Time	Station	Number of Ravens Observed	Location Description	Activity Observed
11/05/14: 14:27	5	2	Beta West	Perched
11/05/14: 14:43	7	2	Beta East	Perched
Total Observed 11/05/14		4		
Total Observed 11/25/2014		0		

Nest Monitoring

According to the Raven Plan, biweekly breeding raven nest surveys were not required in November. These surveys will commence again in March 2015.

**Monthly Common Raven Monitoring Results
November 2014**

Supplement 1—Common Raven Point Count Stations



● RAVEN STATION LOCATION

ABEINSA EPC

ABENER TEYMA
MOJAVE

ABENGOA SOLAR

RAVEN POINT COUNT STATIONS

MOJAVE SOLAR, LLC

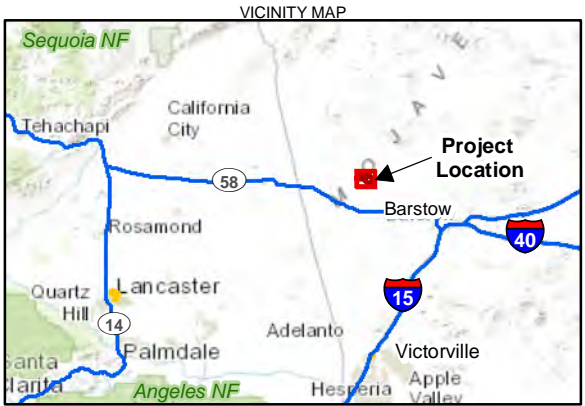
HINKLEY, CALIFORNIA

DRAWN	BY	DATE	APP'D.	DATE	JOB NO.	REVISION
CHECKED	GU	1/25/13				△
SCALE	AS INDICATED					
DRAWING NUMBER						
0001						

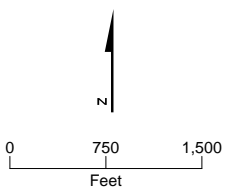
THIS DRAWING IS THE PROPERTY OF ABENER TEYMA MOJAVE	
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1/25/13	For Monitoring
ISSUE DATE	PURPOSE OF ISSUE

**Monthly Common Raven Monitoring Results
November 2014**

Supplement 2—Incidental Common Raven Observations



- LEGEND**
- Common Raven
 - Incidental Observations
 - ▭ Project Boundary



Supplement 2
Incidental Common Raven Observations,
November 2014
 Abengoa Mojave Solar Project
 San Bernardino County, California

**Monthly Common Raven Monitoring Results
November 2014**

Supplement 3—Point Count Data Sheets

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/05/14 Observer (init.) JRB Start Time 10:40 End Time 11:00 Obs Pl. 1

Visibility: Clear or Min. _____ Max. _____ (m) Page 1 of 1

Wind Direction from (circle one) Calm N NE E SE S SW W NW Variable Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other Temp: 68 (°F) Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (°)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Auc?	Vis?	Notes
					WA	PE		1st	closest				
1					WA	PE							
					FL	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

	Mojave Solar
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Common Raven Fixed Point Observation Data Sheet							Obs Pt. 3
--	--	--	--	--	--	--	------------------

Date (mm/dd/yy) <u>11/05/14</u>		Observer (init.) <u>JRB</u>	Start Time <u>11:00</u>	End Time <u>11:10</u>	Obs Pt. <u>2</u>
Visibility (Class) <u>C</u>	or	Min	May	(m)	Page <u>1</u> of <u>1</u>

Visibility: Clear or Min Max (m) Page 1 of 1

[illegible][illegible]

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy)	11/05/14	Observer (init.)	JRB	Start Time	11:25	End Time	11:35	Obs Pt.	3
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Obs Pt. 3

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable Speed: Low High (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other Temp: 71 (°F) Cloud Cover: 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (°)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Alt? (m)	Vis?	Notes
							1st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/05/14

Observer (init.) JRB

Start Time 11:42

End Time 11:52

Obs Pt.	4
---------	---

Page 1 of 1

Visibility: Clear or Min Max (m)

Wind Direction from (circle one) Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 73 °F

Cloud Cover: 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (o)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Alt?	Obs?	Notes
							1st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

OBS. #
(Time)

ADDITIONAL NOTES

N/O OBSERVATIONS

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/05/14

Observer (init.) JR3

Start Time 12:10 End Time 12:20

End Time 12:20

Obs Pt. 5

Page 1 of 1

Visibility: Clear or Min Max (m)

Wind Direction from (circle one) Calm N NE E SE S SW W NW Variable

Speed: Low _____ High: _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 74 (°F)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st X others)	Flight Dir (a)	Horizontal Distance (m) 1st closest	Habitat Type/ Perch Structure	Alt? Vis?	Notes
1	12:10	?	?	1	WA PE FL OT	SW	3	ROAD		(ON ROAD) BETWEEN EVAP PONDS. FLEW
2	12:13	?	?	1	WA PE FL OT	N	40m	POWER LINE		
3					WA PE FL OT					
4					WA PE FL OT					
5					WA PE FL OT					
6					WA PE FL OT					
7					WA PE FL OT					
8					WA PE FL OT					
9					WA PE FL OT					
10					WA PE FL OT					
11					WA PE FL OT					
12					WA PE FL OT					

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (m/d/yyyy)	11/05/14	Observer (init.)	J.R.B.	Start Time	11:33	End Time	11:43	Obs Pt.	6
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Obs Pt. 6

Page 1 of 1

Speed: Low _____ High _____ (km/h)

Temp: 75 (95)

Cloud Cover 0 %

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-creosote bush scrub, SD/SS-sand dunes/sand sheets, DP-desert pavement, OT-other (please specify, provide details of Project structure/facility)

ADDITIONAL NOTES

NO OBSERVATIONS

	Mojave Solar
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Common Raven Fixed Point Observation Data Sheet									
Date (mm/dd/yy)	11/05/14	Observer (init.)	JR13	Start Time	12:55	End Time		Obs Pt.	7

Page 1 of 1

Cloud Cover: 0 %

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)
Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mm/dd/yy) 11/25/14

Observer (init.) JRB

Start Time 13:25

End Time 13:35

Obs Pt.	1
---------	---

Visibility: Clear or Min 1 Max 10 (m)

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 71 (°F)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1 st , X others)	Flight Dir (°)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Auc?	Vis?	Notes
							1 st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/25/14

Observer (init.) JRB

Start Time 13:42

End Time 13:52

Obs Pt. 2

Visibility: Clear or Min Max (m)

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog otherTemp: 70 ($^{\circ}\text{F}$)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (o)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Aud?	Vis?	Notes
							1st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/25/14

Observer (init.) JRB

Start Time 14:00

End Time 14:10

Obs Pt. 3

Visibility: Clear or Min 1 Max 10 (m)

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 71 ($^{\circ}\text{F}$)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)		Flight Dir (o)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Ald?	Vis?	Notes
								1st	closest				
1					WA	PE							
					FL	OT							
2					WA	PE							
					FL	OT							
3					WA	PE							
					FL	OT							
4					WA	PE							
					FL	OT							
5					WA	PE							
					FL	OT							
6					WA	PE							
					FL	OT							
7					WA	PE							
					FL	OT							
8					WA	PE							
					FL	OT							
9					WA	PE							
					FL	OT							
10					WA	PE							
					FL	OT							
11					WA	PE							
					FL	OT							
12					WA	PE							
					FL	OT							

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11 25 14

Observer (init.) JRB

Start Time 14:15 End Time 14:25

Obs Pl. 4

Visibility: Clear or Min Max (m)

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other Temp: 71 (°F) Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (°)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Aud?	Vis?	Notes
							1st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/25/14

Observer (init.) JRS

Start Time 14:40

End Time 14:50

Obs Pt. 5

Page 1 of 1

Visibility: Clear or Min _____ Max _____ (m)

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 71 ($^{\circ}\text{F}$)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1 st , X others)	Flight Dir (to)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Aug?	Vis?	Notes
							1 st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11/25/14

Observer (init.) JRB

Start Time 15:00 End Time 15:10

Obs Pt.	6
---------	---

Visibility: Clear or Min Max (m)

Page 1 of 1

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable Speed: Low _____ High _____ (km/h)

Precipitation (circle one):										Temp:	69 (°F)	Cloud Cover:	0 %
-----------------------------	--	--	--	--	--	--	--	--	--	-------	---------	--------------	-----

[illegible]

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Mojave Solar

Common Raven Fixed Point Observation Data Sheet

Date (mmddyy) 11 25 14

Observer (init.) JRB

Start Time 15:15

End Time 15:25

Obs Pt. 7

Page 1 of 1

Visibility: Clear or Min 1 Max 10 (m)

Wind Direction from (circle one): Calm N NE E SE S SW W NW Variable

Speed: Low _____ High _____ (km/h)

Precipitation (circle one): none light rain rain snow sleet hail fog other

Temp: 68 ($^{\circ}\text{F}$)

Cloud Cover 0 %

Obs #	Time	Sex	Age	# of birds	Activity (circle 1st, X others)	Flight Dir (to)	Horizontal Distance (m)		Habitat Type/ Perch Structure	Ald?	Vis?	Notes
							1st	closest				
1					WA	PE						
					FL	OT						
2					WA	PE						
					FL	OT						
3					WA	PE						
					FL	OT						
4					WA	PE						
					FL	OT						
5					WA	PE						
					FL	OT						
6					WA	PE						
					FL	OT						
7					WA	PE						
					FL	OT						
8					WA	PE						
					FL	OT						
9					WA	PE						
					FL	OT						
10					WA	PE						
					FL	OT						
11					WA	PE						
					FL	OT						
12					WA	PE						
					FL	OT						

Activity Codes: WA-walking on ground, PE-perched above ground, FL-flying, OT-other (please specify)

Habitat Codes: CBS-Creosote Bush Scrub, SD/SS-Sand Dunes/Sand Sheets, DP-Desert Pavement, OT-other (please specify, provide details of Project structure/facility)

[illegible]

Attachment 5
Observed Wildlife Species List

**Observed Wildlife Species List November 2014
Mojave Solar Project**

Common Name	Scientific Name^a	Special-status State/Federal^b	Invasive Wildlife
Reptiles			
Side-blotched Lizard	<i>Uta stansburiana</i>	—/—	—
Birds (4-letter code)			
American Coot (AMCO)	<i>Fulica americana</i>	—/—	—
American Pipit (AMPI)	<i>Anthus rubescens</i>	—/—	—
American Robin (AMRO)	<i>Turdus migratorius</i>	—/—	—
American Widgeon (AMWI)	<i>Anas americana</i>	—/—	—
Bewick's Wren (BEWR)	<i>Thryomanes bewickii</i>	—/—	—
Black Phoebe (BLPH)	<i>Sayornis nigricans</i>	—/—	—
Blue Winged Teal (BWTE)	<i>Anas discors</i>	—/—	—
Bonaparte's Gull (BOGU)	<i>Chroicocephalus philadelphia</i>	—/—	—
Brown Headed Cowbird (BHCO)	<i>Molothrus ater</i>	—/—	Cal Code 14:671
Bufflehead (BUFF)	<i>Bucephala albeola</i>	—/—	—
California Gull (CAGU)	<i>Larus californicus</i>	—/—	—
Cinnamon Teal (CITE)	<i>Anas cyanoptera</i>	—/—	—
Common Goldeneye (COGO)	<i>Bucephala clangula</i>	—/—	—
Common Raven (CORA)	<i>Corvus corax</i>	—/—	—
Dark-eyed Junco (DEJU)	<i>Junco hyemalis</i>	—/—	—
Eared Grebe (EAGR)	<i>Podiceps nigricollis</i>	—/—	—
European Starling (EUST)	<i>Sturnus vulgaris</i>	—/—	Cal Code 14:671
Gadwall (GADW)	<i>Anas strepera</i>	—/—	—
Great Blue Heron (GBHE)	<i>Ardea herodias</i>	—/—	—
Great Egret (GREG)	<i>Ardea alba</i>	—/—	—
Greater Yellowlegs (GRYE)	<i>Tringa melanoleuca</i>	—/—	—
Great-tailed Grackle (GTGR)	<i>Quiscalus mexicanus</i>	—/—	—
Green-Winged Teal (GWTE)	<i>Anas carolinensis</i>	—/—	—
Hooded Merganser (HOME)	<i>Lophodytes cucullatus</i>	—/—	—
Horned Lark (HOLA)	<i>Eremophila alpestris</i>	WU—	—

**Observed Wildlife Species List November 2014
Mojave Solar Project**

Common Name	Scientific Name^a	Special-status State/Federal^b	Invasive Wildlife
House Finch (HOFI)	<i>Carpodacus mexicanus</i>	—/—	—
House Sparrow (HOSP)	<i>Passer domesticus</i>	—/—	Cal Code 14:671
Killdeer (KILL)	<i>Charadrius vociferus</i>	—/—	—
Lesser Scaup (LESC)	<i>Aythya affinis</i>	—/—	—
Lincoln's Sparrow (LISP)	<i>Melospiza lincolnii</i>	—/—	—
Loggerhead Shrike (LOSH)	<i>Lanius ludovicianus</i>	CSC/BCC	—
Long Billed Dowitcher (LBDO)	<i>Limnodromus scolopaceus</i>	—/—	—
Mallard (MALL)	<i>Anas platyrhynchos</i>	—/—	—
Marsh Wren (MAWR)	<i>Cistothorus palustris</i>	—/—	—
Mountain Bluebird (MOBL)	<i>Sialia currucoides</i>	—/—	—
Northern Harrier (NOHA)	<i>Circus cyaneus</i>	CSC/—	—
Northern Pintail (NOPI)	<i>Anas acuta</i>	—/—	—
Northern Rough-winged Swallow (NRWS)	<i>Stelgidopteryx serripennis</i>	—/—	—
Northern Shoveler (NSHO)	<i>Anas clypeata</i>	—/—	—
Peregrine Falcon (PEFA)	<i>Falco peregrinus anatum</i>	FP/BCC	—
Red-tailed Hawk (RTHA)	<i>Buteo jamaicensis</i>	—/—	—
Ring-billed Gull (RBGU)	<i>Larus delawarensis</i>	—/—	—
Ring-necked Duck (RNDU)	<i>Aythya collaris</i>	—/—	—
Ross's Goose (ROGO)	<i>Chen rossii</i>	—/—	—
Ruddy Duck (RUDU)	<i>Oxyura jamaicensis</i>	—/—	—
Sagebrush Sparrow (SABS)	<i>Artemisiospiza nevadensis</i>	—/—	—
Say's Phoebe (SAPH)	<i>Sayornis saya</i>	—/—	—
Turkey Vulture (TUVU)	<i>Cathartes aura</i>	—/—	—
Western Bluebird (WEBL)	<i>Sialia mexicana</i>	—/—	—
Western Grebe (WEGR)	<i>Aechmophorus occidentalis</i>	—/—	—
Western Gull (WEGU)	<i>Larus occidentalis</i>	—/—	—
Western Meadowlark (WEME)	<i>Sturnella neglecta</i>	—/—	—

**Observed Wildlife Species List November 2014
Mojave Solar Project**

Common Name	Scientific Name^a	Special-status State/Federal^b	Invasive Wildlife
White-Crowned Sparrow (WCSP)	<i>Zonotrichia leucophrys</i>	___/___	—
White-faced Ibis (WFIB)	<i>Plegadis chihi</i>	WL/___	—
Wood Duck (WODU)	<i>Aix sponsa</i>	___/___	—
Yellow-rumped Warbler (YRWA)	<i>Setophaga coronata</i>	___/___	—
Mammals			
Black-tailed Jackrabbit	<i>Lepus californicus</i>	___/___	—
Coyote	<i>Canis latrans</i>	___/___	—
Desert Kit Fox	<i>Vulpes macrotis</i>	CCR/___	—
White-tailed Antelope Squirrel	<i>Ammospermophilus leucurus</i>	___/___	—

^a Source of scientific names is CDFW Natural Diversity Database. September 2014. Special Animals List. Periodic publication. 52 pp

^b Source of special-status species status is CDFW Natural Diversity Database. September 2014. Special Animals List. Periodic publication. 52 pp

Status Codes:

Federal:

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

BCC = USFWS Bird of Conservation Concern

State:

SE = State listed as Endangered

ST = State listed as Threatened

CSC = California Species of Special Concern Species of concern to CDFW because of declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.

CCR = protected by the California Code of Regulations

FP = Fully Protected

WL = Watch List

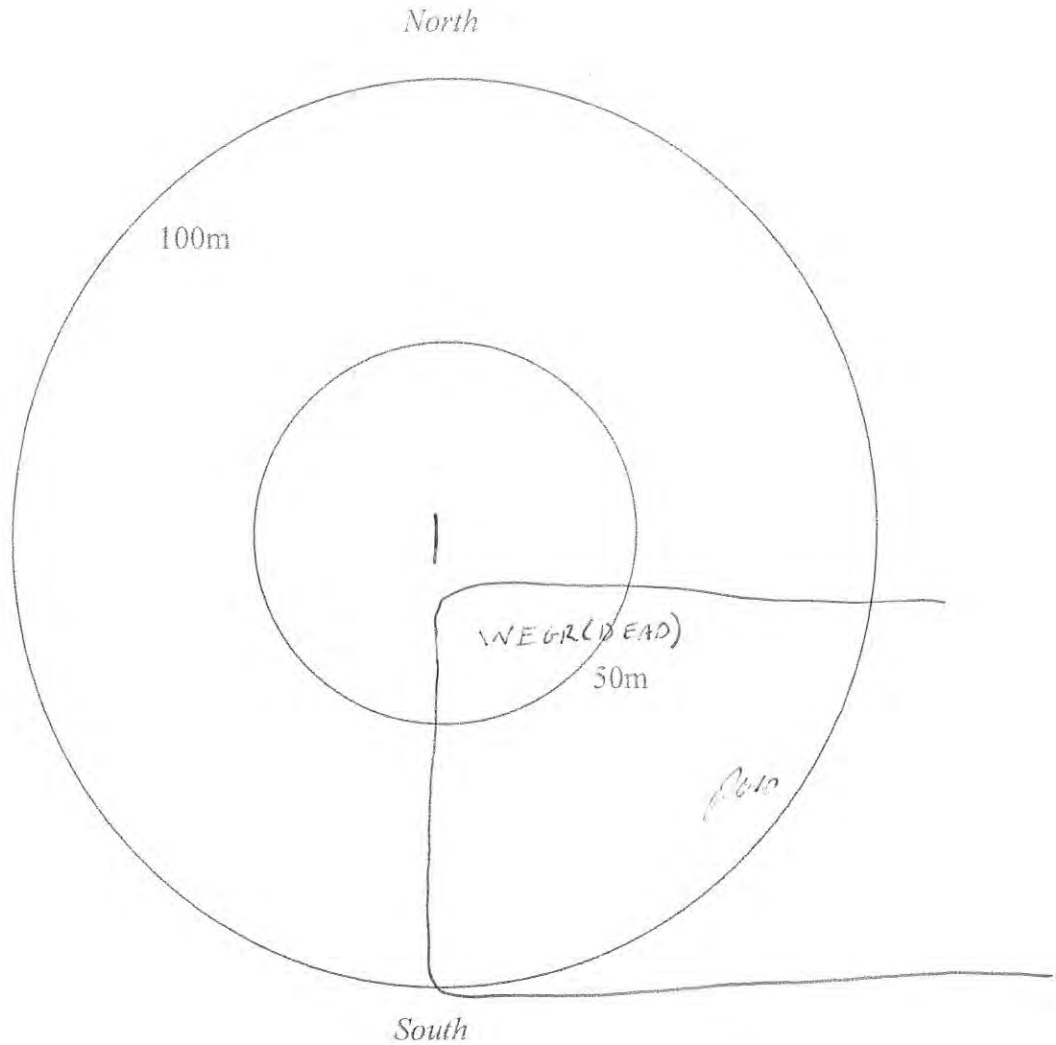
Attachment 6
Evaporation Pond Monitoring Data Sheets

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 1 Observer Initials: JRB Sky: CLEAR Temp: (F) 40

Estimated Average Wind Speed: (MPH) 8 Wind Direction: N/A

Date (month/day/ year): 11/14/14 Start Time 07:17 End Time 07:22



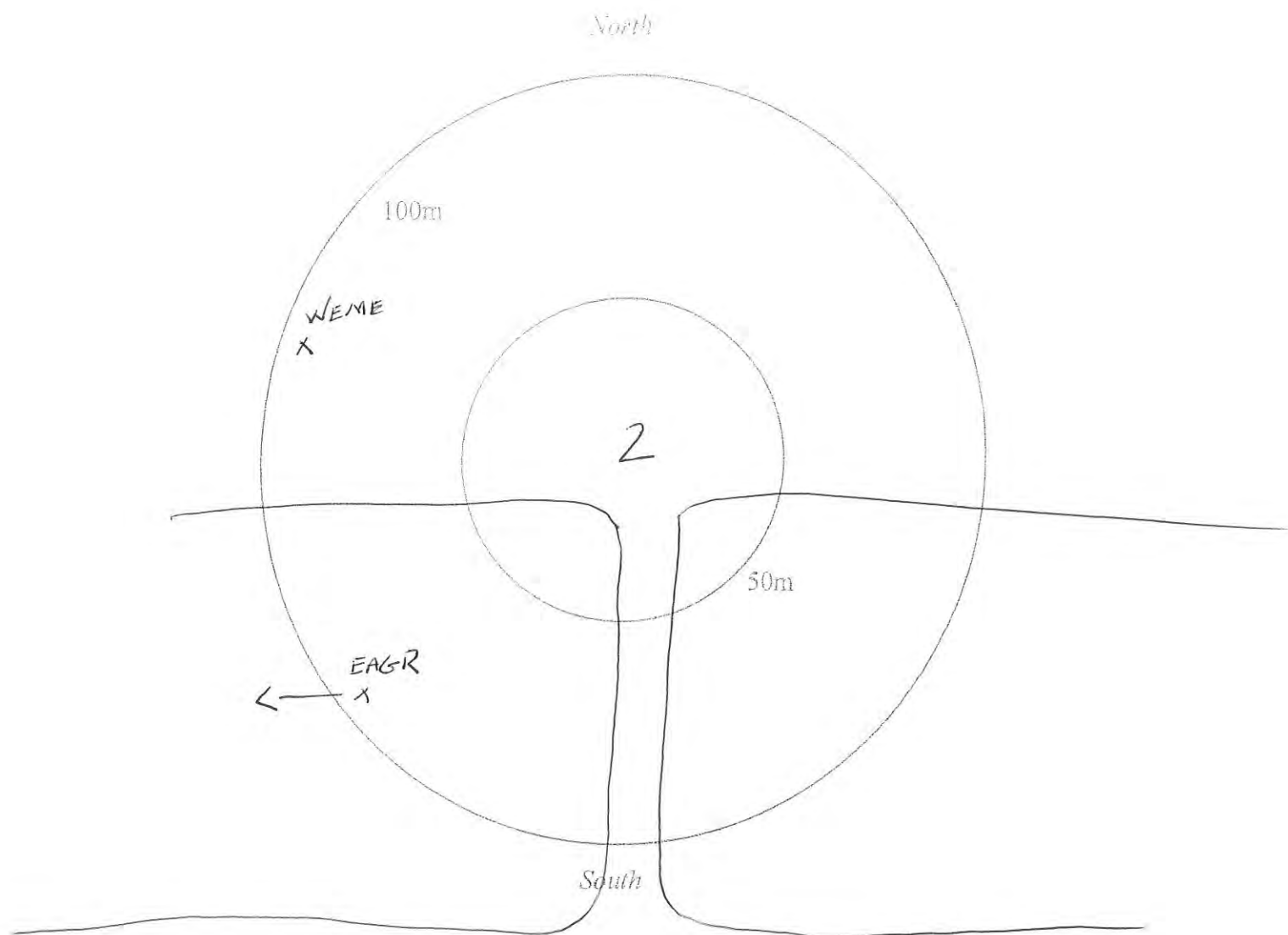
Notes _____

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 2 Observer Initials: JRS Sky: CLEAR Temp: (F) 41

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 11 / 4 / 14 Start Time 07:26 End Time 07:31



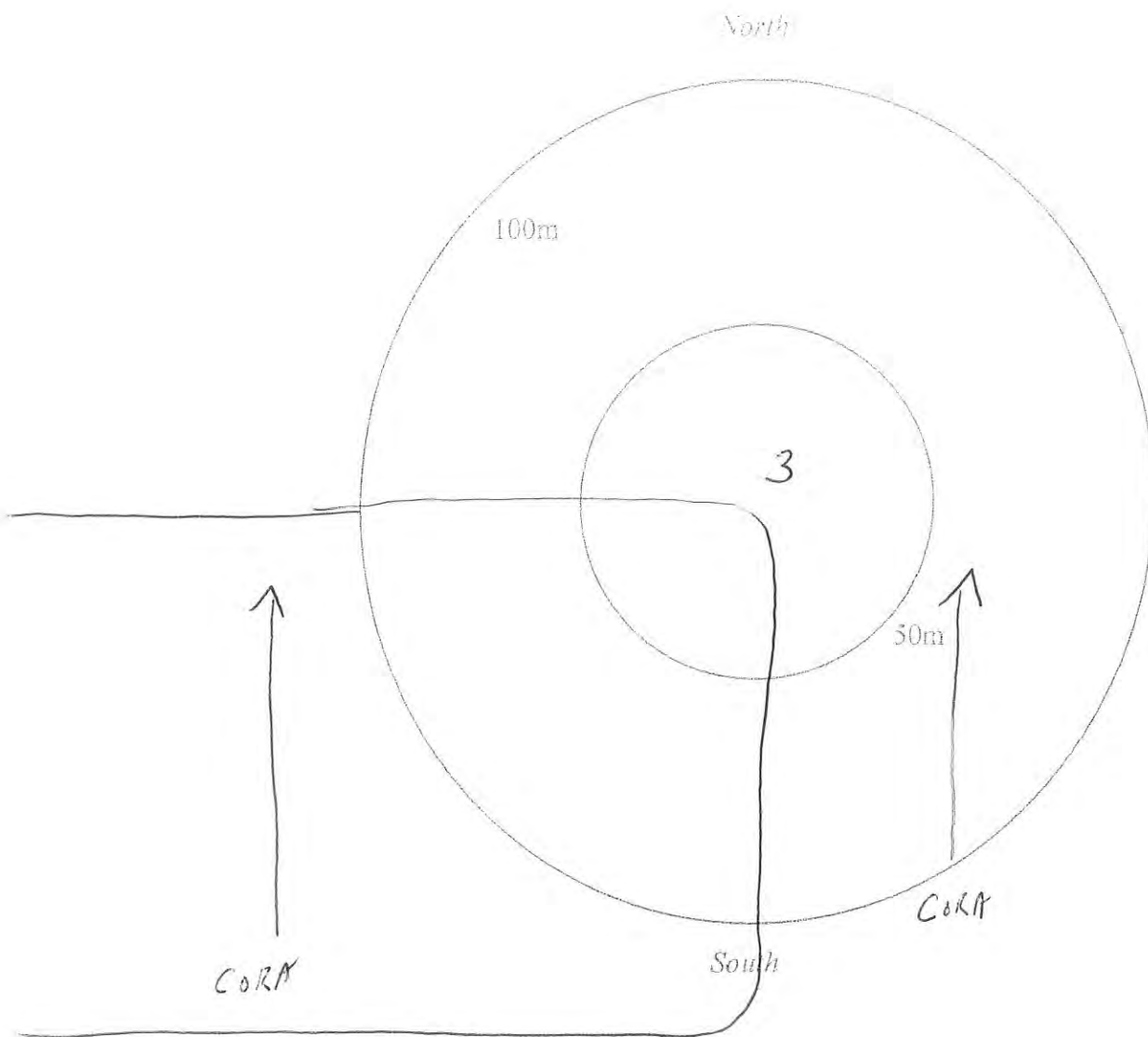
Notes EAST SIDE IS EMPTY

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 3 Observer Initials: JRB Sky: CLEAR Temp: (F) 42

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 4 / 14 Start Time 07:36 End Time 07:41



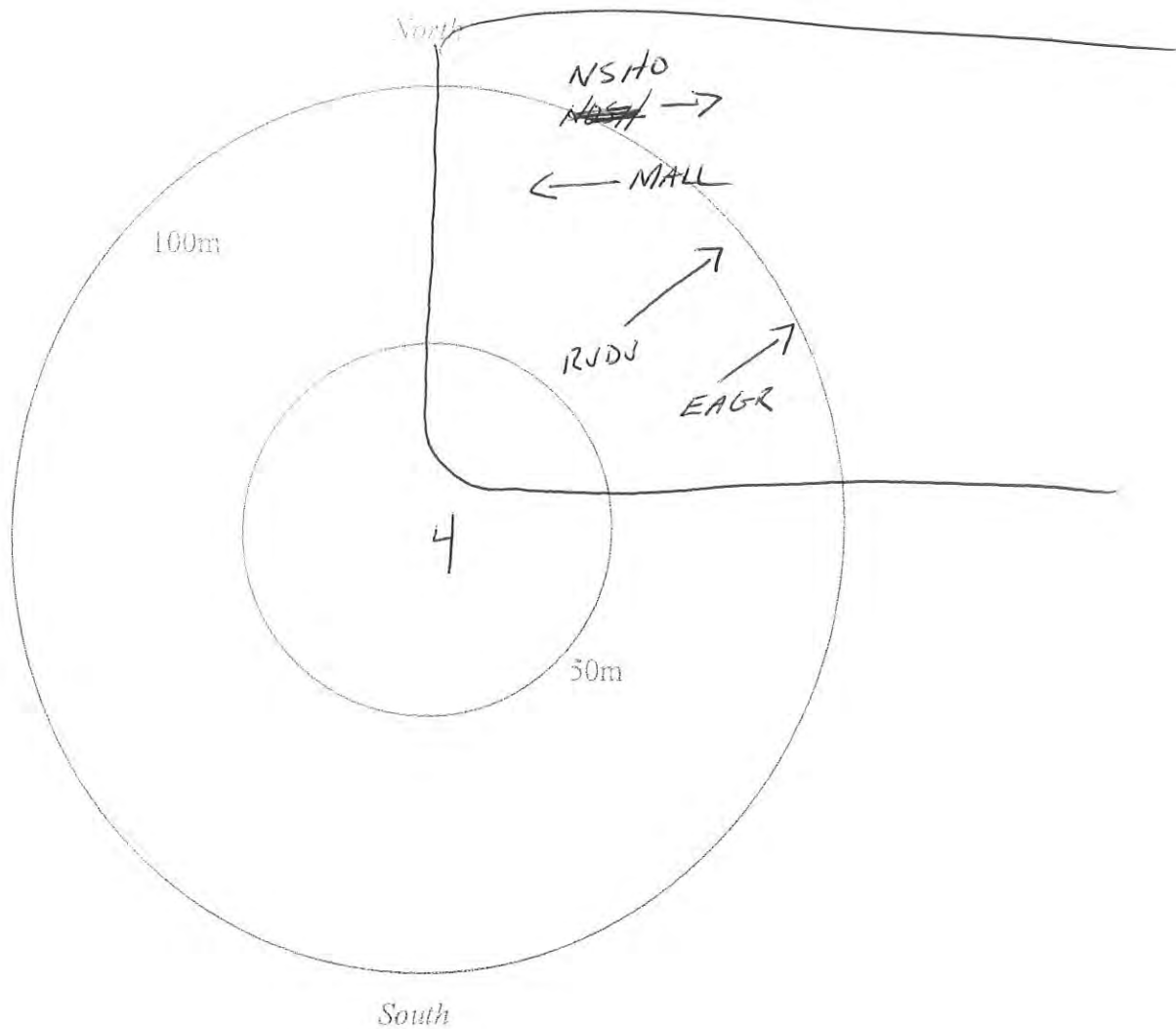
Notes _____

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 4 Observer Initials: JRB Sky: CLEAR Temp: (F) 42

Estimated Average Wind Speed: (MPH) 0 Wind Direction: 0

Date (month/day/ year): 10 / 11 / Start Time 08:09 End Time 08:14



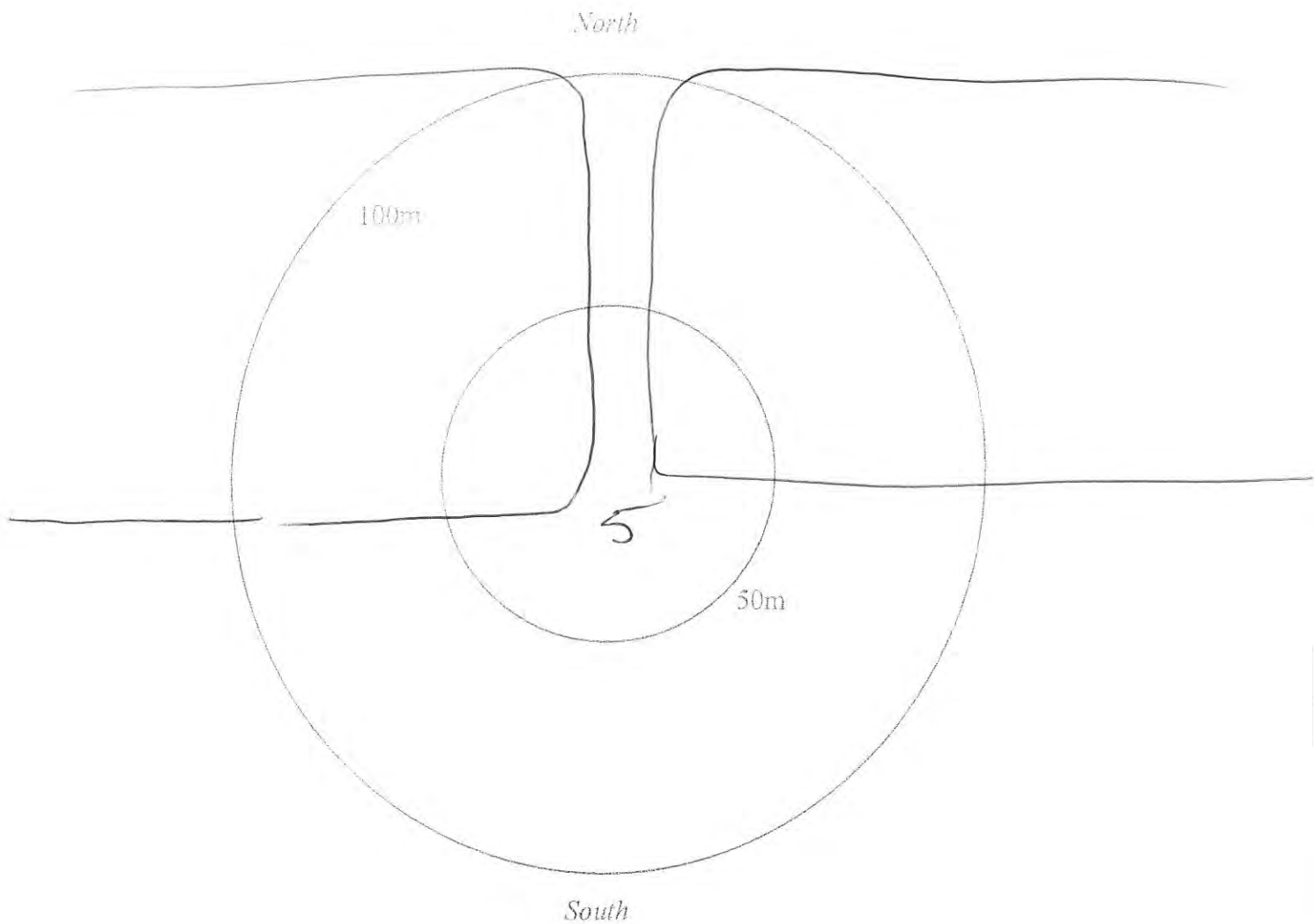
Notes _____

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 5 Observer Initials: JRS Sky: CLEAR Temp: (F) 43

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/S

Date (month/day/ year): 11 / 4 / 14 Start Time 07 : 57 End Time 08 : 02



Notes NO OBSERVATIONS

5

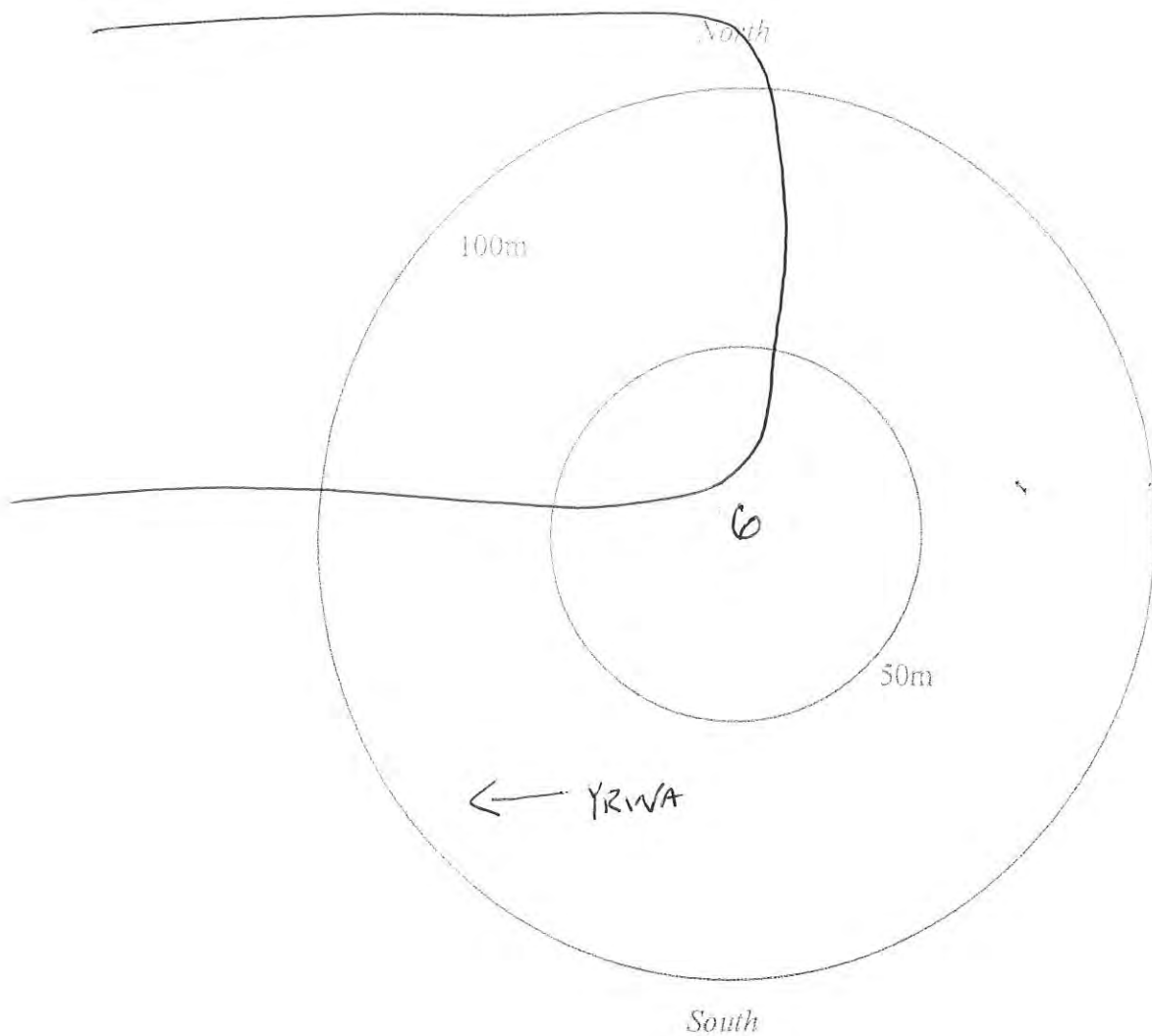
Species	# individuals	Flythrough	Flyover	Behaviors observed
NO OBSERVATIONS				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 6 Observer Initials: JRB Sky: CLEAR Temp: (F) 42

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 4 / 14 Start Time 07:48 End Time 07:53



Notes _____

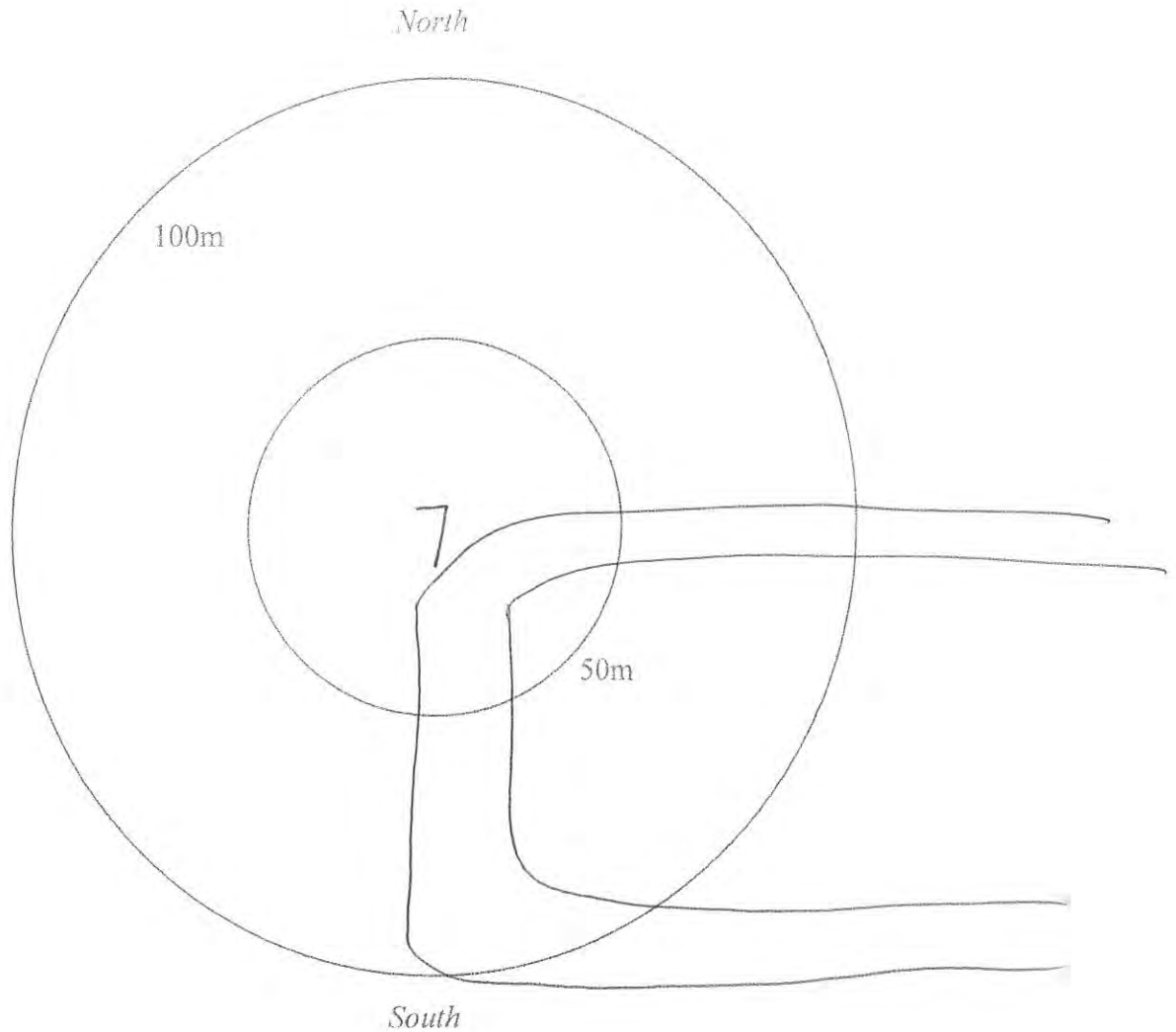
[illegible]

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 7 Observer Initials: JRB Sky: clear Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 11 / 4 / 14 Start Time 08:57 End Time 09:02



Notes HOSP (HEARD)

7

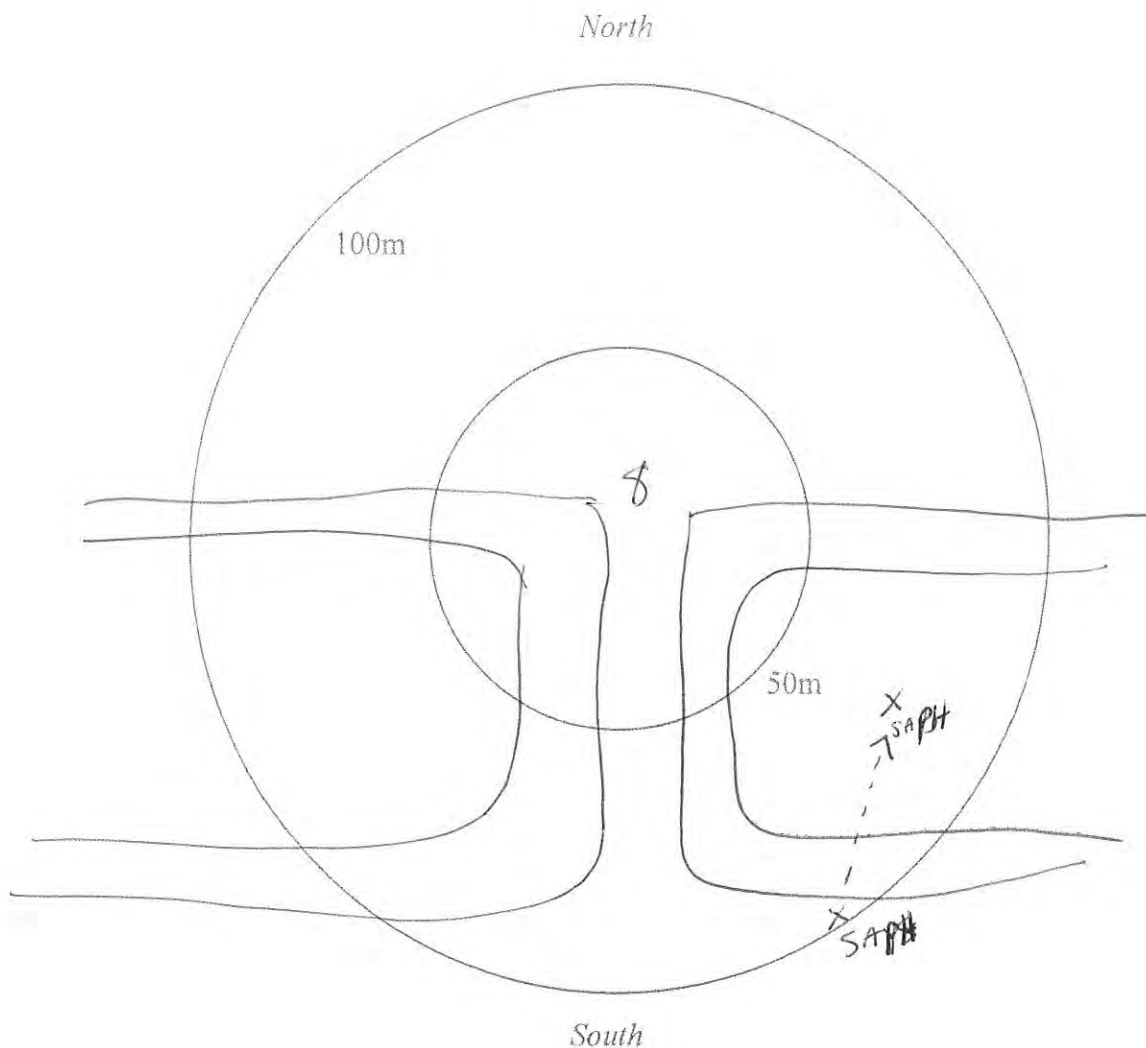
[illegible]

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 8 Observer Initials: JRB Sky: CLEAR Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/E

Date (month/day/ year): 11 / 14 / 14 Start Time 09:00 End Time 09:11



Notes _____

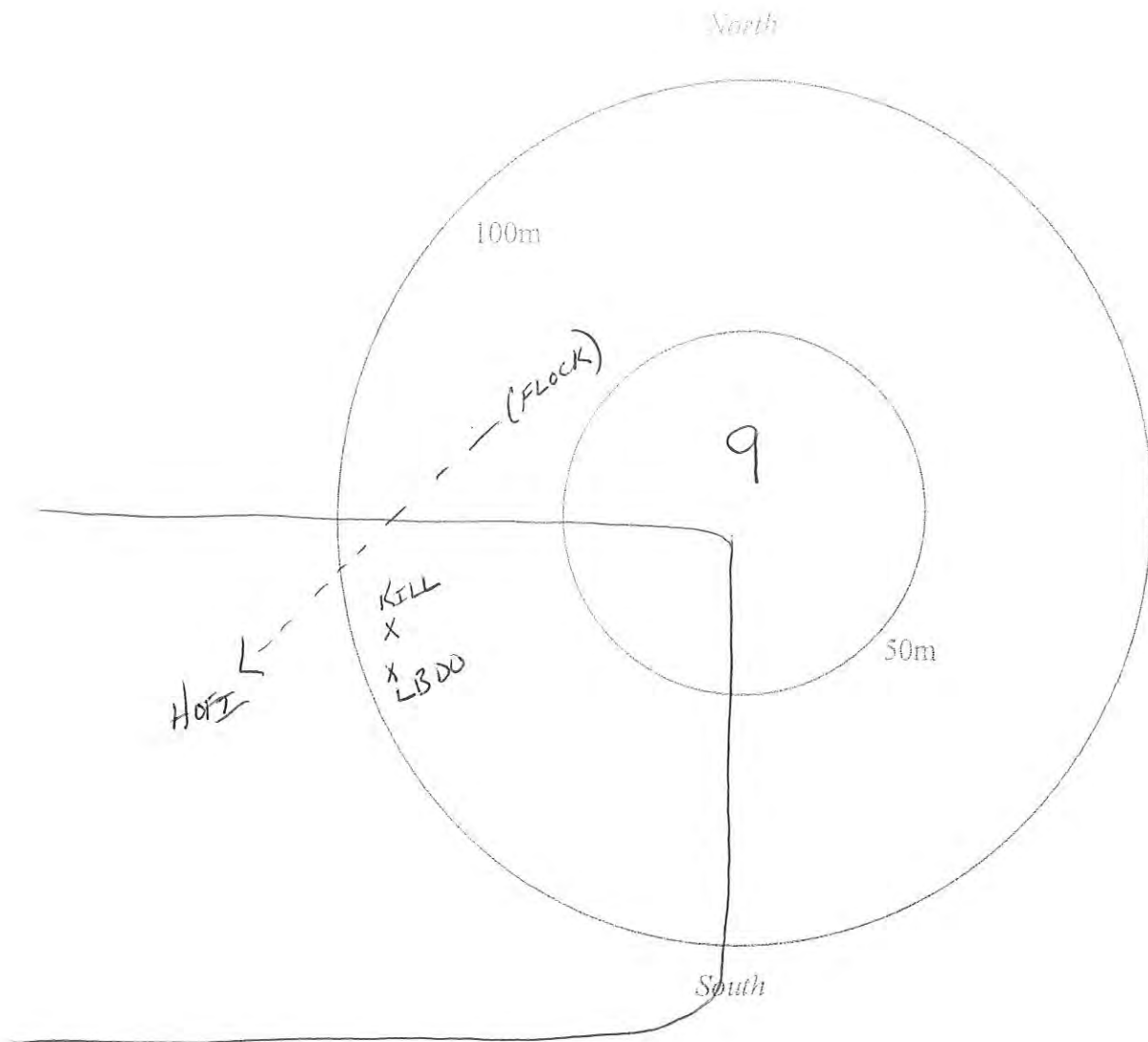
[illegible]

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 9 Observer Initials: JRB Sky: CLEAR Temp: (F) 54

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 4 / 14 Start Time 09:17 End Time 09:22



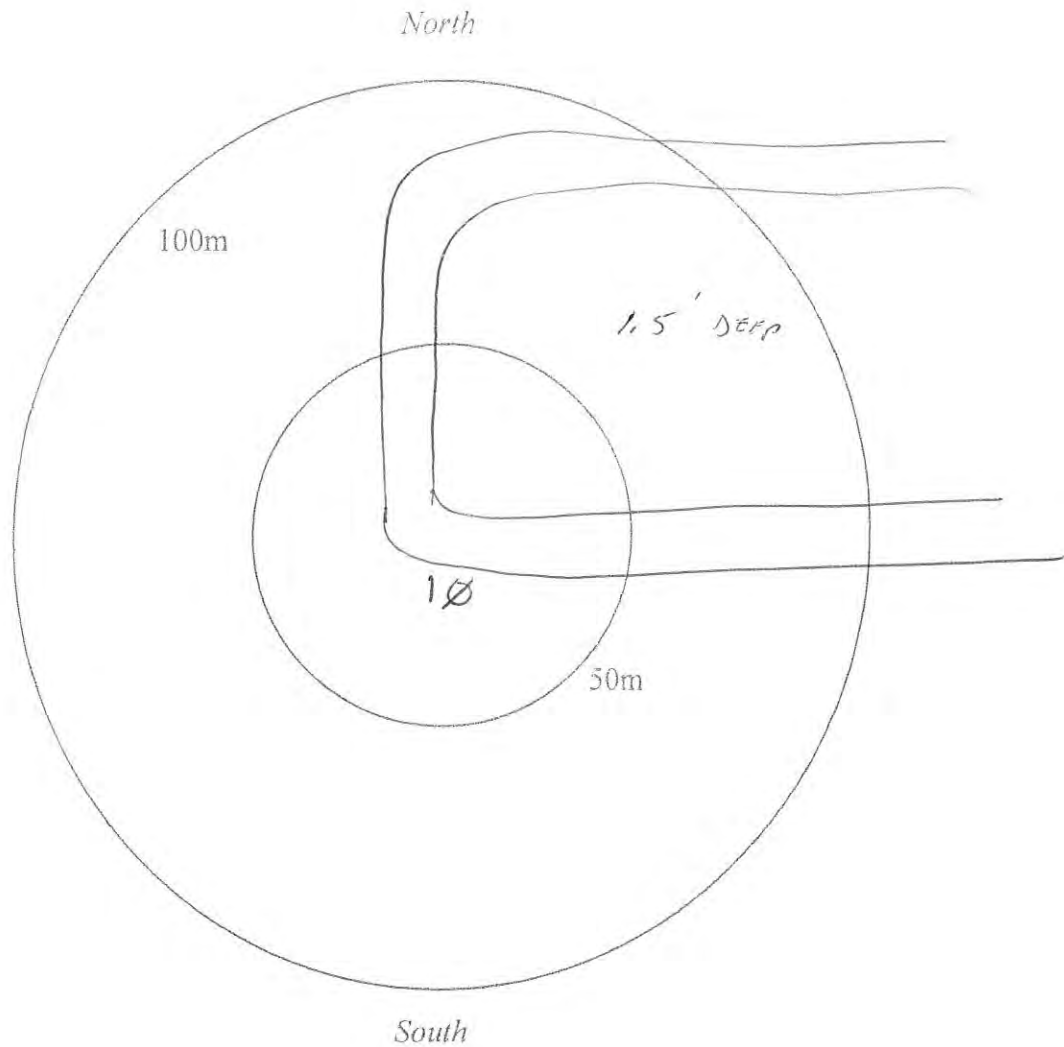
Notes HOSP (Hearo)

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 10 Observer Initials: JLD Sky: clear Temp: (F) 54

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11/14/14 Start Time 09:49 End Time 09:54



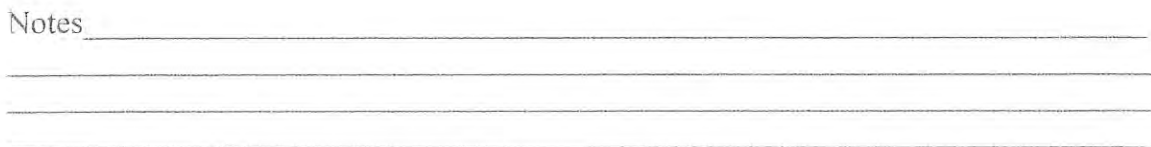
Notes NO OBSERVATIONS

[illegible]

Point ID: 11 Observer Initials: JRB Sky: clear Temp: (F) 55

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 11/14/14 Start Time 09:39 End Time 09:44



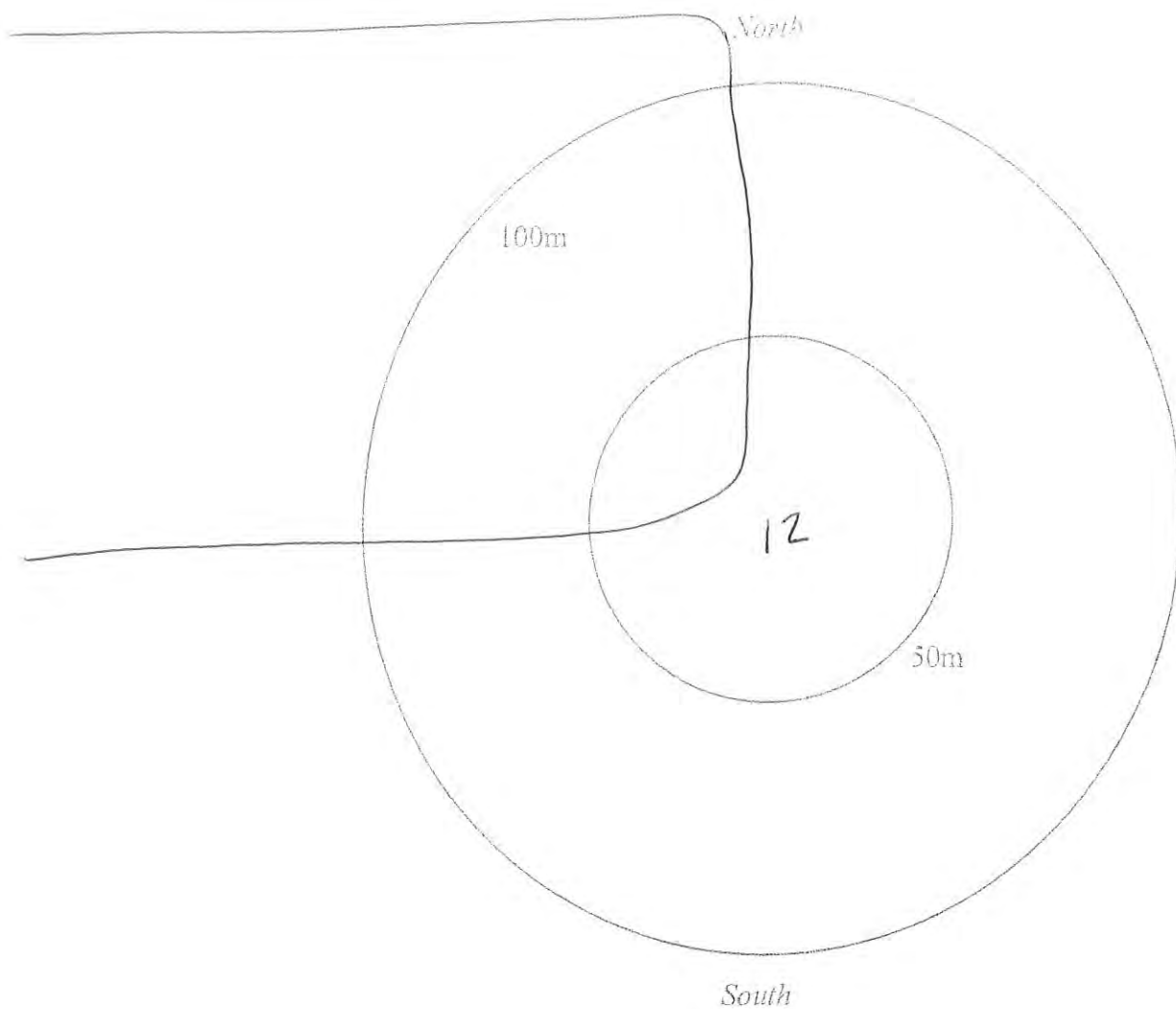
[illegible]

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 12 Observer Initials: JRJ3 Sky: CLEAR Temp: (F) 51

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 11 / 4 / 14 Start Time 09:27 End Time 09:32



Notes AMERICAN PEPPER JUST SOUTH OF SURVEY AREA.

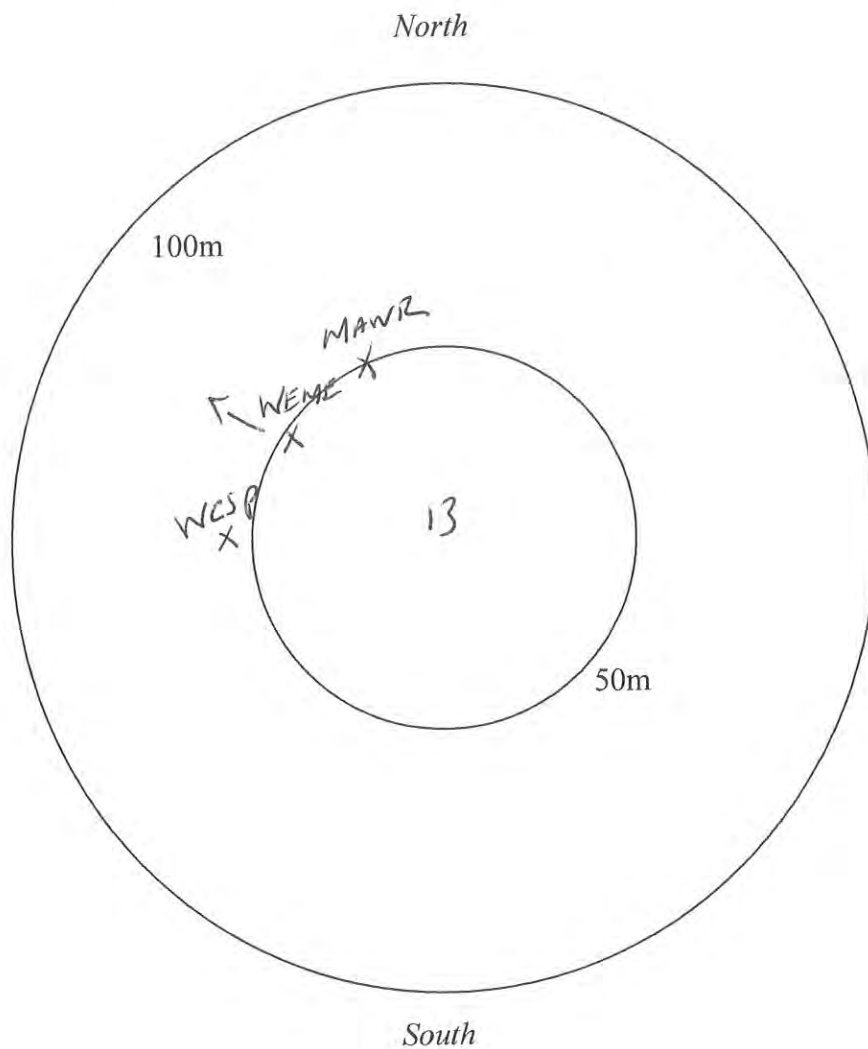
Species	# individuals	Flythrough	Flyover	Behaviors observed
NO OBSERVATIONS				

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 13 Observer Initials: JRB Sky: CLEAR Temp: (F) 36

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 4 / 14 Start Time 06 : 41 End Time 06 : 46



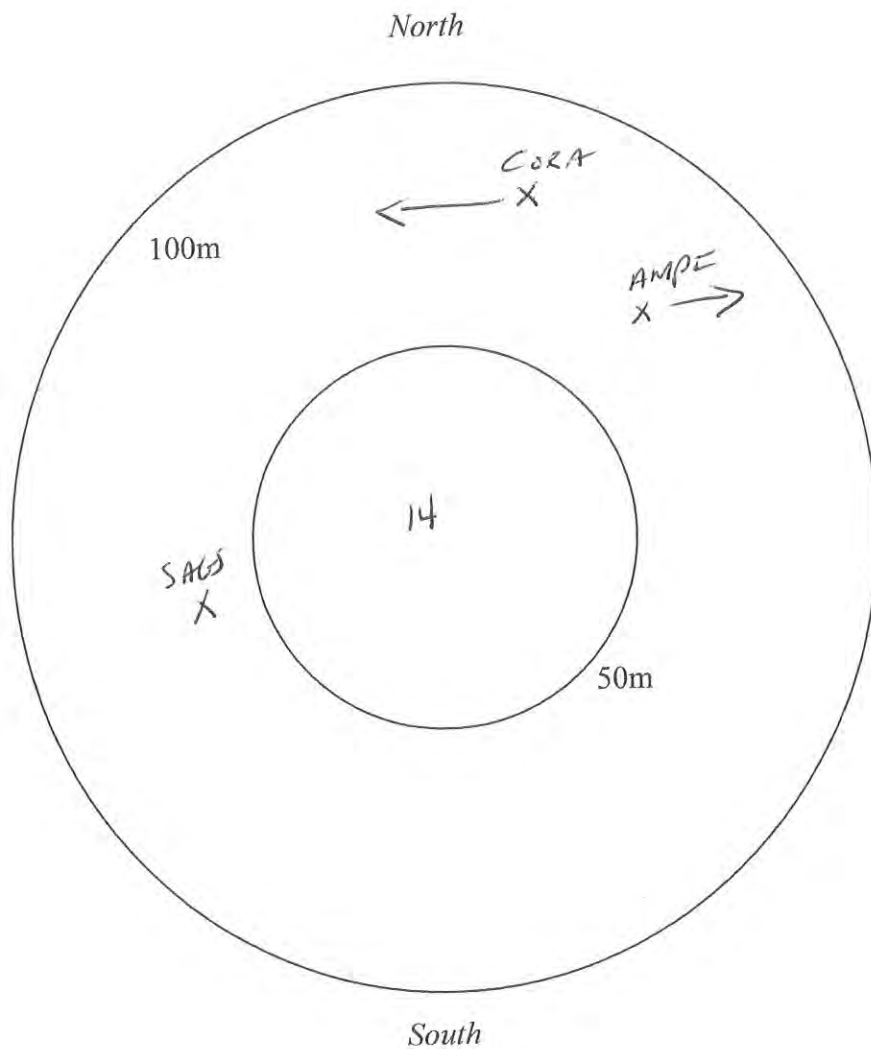
Notes WETLAND APPEARS DRY

Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 14 Observer Initials: JRB Sky: CLEAR Temp: (F) 36

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11/14/14 Start Time 06:30 End Time 06:35



Notes no H₂O here

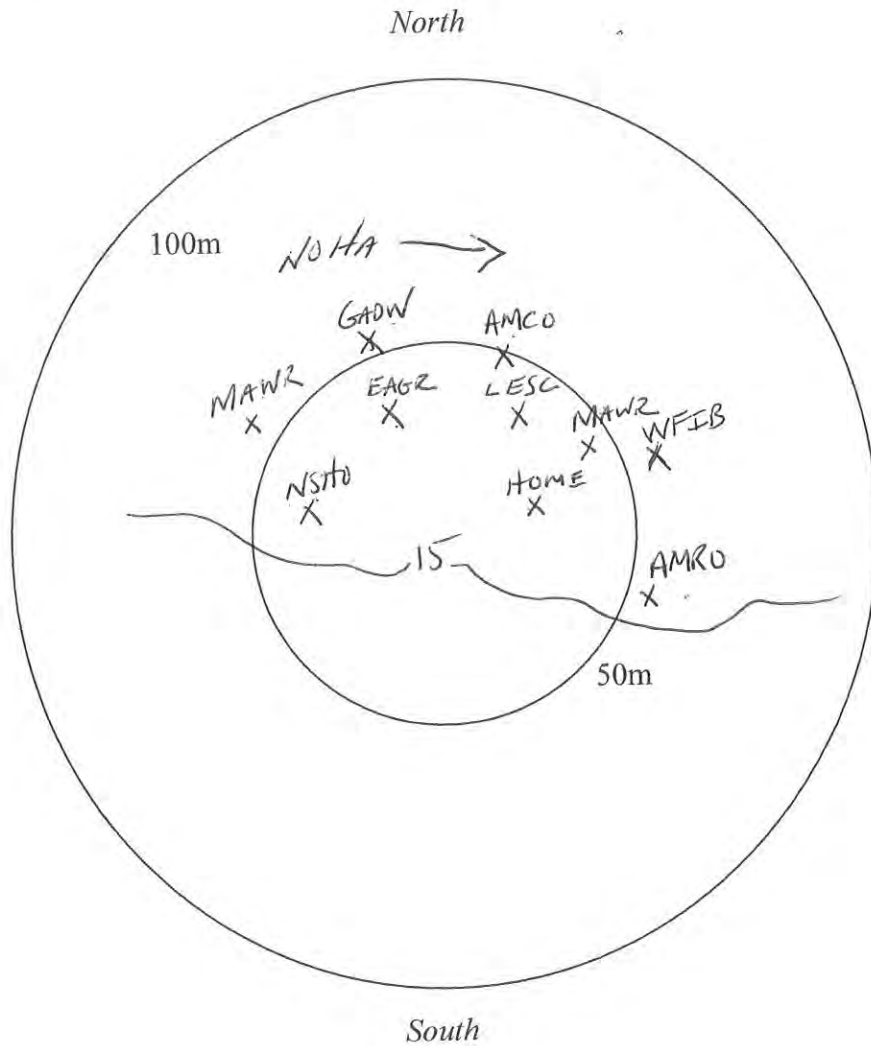
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Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 15 Observer Initials: JRB Sky: CLEAR Temp: (F) 35

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 4 / 14 Start Time 06:15 End Time 06:20



Notes _____

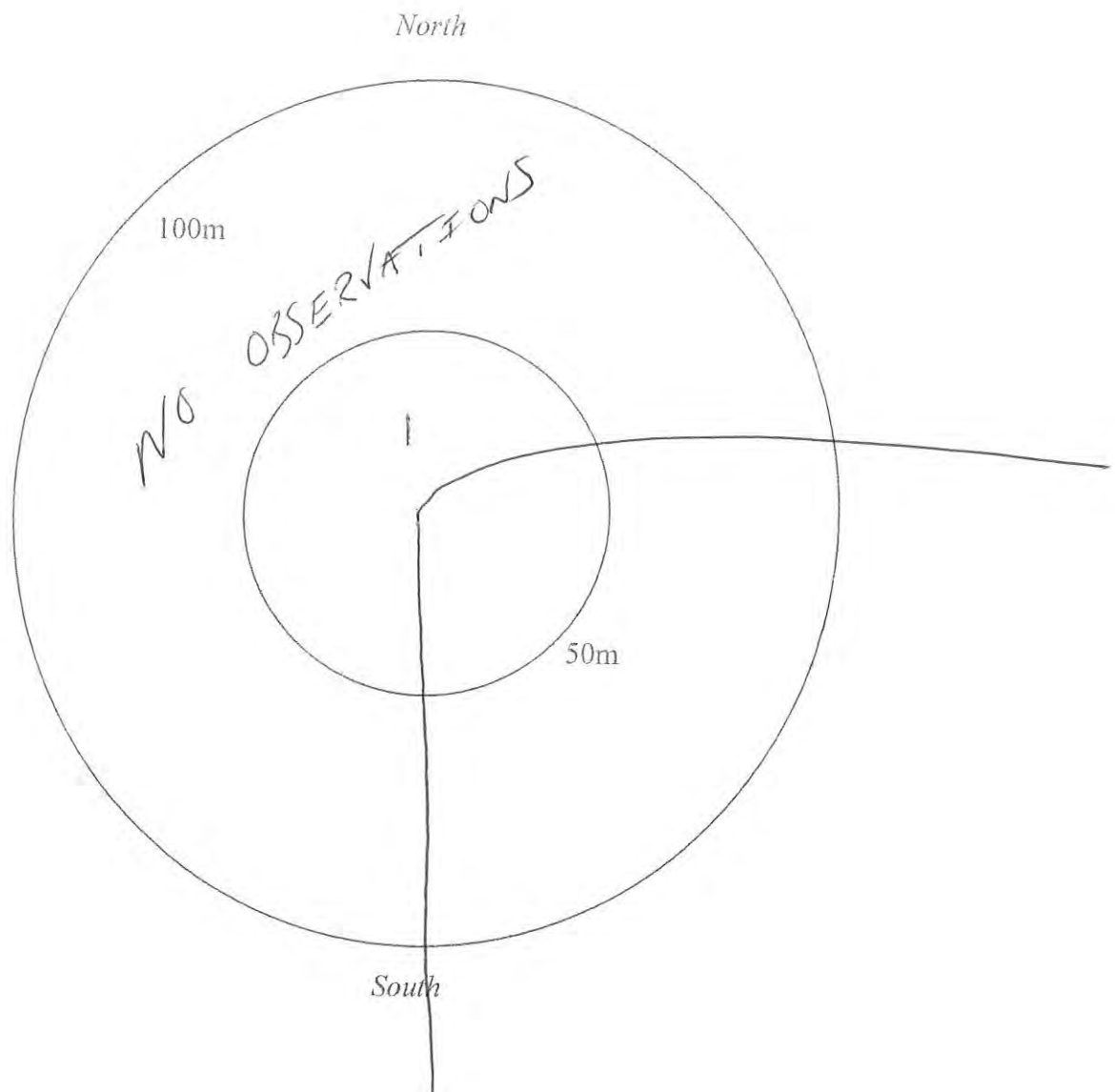
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 1 Observer Initials: JRB Sky: P/L Temp: (F) 50

Estimated Average Wind Speed: (MPH) 1-5 Wind Direction: E

Date (month/day/year): 11 / 30 / 14 Start Time 08:14 End Time 08:19

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 1 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

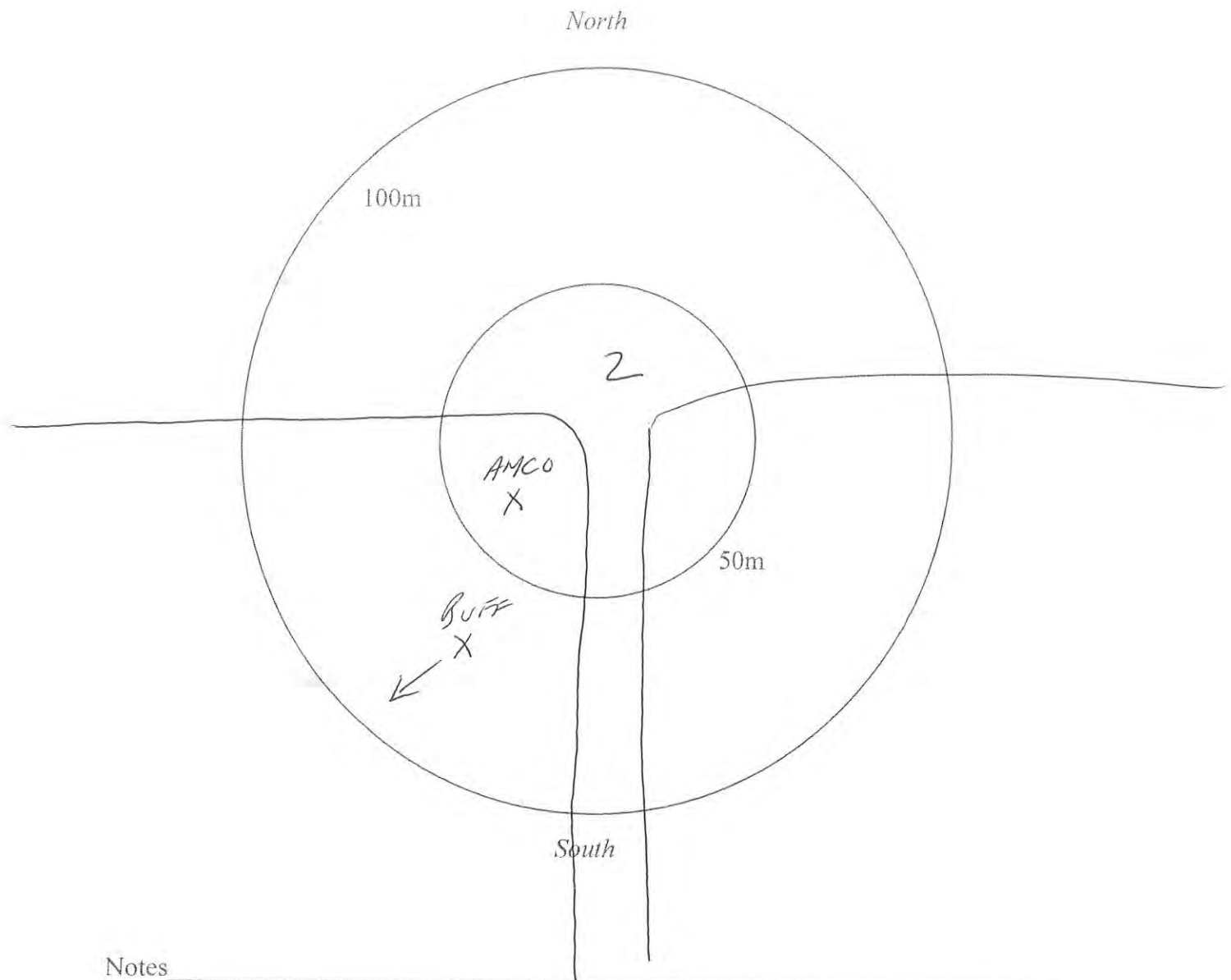
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 2 Observer Initials: JRB Sky: Cloudy Temp: (F) 49

Estimated Average Wind Speed: (MPH) 1-5 Wind Direction: E

Date (month/day/ year): 11/30/14 Start Time 08:22 End Time 08:27

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes

Point ID: 2 Date (month/day/ year): 11 / 30 / 2014

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

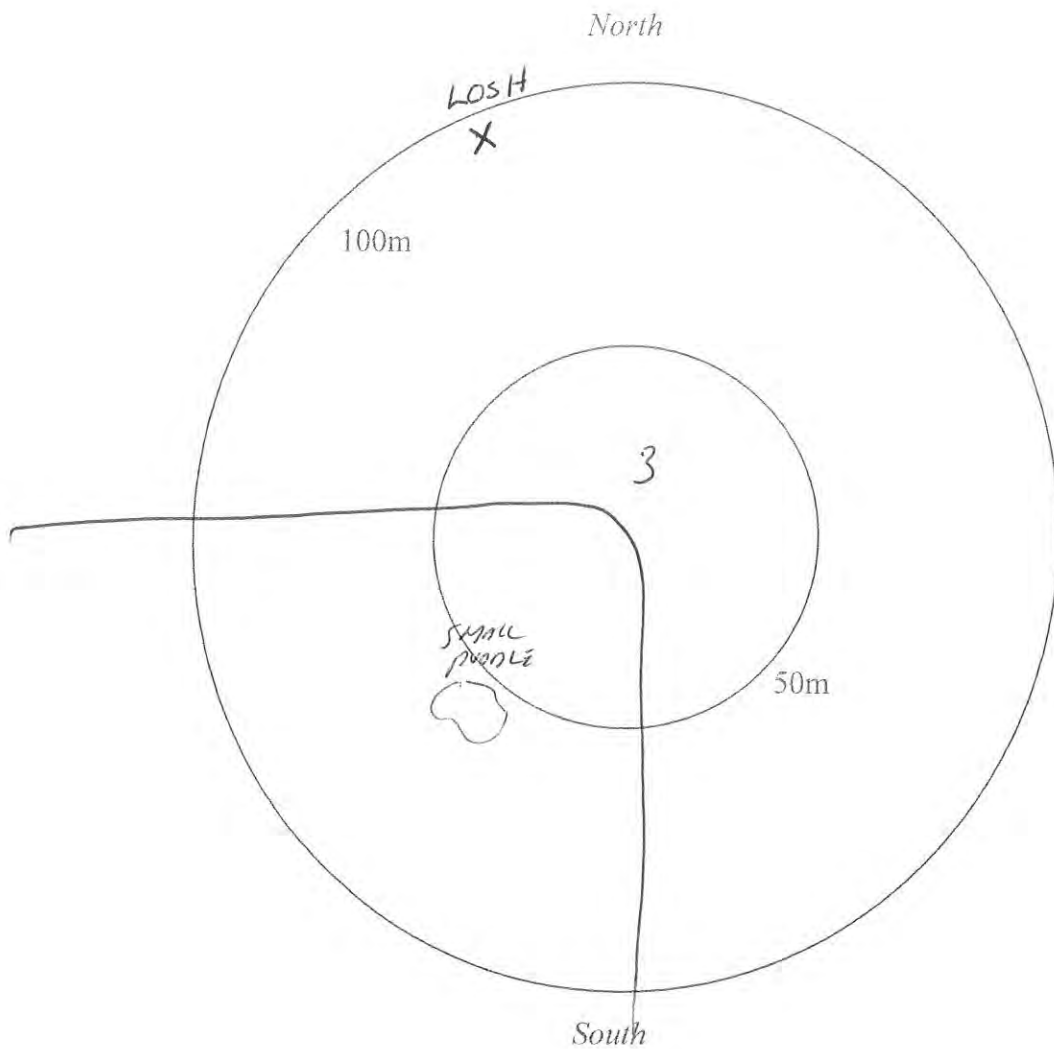
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 3 Observer Initials: JRB Sky: Cloudy Temp: (F) 49

Estimated Average Wind Speed: (MPH) 1-5 Wind Direction: E

Date (month/day/ year): 11 / 30 / 14 Start Time 08:31 End Time 08:36

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 3 Date (month/day/ year): 11/30/14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

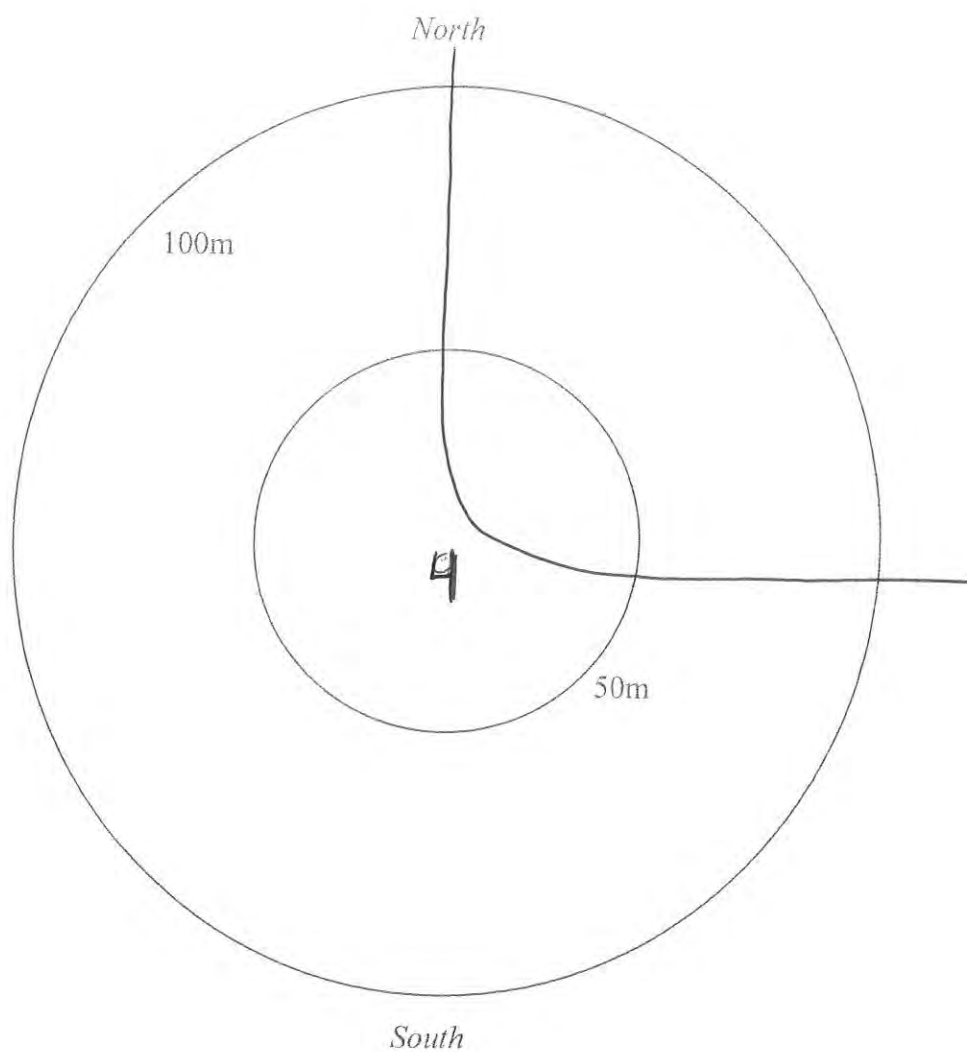
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 4 Observer Initials: JRS Sky: cloudy Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 11/30/14 Start Time ~~08~~: 55 End Time 09:00

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID:

Date (month/day/ year): 11 / 30 / 14

11 / 30 / 14

OBSERVATION

No

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

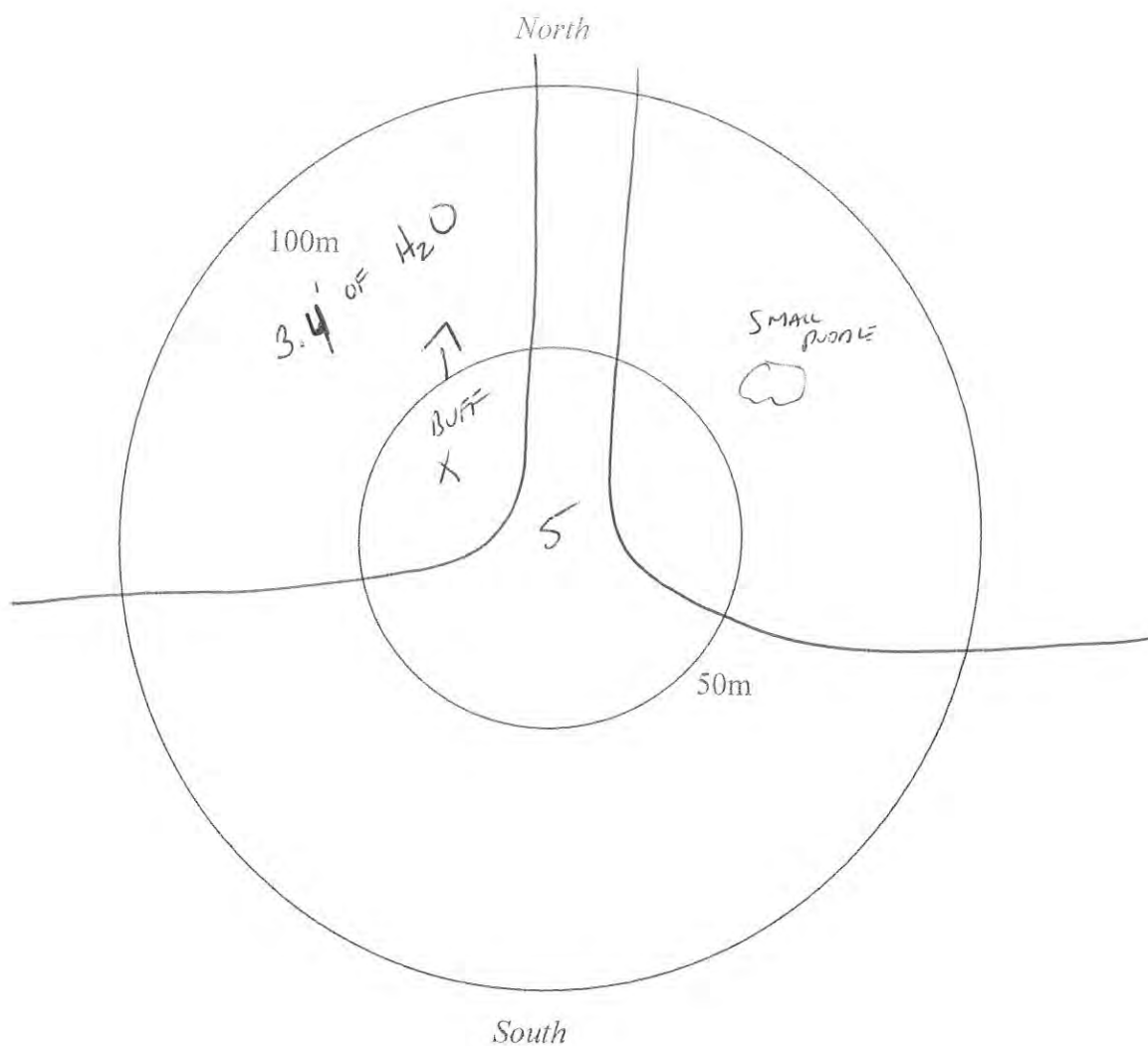
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 5 Observer Initials: JRB Sky: CLARY Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0-1 Wind Direction: E

Date (month/day/ year): 11 / 30 / 14 Start Time 08:48 End Time 08:53

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID:

Date (month/day/ year): 11 / 30 / 14

Species

But-

Individ
uals

2

Fyfeough

Итак

Behavior Observed

SWIMMING

Evap
Pond *

AE-W

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

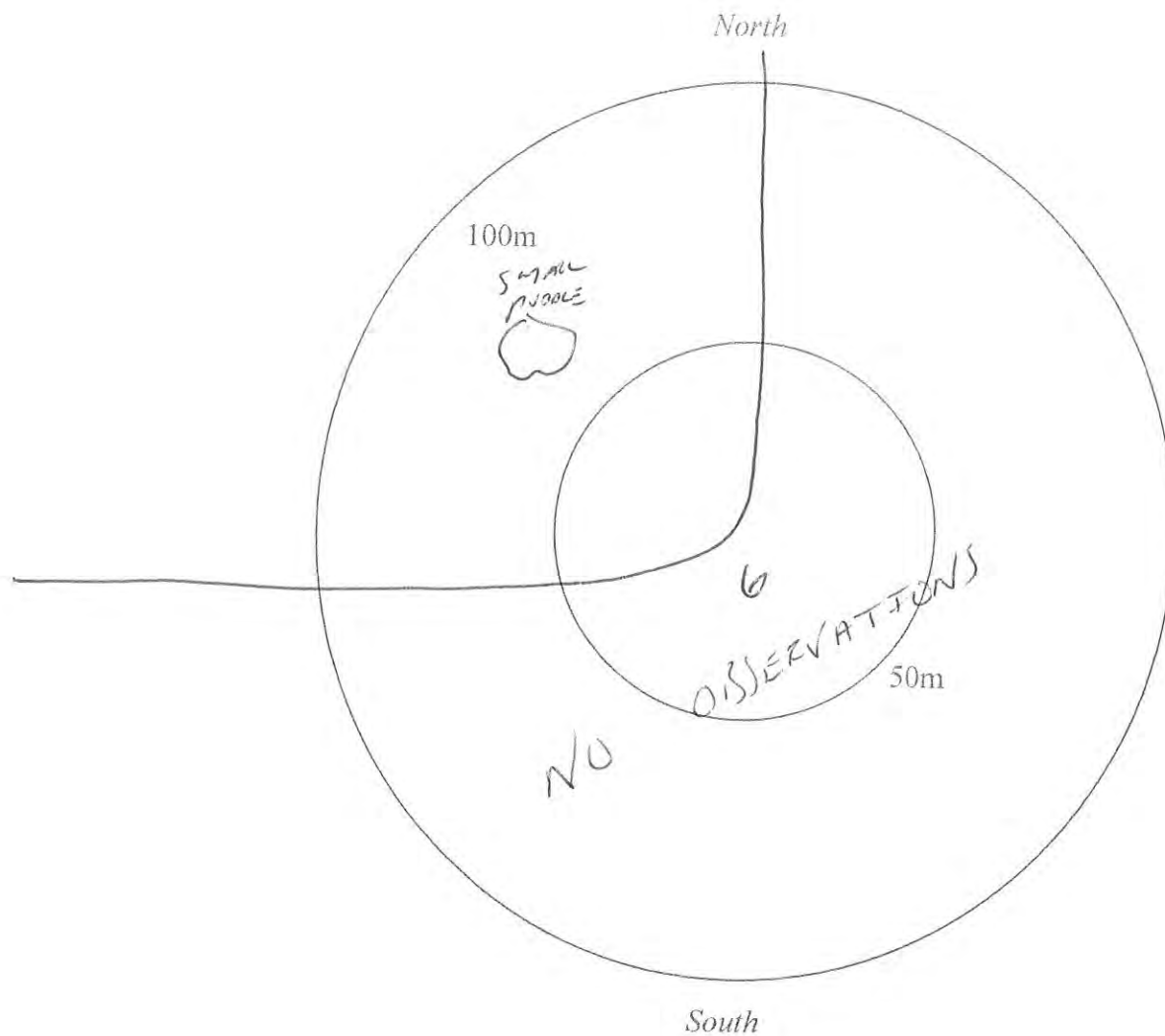
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 6 Observer Initials: JRB Sky: cloudy Temp: (F) 49

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11/30/14 Start Time 08:39 End Time 08:44

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 6 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

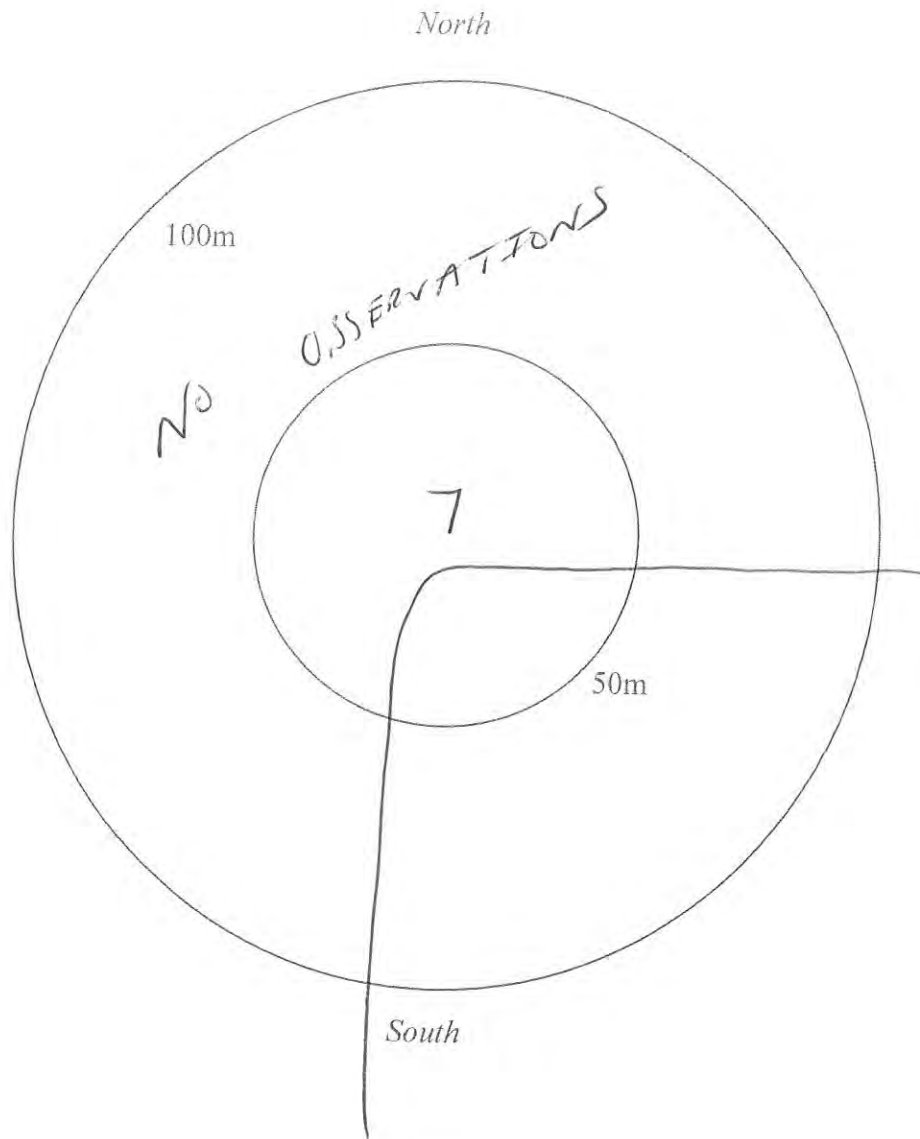
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 7 Observer Initials: JRS Sky: p/c Temp: (F) 50

Estimated Average Wind Speed: (MPH) 0-1 Wind Direction: E

Date (month/day/year): 11 / 30 / 14 Start Time 09:58 End Time 10:03

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 7 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

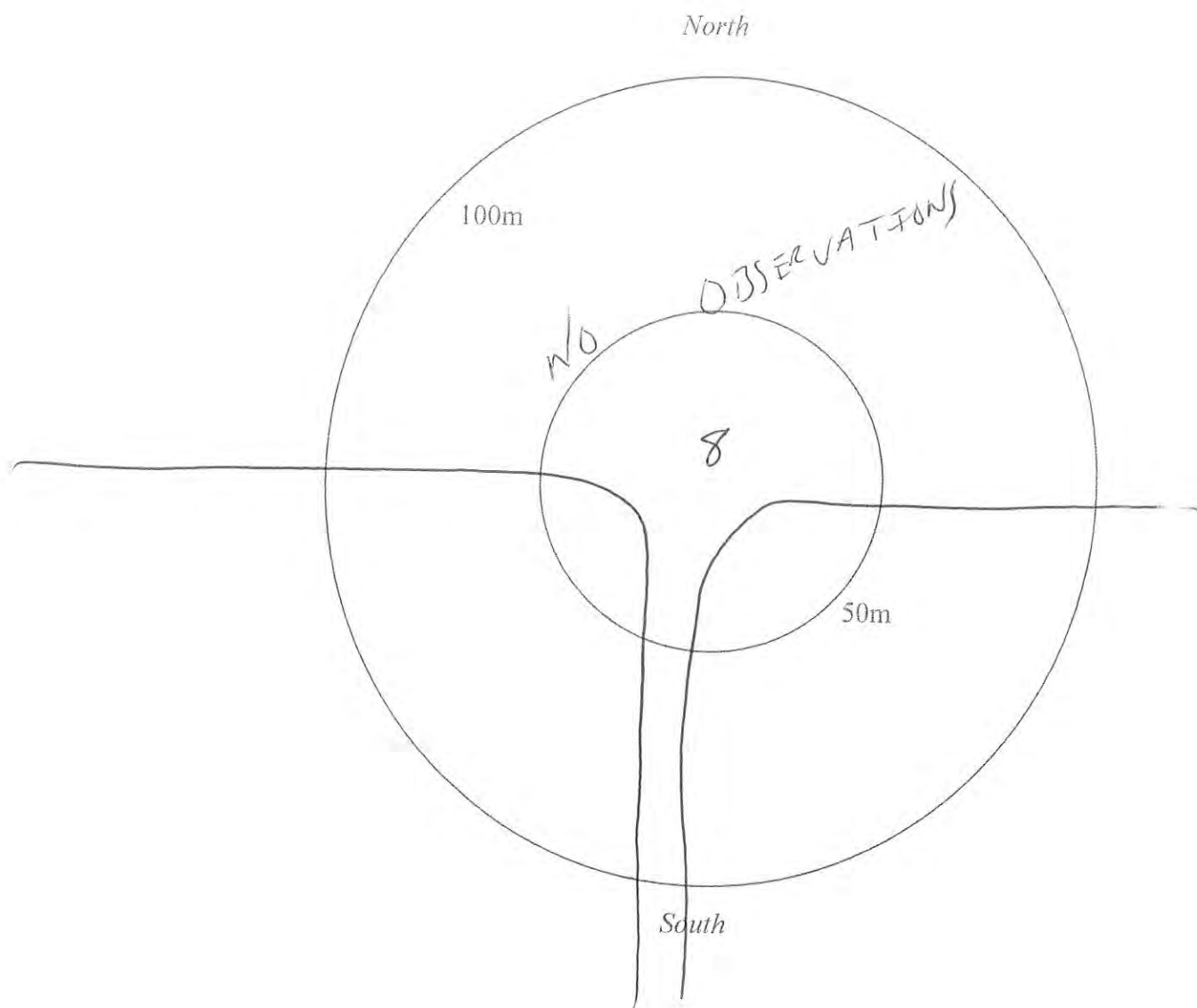
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 8 Observer Initials: JRB Sky: p/c Temp: (F) 58

Estimated Average Wind Speed: (MPH) 0-1 Wind Direction: E

Date (month/day/year): 11 / 30 / 14 Start Time 10 : 00 End Time 10 : 11

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID:

8

Date (month/day/ year): 11 / 30 / 14

11/30/14

OBSERVATIONS

20

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

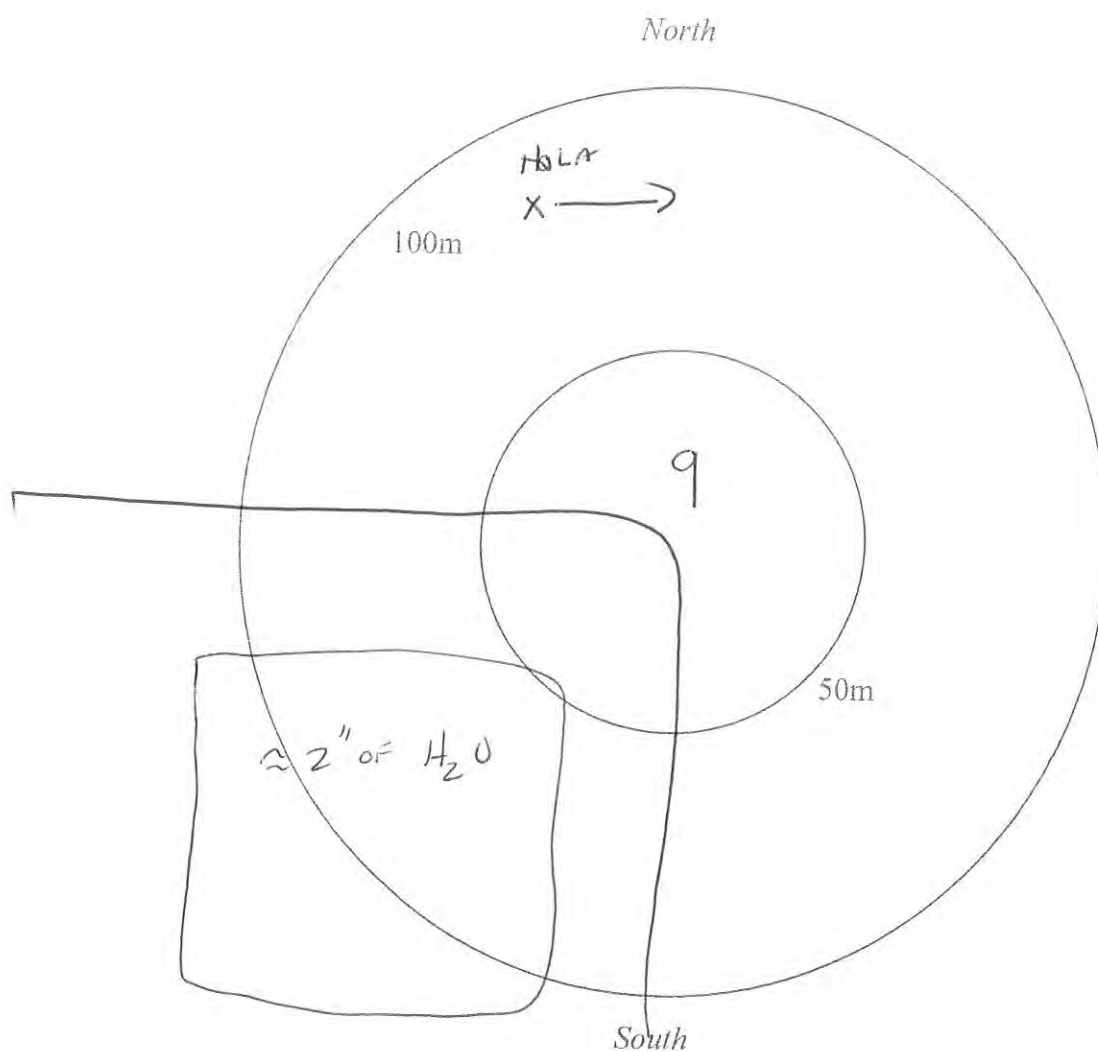
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 9 Observer Initials: JRS Sky: p/c Temp: (F) 52

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11 / 30 / 14 Start Time 10:15 End Time 10:20

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 9 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

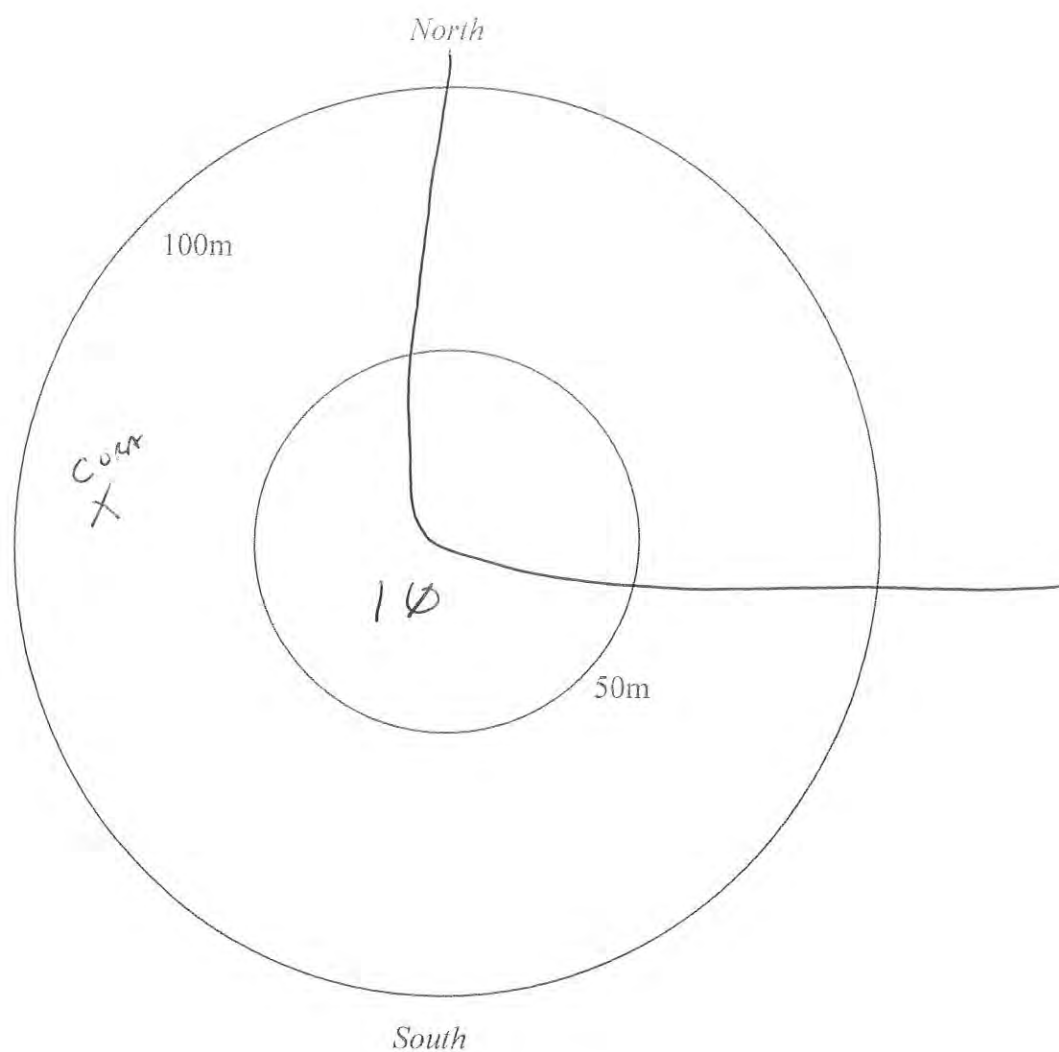
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 10 Observer Initials: JRB Sky: P/C Temp: (F) 54

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/ year): 1/ 30 / 14 Start Time 10 : 40 End Time 10 : 45

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: _____ Date (month/day/ year): ____/____/____

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

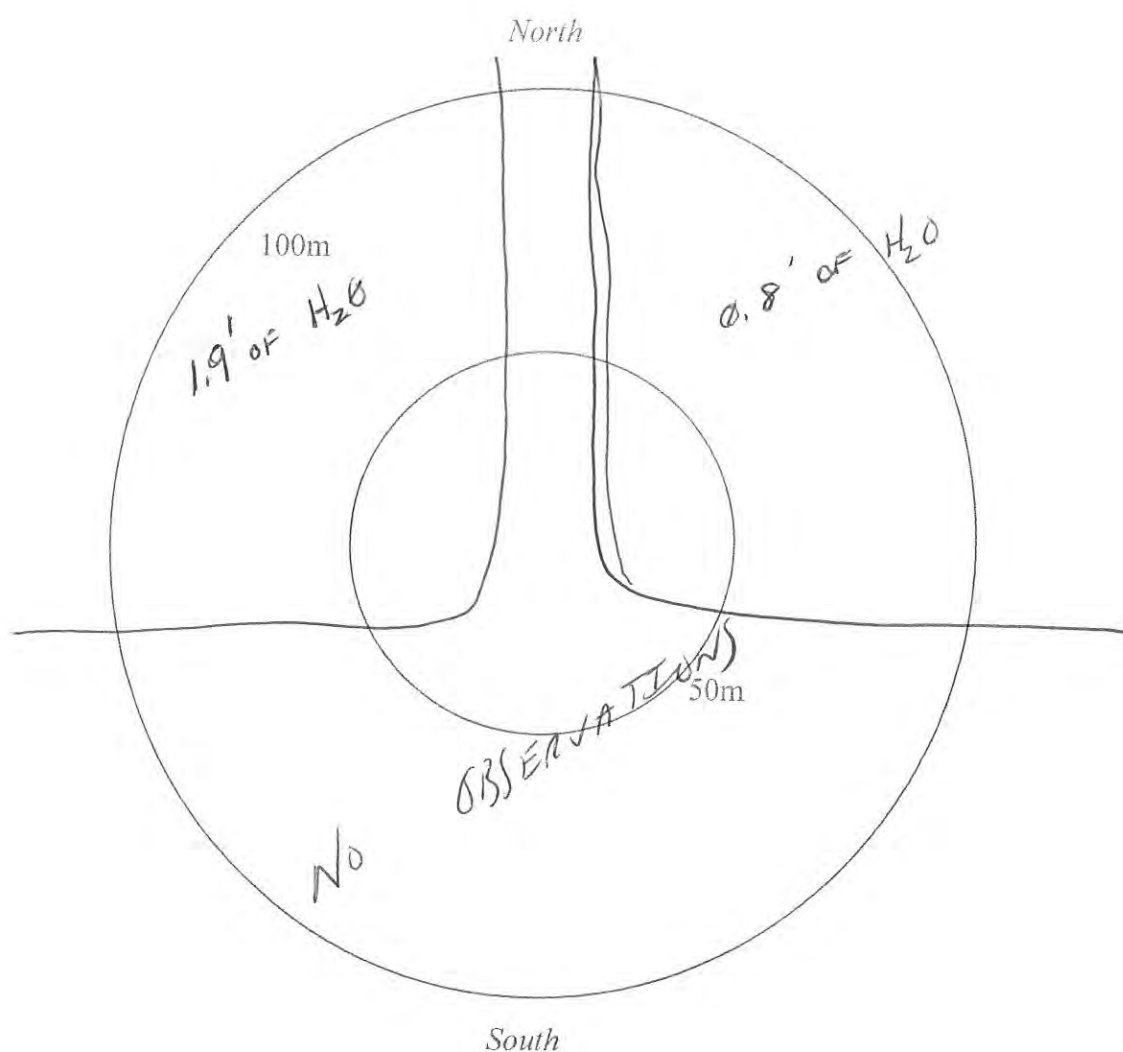
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 11 Observer Initials: JLB Sky: P/C Temp: (F) 53

Estimated Average Wind Speed: (MPH) 8-1 Wind Direction: E

Date (month/day/year): 11 / 30 / 14 Start Time 10:32 End Time 10:37

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 11 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

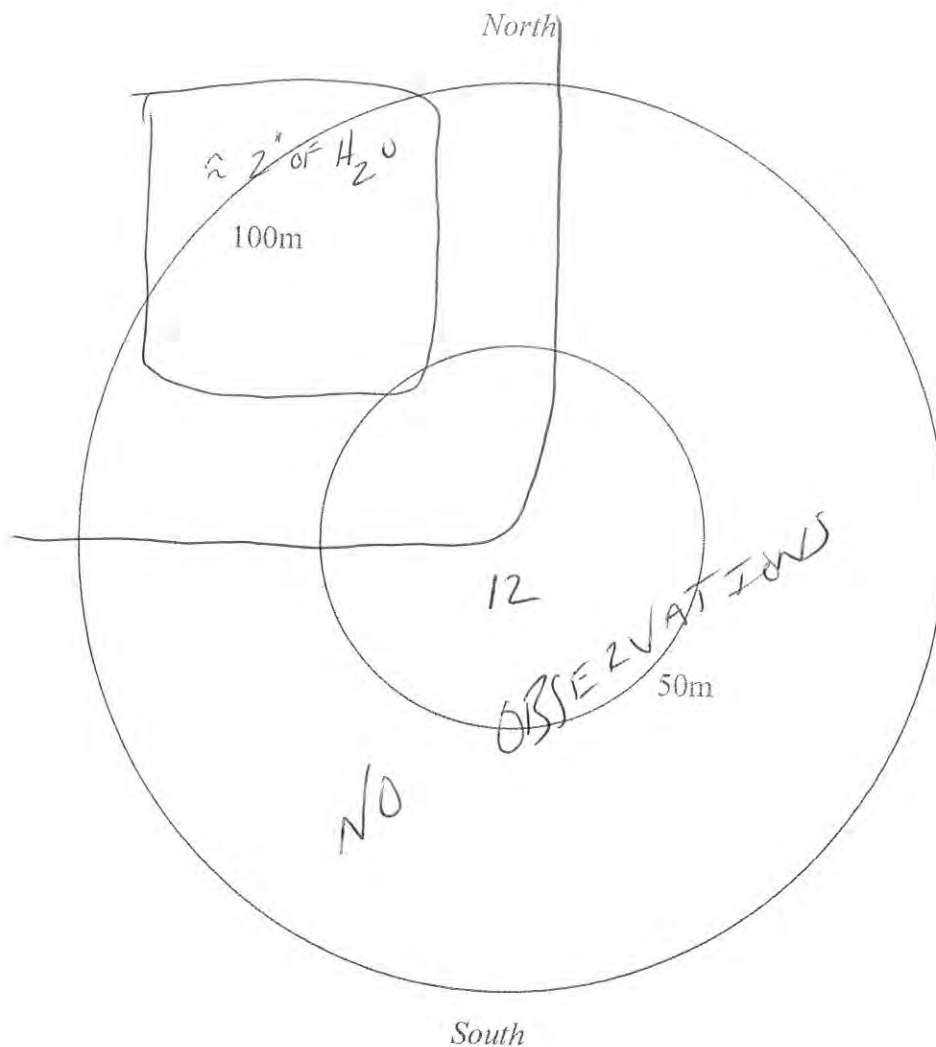
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 1Z Observer Initials: JRG Sky: P/C Temp: (F) 52

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/A

Date (month/day/year): 11/30/14 Start Time 16:24 End Time 16:29

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 12 Date (month/day/ year): / /

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

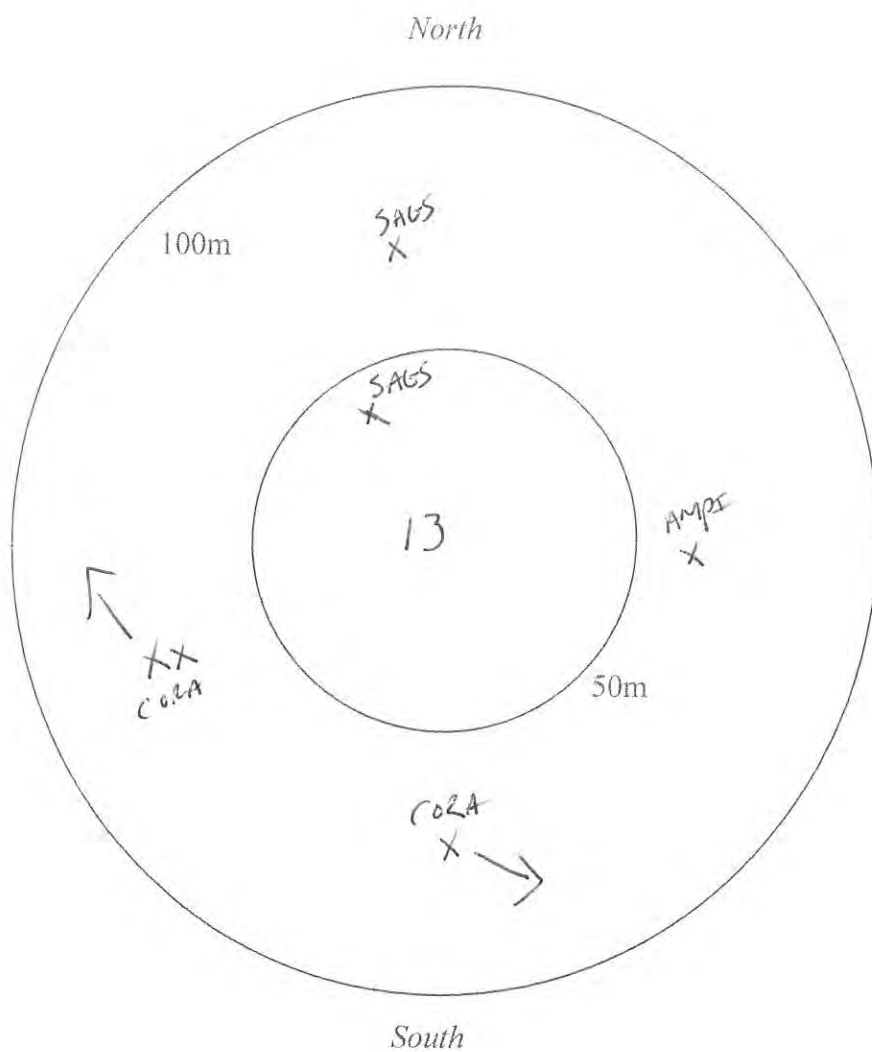
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 13 Observer Initials: JRB Sky: p/c Temp: (F) 47

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/r

Date (month/day/ year): 11 ~~07~~ / 30 / 14 Start Time 07:31 End Time 07:36

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID:

Date (month/day/ year): 11/30/14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

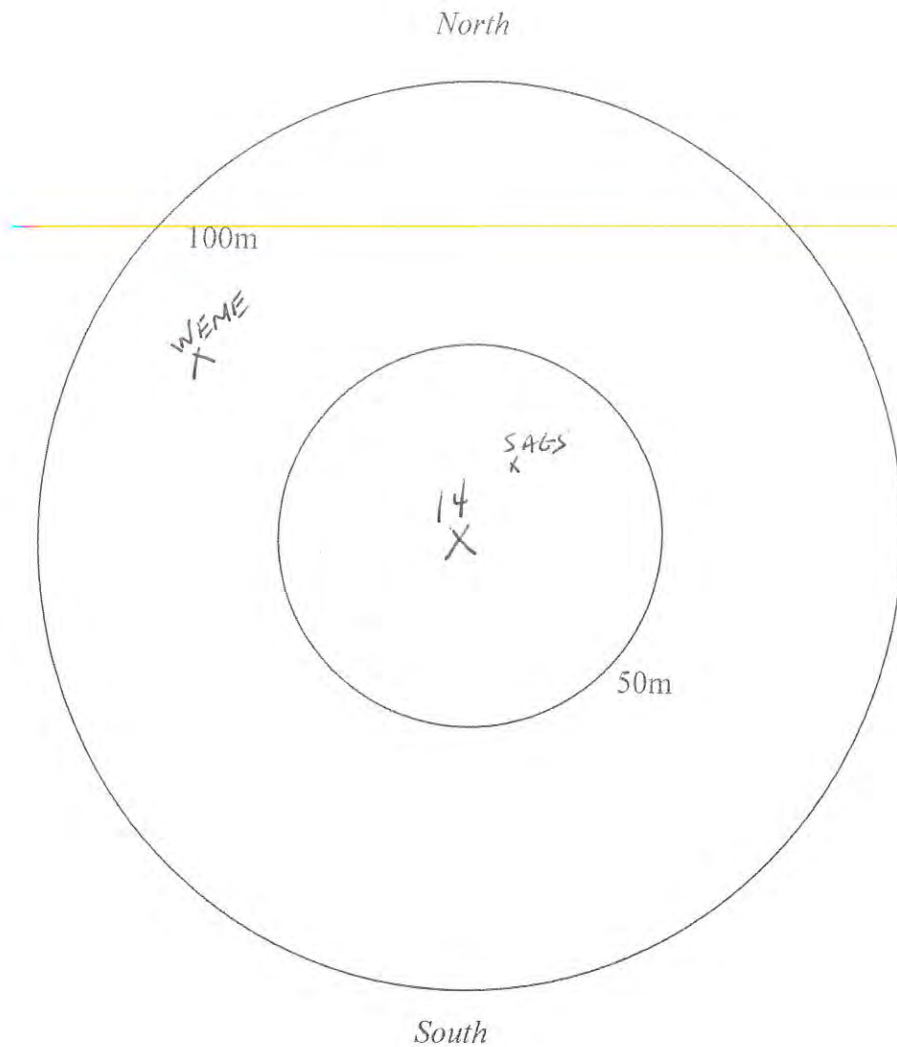
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 14 Observer Initials: JRB Sky: 9/1 Temp: (F) 46

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/N

Date (month/day/ year): 11 / 30 / 14 Start Time 07:22 End Time 07:27

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID:

14

Date (month/day/ year):

ii

1

01

14

Species

WEME

JAL

Individuals

1

1

Pythougen

Flyover

Behavior Observed

PELTING	CALLING
---------	---------

PERCUTING

Evap
Pond *

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

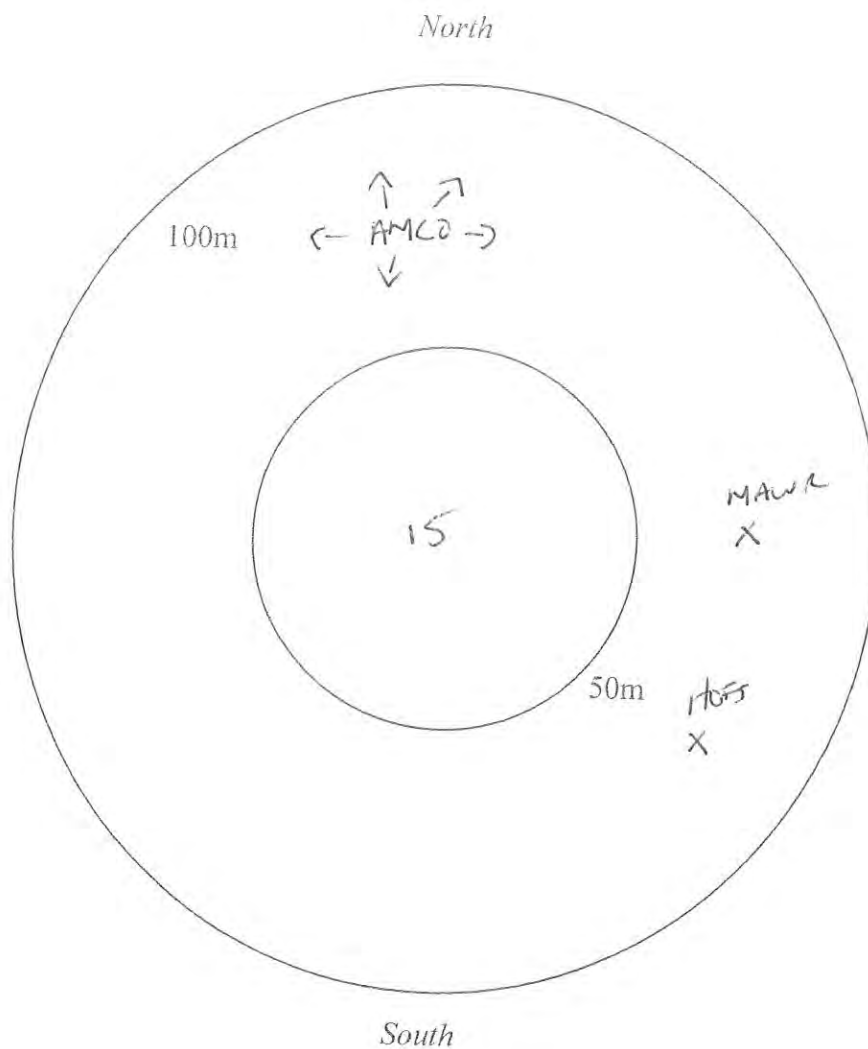
Avian Point Count Data Sheet – Mojave Solar Project

Point ID: 15 Observer Initials: JRB Sky: P/C Temp: (F) 45

Estimated Average Wind Speed: (MPH) 0 Wind Direction: N/E

Date (month/day/ year): 11 / 30 / 14 Start Time 07:10 End Time 07:15

Monitoring Purpose - Daily Deterrent [DD] or Bi-Weekly [BW]: DD



Notes _____

Point ID: 15 Date (month/day/ year): 11 / 30 / 14

[illegible]

* Evaporation Pond codes: AE-E, AE-W, BW-E, BW-W

**Appendix C
Cultural Resources**

**Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California**

November 2014 Reporting Period



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December 8, 2014

Mr. Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Abengoa Mojave Solar Project (09-AFC-5C)
Monthly Compliance Report CUL-1 and CUL-6

Dear Mr. Rundquist:

CH2M HILL is assisting Abengoa Solar LLC. (Abengoa) in complying with California Energy Commission (CEC) Conditions of Certification, specifically, CUL-1 and CUL-6, for cultural resource monitoring, as set forth in the Commission Decision for the Mojave Solar Project (MSP). This report covers the cultural resources monitoring conducted from November 1, 2014 through November 30, 2014, by CH2M HILL.

Personnel Active in Cultural Monitoring This Period

The Cultural Resources Monitor (CRM) was Sonia Sifuentes and the Native American Monitor (NAM) was David Perezchica. The monitoring program was directed by the Cultural Resource Specialists (CRS), Gloriella Cardenas and John Dietler, and the Alternate CRS, Phillip Reid.

Monitoring and Associated Activities This Period

Ground-disturbing activities subject to cultural resource monitoring during this reporting period included conduit excavations and rework, fire hydrant removal and installation, and sidewalk excavations in Beta Power Block. In Alpha Power Block, monitored activities included grading for vaults, guard shack foundation excavation, fire hydrant installation, trenching for grounding well boxes, excavation for bollards, and excavation for a stair landing. In addition to the scheduled activities, a cultural crew also assessed hazardous material spill cleanups throughout project site.

Cultural Resources Discoveries This Period

None.

Anticipated Changes in the Next Period

Monitoring will continue for various small excavations such as foundations, electrical trenching, drainages, and other activities. A cultural monitoring crew will remain onsite to continue monitoring and to respond to discoveries if they occur.

Comments, Issues or Concerns

Non-Compliance Reports

A non-compliance issue was discovered on November 21, 2014. The cultural monitoring crew observed a hazardous spill cleanup location that had been excavated and backfilled before it had been inspected and cleared by the monitors. This was out of compliance with established project protocols, including CUL-2 and CUL-6. Non-compliance report (NCR) No. 15 was issued on November 22, 2014.

Non-Compliance Resolutions

Resolutions for NCR. No. 15 were completed with supporting documents submitted to the CRS on December 2, 2014. The resolution report along with the Contractor's documents are included as Attachment 1 to this Monthly Compliance Report.

Outstanding

NCR. No. 11 was issued on August 21, 2014. Per direction of the CEC CPM, the recommended resolutions were revised on August 22, 2014. The CEC requested to review the modified resolutions prior to re-issuance to the Project Owner. Formal re-submittal of the NCR with revised resolutions is pending CEC CPM and Staff Archaeologist review and concurrence.

Sincerely,

A handwritten signature in black ink, appearing to read "John Dietler". The signature is fluid and cursive, with a long horizontal stroke at the end.

John Dietler, Ph.D., RPA
SWCA Environmental Consultants
Cultural Resources Specialist

Attachment 1: NCR No.15 Documentation Submittals

Attachment 1
NCR No. 15 Documentation Submittals

ABENGOA SOLAR LLC

Non-Compliance Resolution Report

Project: Mojave Solar Project	Reference: CUL NCR-15
Date: 11/21/2014 (issued)	
Affected Area: CEC Permit COCs CUL-2, CUL-6	
Description of the problem: From CUL NCR-15: Per communication between CEC and Abengoa, minor HTF (heat transfer fluid) spills are cleaned up as they occur for health and safety reasons. A list of spills is sent by Abengoa Health & Safety to the CRS and DB so the areas can be examined for cultural and biological issues before they are backfilled. This list is passed on by the CRS and DB to the onsite monitors as it is received. These areas are then examined by cultural and biological monitors and released for backfilling by Abeinsa, who is responsible for all cleanup activities at MPS. While on standby in the morning of November 21, 2014, the CRM and NAM searched for spill cleanup 103 in Alpha West. After getting a laborer to walk them to the location, the monitors discovered that the excavation was backfilled before it was given clearance. According to the laborer, the area of excavation was approximately 2 ft. wide and 1.5 ft. deep. It then staked with green flagging tape during the cleanup, but no such markers were in place as of the morning of the 21st. The laydown yard where the spill occurred belongs to Abengoa Solar. The CRM and NAM were told by Abengoa Health & Safety personnel that a tractor was in the yard working a few days prior to the 21st. Both CRS John Dietler and alternate CRS Phillip Reid were contacted about the situation. Photographs of the area were taken on November 21st. Because spill had been backfilled and the CRM was unable to determine if any impacts to cultural resources had occurred. Although the likelihood for impacts to cultural resources is considered to be minimal, whether or not an impact occurred cannot be determined due to the lack of CRM oversight. Because failure to notify the CRS of ground disturbing activities is a non-compliance issue per CUL-2, and conducting ground disturbance of native sediments without cultural monitoring is a non-compliance issue per CUL-6, this NCR was issued. Additionally, this is the Contractor's fourth non-compliance incident regarding failure to obtain cultural monitors for ground disturbing activities in conjunction with failure to notify the CRS of an excavation (backfilling; see NCR 6, 7, and 9).	
Requires preventive action: No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	
IRP No:	Date: 12/2/2014
IRP Coordinator: Kathleen Sullivan	
Root Cause:	
Miscommunication between AEPC and ASI Operations staff. Need for spill notification and excavation protocol training for ASIO staff.	
Corrective Action: Training and Improved Coordination	
IRP Coordinator: Kathleen Sullivan	Date: 12/2/2014

ABENGOA SOLAR LLC

Comment:

After review with the CRS, it was learned that this was actually spill 105, an approximately 2.5-gallon spill of hydraulic fluid from a crane in Abengoa Solar's equipment storage yard near the Alpha West trailer complex, that was detected on 11/18/2014. AEPC was contacted upon detection of the spill and a crew dispatched to excavate the soil, containerize it, and move it to the storage area near the TAB pending proper offsite disposal. ASI Operations moved the crane for spill cleanup and placed containment under the leaking part. This was the first spill involving ASI Operations staff and they had no prior experience dealing with spills on the site. Cones were placed by AEPC's crew around the excavation. Since ASIO staff were unfamiliar with spill protocol, the hole only appeared to be a safety hazard. They asked an AEPC staff member if they could fill it, and were told it was OK to fill. In hindsight, the person was not the correct point of contact for this question and may not have understood the implications or had the authority to advise ASIO regarding backfilling the hole.

As a result of this incident, during the 12/2/2014 Safety Briefings with ASIO staff, training was provided on permit requirements related to all excavations, in particular, spill handling (see attachment). The ASIO staff involved repeated WEAP training.

An ASIO Maintenance Supervisor is forming a spill team to be trained by and coordinate with AEPC's team regarding the protocol for notification and handling spills while ground disturbance is ongoing.

Attachments : Crew Meeting Sign-in sheet for 12/2/2014

NCR Coordinator:
Kathleen Sullivan

Position: Quality & Environmental Manager
Signature of Coordinator:

NCR Supervisor:
Nicholas Potrovitza

Position: Plant Manager
Signature of Supervisor:

Sign-in Log/Training Register

Date: 12 02 2014

Start Time: 07 00

End Time: 07 30

Location /Project: Mojave Solar

Instructor/s: John Sandridge

Topic/s:

Excavation and backfilling requirements for spills

Delivered materials:

Participants

No.	Full name	Signature	Department/Company
1.	Babak Bazei	Babak Bazei	ISC
2.	Mark Hamman	Mark Hamman	ISC
3.	Robert Koupeny	Robert Koupeny	Maint
4.	Danup Muneo	Danup Muneo	Maint / Abengoa
5.	Rico Thompson	Rico Thompson	SFO
6.	Drue Packer	Drue Packer	MAINT
7.	Scott Beards	Scott Beards	sq/ops
8.	TONY ROSSMAN	TONY ROSSMAN	Eg of
9.	Glenn Bazei	Glenn Bazei	maint
10.	Rick Hoyt	Rick Hoyt	MAINT
11.	Grusbel Rivera tito	Grusbel Rivera tito	SF
12.	Kevin Lambeth	Kevin Lambeth	maint
13.	Gary Barden	Gary Barden	maint
14.	Ray Delaney	Ray Delaney	maint
15.	Angelo Perea	Angelo Perea	maint ISC
16.	FERNANDO PEREZ	FERNANDO PEREZ	ISC
17.	John Sandridge	John Sandridge	Maint
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

Appendix D
Paleontological Resources

Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California

November 2014 Reporting Period



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www.swca.com

Mr. Dale Rundquist, CPM
(09-AFC-5C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814

December 5, 2014

RE: PAL-5, Summary of Paleontological Monitoring and Mitigation Activities at
the Mojave Solar Project (MSP) for the period of November 2014

Dear Mr. Rundquist:

This letter is to confirm SWCA Environmental Consultants paleontological monitoring and mitigation activities at the MSP site during the period of November 1 through November 30, 2014. As of February 28, 2014, major ground-disturbing activities for the MSP had been completed and SWCA's monitoring services were no longer required onsite. No paleontological monitoring occurred during the above-referenced period.

It has been a pleasure working with you on this project. If you have any questions please do not hesitate to contact me at 626 240 0587 ext 6605 or at ccorsetti@swca.com.

Respectfully,

A handwritten signature in black ink, appearing to read "Cara Corsetti".

Cara Corsetti, M.S.
Principal
Paleontological Resources Specialist, MSP

**Appendix E
Worker Safety**

**Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California**

November 2014 Reporting Period

Monthly Safety Report

Larry Davis, Mojave Solar Project Safety Manager
November, 2014

Record of all employees trained for the month

Worked **6,264,702** hours project to date with **86** recordable incidents. **9,492** new employee orientations completed to date. **7,139** visitor safety orientations completed to date. **34** new employee orientations were completed in the month of November.

Summary report of safety management actions and safety-related incidents that occurred:

- **Alpha West/Abengoa parking area secured by H&S, keys turned over to Nicholas P.**
- **All personal vehicles will be excluded from both power blocks effective Monday, 10/6/14. Vehicle stickers for Abengoa personnel have been turned over to Nicholas P. for distribution.**
- **Trash control efforts have been evaluated and more concentrated efforts are being applied to the Alpha and Beta power blocks.**
- **Light level measurements continue to be taken on night shift to ensure compliance for OSHA standards.**
- **H&S continues to audit H&S incidents and injuries including follow up corrective actions.**

Safety management actions included WEAP and new employee orientation training and safety committee meetings. H&S continues with monthly subcontractor audits. Weekly inspection with Bureau Veritas revealed no major safety issues and all other issues corrected right away. Zero off road violations were reported to site biologist/CEC for the month of November 2014.

Report of accidents and injuries that occurred during the month of November:

One Recordable was incurred in the month of November 2014, one RWDC.

Case #1: 11/15/2014 – Abacus, Lumbar strain; Classified as RWDC

- **Worker was carrying 2-5 gallon buckets with material and felt pain to his back.**

No report of any continuing or unresolved situations and incidents that may pose danger to life or health.

Currently we have an average of **354** employees on site daily.
Landing Zone prepared for emergency evacuation cleared at all times.

Construction has worked **6,264,702** hours with **86** recordable cases.
Total Recordable Incident Rate, (TRIR), for Project in the month of October is **2.10%**
Total Recordable Incident Rate, (TRIR), for year to date is **2.90%**
Total Recordable Incident Rate, (TRIR), for Project to date is **2.75%**
Total Lost Work day cases- **15**, Lost Work days total – **1,097**

**Appendix F
Engineering**

**Soil & Water
Waste
General Conditions
Civil
Structural
Mechanical
Electrical
Transmission System**

**Mojave Solar Project
Monthly Compliance Report
San Bernardino County, California**

November 2014 Reporting Period

ABENER TEYMA MOJAVE

13911 Park Avenue, Suite 208
Victorville, CA 92392
Phone: 480-287-1419

Subject:	Mojave Solar Project (09-AFC-5C)
Condition No.:	Compliance5
Description:	Monthly Compliance Matrix
Submittal No.:	COMPLIANCE5-00-00

December 9, 2014
Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

As required by the California Energy Commission and more specifically by Condition of Certification COMPLIANCE5, attached please find an update to the following Compliances:

COMPLIANCE-2 [ASI + A/T]

The project owner shall maintain project files on-site or at an alternative site approved by the CPM for the life of the project, unless a lesser period of time is specified by the Conditions of Certification. The files shall contain copies of all "as-built" drawings, documents submitted as verification for Conditions, and other project-related documents. Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this Condition.

Hardcopy files of all "as-built" drawings and documents are available for review at the Abeinsa EPC Alpha west main site trailer.

COMPLIANCE-5 [ASI + A/T]

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all Conditions of Certification in a spreadsheet format. The compliance matrix must identify:

1. The technical area;

2. The Condition number;
 3. A brief description of the verification action or submittal required by the Condition;
 4. The date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
 5. The expected or actual submittal date;
 6. The date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable; and
 7. The compliance status of each Condition, e.g., "not started," "in progress" or "completed" (include the date).
 8. If the Condition was amended, the date of the amendment.
- Satisfied Conditions shall be placed at the end of the matrix.

The Compliance Matrix has been included, please see attachment.

COMPLIANCE-6 [ASI + A/T]

The first Monthly Compliance Report is due one month following the Energy Commission business meeting date upon which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List found at the end of this section of the Decision.

The Key Events list has been included with current completed activity dates listed, please see attachment. This letter satisfies this compliance as well.

AIR QUALITY PERMIT

Air Quality permit amendment was submitted to MDAQMD on 10/19/2013. MDAQMD approved on 02/24/2014. MDAQMD submitted this approval to the CPM on 02/24/2014, MDAQMD submitted revised ATC to CPM on 03/14/2014. CPM provided revised conditions of certification on 03/21/2014. CPM staff review and public comment period took place on 04/22/2014, CEC approved air quality permit revision. CEC issued revised air quality permits on 04/28/2014.

AQ-12

Specifications for the Ullage Venting System were approved by CPM on 06/10/2014 and MDAQMD on 05/28/2014.

AQ-25

Approval of the TDS Meter specifications and calibration results submitted to MDAQMD and CEC on 10/31/2014, CEC approved on 11/05/2014, please see attachment.

ABENER TEYMA MOJAVE

13911 Park Avenue, Suite 208
Victorville, CA 92392
Phone: 480-287-1419

AQ-32

Hour meter for diesel fuel emergency backup generator submitted to CPM and MDAQMD on 05/20/2014.

AQ-43

Hour meter for diesel fuel emergency backup generator for fire pumps submitted to CPM and MDAQMD on 04/20/2014.

AQ-54

The project owner shall notify the District at least 10 days prior to performing the required tests. The test results shall be submitted to the District within 30 days of completion of the tests and shall be made available to the CPM if requested. Vapor Recovery system installation and testing occurred on 09/04/2014. AQ-54-00-00 submitted to MDAQMD and CPM on 10/01/2014, please see attachment. MDAQMD added results to their files on 10/02/2014. CEC approved package on 11/13/2014, please see attachment.

AQ-64

Carbon Absorption System monitoring and change-out plan submitted to MDAQMD and CPM on 06/25/2014. Plan resubmitted to MDAQMD and CPM on 07/25/2014, MDAQMD approved on 08/06/2014. CPM approved on 09/05/2014.

AQ-67

AQ-67-00-00, Carbon Adsorption System VOC Monitoring procedure submitted to MDAQMD and CPM on 10/27/2014. MDAQMD issued non-objection on 10/30/2014, CEC approved on 11/13/2014, please see attachment.

HAZ-1 [ASI and A/T]

The project owner shall not use any hazardous materials not listed in Appendix A (Hazardous Materials Proposed for Use at AMS During Operations), below, or in greater quantities or strengths than those identified by chemical name in Appendix A (Hazardous Materials Proposed for Use at AMS During Operations), below, unless approved in advance by the Compliance Project Manager (CPM). The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility. **A revised chemical list is included, please see attachment. Diesel fuel and gasoline and the other listed chemicals were delivered during the month. No HTF deliveries were made for the month. The Nitrogen, Beck Oil (tickets), and spreadsheets for other chemical deliveries for November 2014 are included, please see attachments.**

HAZ-2 [ASI and A/T]

At least 60 days prior to receiving any hazardous material on the site for commissioning or operations, the project owner shall provide a copy of a final Hazardous Materials Business Plan (HMBP), Spill Prevention, Control, and Countermeasure (SPCC) Plan, and a Process Safety Management (PSM) Plan to the CPM for approval.

The HMBP was submitted to the CPM and San Bernardino Fire Department on 07/23/2013. The CPM and SBCFD Haz Mat Division approved the HMBP on 08/01/2013 and 10/09/2013 respectively. The SPCC and PSM plans were submitted to the CPM on 10/29/2013, and SBCFD Haz Mat Division on 11/01/2013. The plans were approved by SBC Haz Mat Division as they stated that their only requirement is to have a copy of the SPCC on file at the site should a representative visit. The SPCC was approved by CPM on 11/25/2013. The PSM plan was returned with comments on 12/09/2013. Revised PSM plan, PHA, LOPA and O&M Manuals were resubmitted to the CPM on 01/29/2014, CEC approved on 02/10/2014. The HTF End Loop Testing procedure was submitted to the CPM on 01/17/2014, CPM approved on 01/27/2014. SBCFD provided comments to the SPCC on 02/13/2014. Comments were addressed and submitted to CPM on 02/28/2014, please see attachment. CPM comments for the PSM plan were addressed and submitted to CPM on 01/27/2014. CPM approved PSM plan on 02/10/2014, please see attachment. HMBP was resubmitted on 03/26/2014 to include the hydrogen and CO2 for the turbine cooling system, CEC approved on 04/16/2014, please see attachments. Submittal for steam generator chemical pipe cleaning procedure submitted to CPM on 04/23/2014. Location map showing storage locations of chemical pipe cleaning chemicals submitted to CPM on 04/25/2014, please see attachments. Conditional approval of Chemical Pipe Cleaning process approved by CEC on 04/29/2014. SBC permit to place baker tanks in Harper Lake Road right-of-way for the chemical pipe cleaning submitted to SBC on 03/17/2014, SBC approval on 03/20/2014. HAZ-2-04-00, the revised Hazardous Materials Business Plan (HMBP) was submitted to CPM on 05/01/2014, CPM approved 05/02/2014. HAZ-2-07-00, the revised Hazardous Materials Business Plan (HMBP) was submitted on 07/11/2014 and approved by the CPM on 08/21/2014.

WASTE-2 [ASI and A/T]

Project owner shall keep a copy of the identification number on file at the project site and provide documentation of the hazardous waste generation notification and receipt of the number to the CPM after receipt of the number. Waste generator number issued by California EPA on September 28, 2012. CEC reviewed and approved submittal on November 27, 2012. The application for the USEPA hazardous waste generation notification number was submitted on July 9, 2013. EPA approval issued on 10/02/2013.

WASTE-10 [ASI and A/T]

The project owner shall document all releases and spills of HTF as described in Condition of Certification **WASTE-9** and as required in the **Soil & Water Resources** section of this Decision. Cleanup and temporary staging of HTF-contaminated soils shall be conducted in accordance with the approved Operation Waste Management Plan required in Condition of Certification of **WASTE-6**. The project owner shall sample HTF-contaminated soil in accordance with the United States Environmental Protection Agency's (USEPA) current version of "Test Methods for Evaluating Solid Waste" (SW-846). Samples shall be analyzed in accordance with USEPA Method 1625B or other method to be reviewed and approved by DTSC and the CPM.

Within 28 days of an HTF spill the project owner shall provide the results of the analyses and their assessment of whether the HTF-contaminated soil is considered hazardous or non-hazardous to DTSC and the CPM for review and approval. If DTSC and the CPM determine the HTF-contaminated soil is considered hazardous it shall be disposed of in accordance with California Health and Safety Code (HSC) Section 25203 and procedures outlined in the approved Operation Waste Management Plan required in Condition of Certification **WASTE-9** and reported to the CPM in accordance with Condition of Certification **WASTE-12**. If DTSC and the CPM determine the HTF-contaminated soil is considered nonhazardous it shall be retained in the land farm and treated on-site in accordance with the Waste Discharge Requirements contained in the **Soil & Water Resources** section of this Decision.

The HTF contaminated soil samples have been submitted to a testing lab. Lab results submitted to the CPM on 04/25/2014 and to DTSC on 05/09/2014. CPM approved on 05/22/2014 and DTSC on 05/09/2014. HTF contaminated soil sample lab results resubmitted to CEC after testing for biphenyl and diphenyl on 07/09/2014, CPM approved on 08/04/2014. **A hazardous spill report summary and the spill reports for November 2014 have been provided, please see attachments. WASTE-10-07-01 for the Waste Characterization of the HTF contaminated soil was submitted to DTSC and CPM on 10/28/2014. Still no answer from DTSC to date. WASTE-10-08-00 for CEC request to extend HTF contaminated soil on site holding time an additional 30 days was submitted to the CEC on 10/27/2014, CEC approved request on 11/20/2014, please see attachments. WASTE-10-08-00 amendment to extend holding time until DTSC provided an answer to WASTE-10-07-01 was submitted to CEC on 11/20/2014, request approved by CEC on 11/20/2014, please see attachments.**

WASTE-11 [ASI and A/T]

The project owner shall ensure that the cooling tower basin sludge is tested pursuant to Title 22, California Code of Regulations, and section 66262.10 and report the findings to the CPM. The handling, testing, and disposal methods for sludge shall be identified in the Operation Waste Management Plan required in Condition of Certification

WASTE-9. The project owner shall report the results of filter cake testing to the CPM within 30 days of sampling. If two consecutive tests show that the sludge is non-hazardous, the project owner may apply to the CPM to discontinue testing. The test results and method and location of sludge disposal shall also be reported in the Annual Compliance Report required in Condition of Certification WASTE-9. **WASTE-11-01-00 Submittal for filter cake testing for Alpha WTP submitted to CPM on 11/17/2014, please see attachment.**

WORKER SAFETY-1

The project owner shall submit to the Compliance Project Manager (CPM) a copy of the Project Construction Safety and Health Program containing the following:

- A Construction Personal Protective Equipment Program;
- A Construction Exposure Monitoring Program;
- A Construction Injury and Illness Prevention Program;
- A Construction heat stress protection plan that implements and expands on existing Cal OSHA regulations as found in 8 CCR 3395;
- A Construction Emergency Action Plan; and
- A Construction Fire Prevention Plan.

The Personal Protective Equipment Program, the Exposure Monitoring Program, the Heat Stress Protection Plan, and the Injury and Illness Prevention Program shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan and the Fire Prevention Plan shall be submitted to the San Bernardino County Fire Department (SBCFD) for review and comment prior to submittal to the CPM for approval. **Verification:** At least 30 days prior to the start of construction, the project owner shall submit to the SBCFD a copy of the Construction Fire Prevention Plan and Emergency Action Plan for review and comment and a copy of the Project Construction Safety and Health Program to the CPM for review and approval.

WKSF-01-03-00, Lightning Mitigation plans for TCO submitted to CPM on 11/07/2014, please see attachment. CPM returned with comments on 11/12/2014, WKSF-01-03-01 Submitted to CPM on 11/13/2014, CPM approved on 11/14/2014, please see attachments.

WKSF-01-04-00, Lighting Mitigation plans for TCO submitted to CPM on 11/07/2014, please see attachment. CPM returned with comments on 11/12/2014, WKSF-01-04-01 Submitted to CPM on 11/13/2014, CPM approved on 11/14/2014, please see attachments.

WORKER SAFETY-2

At least 30 days prior to the start of commissioning, the project owner shall submit to the SBCFD the final Operations Fire Prevention Plan and Emergency Action for review and the final Project Operations and Maintenance Safety and Health Program to the CPM for approval.

Health & Safety, Fire Prevention and Emergency Response plans for operations submitted to SBCFD and CPM on 02/14/2014, please see attachments. SBCFD issued comments on 02/26/2014, comments addressed and resubmitted to CPM on 02/26/2014. CPM issued

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comments on 03/03/2014, package resubmitted on 03/05/2014, please see attachment. CPM approved package on 03/10/2014, please see attachment. CPM clarified its approval of this compliance on 03/25/2014. **WKSF-2-01-00 Emergency Response plan revision 2 to include the lightning mitigation plan submitted to CEC on 11/18/2014, please see attachment.**

SOIL&WATER-1

Provide an analysis on the effectiveness of the drainage, erosion, and sediment control measures and the results of monitoring and maintenance activities.

Please see the attached Construction Site Stormwater Runoff Control Inspection forms. The contractor reports as of November 30, 2014 that 0 lf (24,730 lf total for project) of straw rolls and 0 lf (16,219 lf total for project) of new swale have been installed for this month, maintenance required for this month included cleaning all waddles running north/south in Alpha East due to sand buildup. The existing fiber rolls and swales continued being monitored, maintained, and replaced as needed. These BMP's were effective in preventing sediment run off from the site. There are two concrete washout stations (1 in Alpha and 1 in Beta). Additionally, the steel rumble strips remain in place at the Alpha east main entrance (north), Alpha east (south) entrance, Alpha west entrance, and on Lockhart Road adjacent to the TAB main entrance. They were effective in preventing dirt and mud from being tracked from the site onto Harper Lake Road and Lockhart Road as well as an effective deterrent against the spreading of noxious weeds. The steel beams are continuously maintained to prevent clogging. Street sweeping of the construction entrances and Harper Lake Road and Lockhart Road is occurring on an as needed basis as a means of good housekeeping; it has improved and will continue to be the main activity to keep the streets free of dirt and mud, especially when high winds and storm events occur. Soil stabilizer wasn't used for this month on traffic areas as daily watering was an effective means for dust control. Project site areas for the month that have been stabilized are 0 acres for Alpha East (279.50 acres total), 0 acres in Alpha West (369 acres total), 0 acres in Beta East (502 acres total), and 0 acres in Beta West (102.50 acres total). No sand build-up was reported in the retention basins between collectors. Trash collection became an issue, as there were changes in personnel and a new crew was assigned to the task. It is now back on track and being taken care of daily. Notification to the subcontractors to clean up their own trash, especially any accumulating in the trenches, pipes and power block areas has been mentioned at the daily subcontractor meetings, especially now that trailers have been moved and accumulated trash underneath the trailers needed to be picked up. All site personnel have been instructed to not feed any on site wildlife, particularly coyotes, who have come onto the site looking for food. The DB should be contacted immediately should a coyote be spotted. Sand removal along tortoise fences was done daily. Please see attachments, which include the SWPPP Summary and weekly Construction Site Stormwater Runoff Control Inspection forms signed by the project QSP and the Bureau Veritas site inspector.

SOIL&WATER-2

The project owner shall comply with the Waste Discharge Requirements (WDRs) established in Soil and Water Resources Appendices C, D, and E for the construction and operation of the surface impoundments (evaporation ponds), land treatment units, and storm water management system. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with staff of the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"). It is the Commission's intent that these requirements be enforceable by both the Commission and the Water Boards. In furtherance of that objective, the Commission hereby delegates the enforcement of these requirements, and associated monitoring, inspection and annual fee collection authority, to the Water Boards. Accordingly, the Commission and the Water Board shall confer with each other and coordinate, as needed, in the enforcement of the requirements. The project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. In addition, the Water Boards may "prescribe" these requirements as waste discharge requirements pursuant to Water Code Section 13263 solely for the purposes of enforcement, monitoring, inspection, and the assessment of annual fees, consistent with Public Resources Code Section 25531, subdivision (c). No later than sixty (60) days prior to any wastewater or storm water discharge or use of land treatment units, the AMS project shall provide documentation to the CPM, with copies to the Lahontan RWQCB, demonstrating compliance with the WDRs established in Appendices C, D, and E. Any changes to the design, construction, or operation of the ponds, treatment units, or storm water system shall be requested in writing to the CPM, with copies to the Lahontan RWQCB, and approved by the CPM, in consultation with the Lahontan RWQCB, prior to initiation of any changes. The AMS project shall provide to the CPM, with copies to the Lahontan RWQCB, all monitoring reports required by the WDRs, and fully explain any violations, exceedances, enforcement actions, or corrective actions related to construction or operation of the ponds, treatment units, or storm water system. SWAT2-01-00, construction plans for the Evaporation ponds and LTU's were submitted to the CEC, Lahontan and CBO on June 6, 2013 and approved by all agencies on June 11, 2013. SWAT2-02-00, a modification to the LTU plans was submitted to the CEC and Lahontan on August 5, 2013, and an approval was issued on August 8, 2013. SWAT2-04-00 for a change in verification was requested by the CEC but AEPC suggested that any change will be covered by the closure compliances, COMPLIANCE-12, -13 and -14. The CEC responded on September 12, 2013 that they were in agreement. SWAT2-03-00, for the monitoring well system was submitted to the CEC and Lahontan the week of 10/28. Abeinsa EPC engineering staff is still coordinating with the CEC and Lahontan on the final design. Abeinsa EPC submitted a well plan for CEC review on 11/27/2013. CEC provided comments to the well plan on 12/17/2013. Revised well plan submitted to the CEC on 12/23/2013, CPM approved on 01/14/2014. DMP submitted to CEC on 06/03/2014. CEC provided comments, DMP resubmitted on 06/30/2014. SWAT-2-08-02 request to use Cooling Tower and pipe cleaning water for dust control submitted and approved on 06/17/2014. SWAT-2-06-01, Bioremediation Manual, was submitted to CPM on 06/20/2014. CPM approved SWAT-2-06-01 Bioremediation Manual on 07/02/2014. DMP, SWAT-2-09-05 resubmitted to CPM on 08/21/2014, CPM approved on 08/26/2014. SWAT-02-10-05 closure plans for the LTU's and Evaporation ponds approved by the CPM on 08/26/2014. CEC provided comments on the GMN portion of the combined DMP/GMN plan on 09/29/2014, package resubmitted to CPM on 10/27/2014, please see attachment. SWAT-2-11-00 request to use steam blow test water for dust control submitted on 09/30/2014, CPM approved on 10/02/2014, please see attachment. **Now that**

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evaporation ponds are operational, it is required to perform weekly pond inspections. Please see attached for the November 2014 weekly inspection forms for the Alpha and Beta evaporation ponds. **SWAT-2-03-00 Submittal for the monitoring well locations submitted to CPM on 08/14/2014 and approved on 11/20/2014, please see attachments. SWAT-2-12-00 for the DMP/GMN, rev 4 submitted to CPM on 10/27/2014, CPM approved on 11/13/2014, please see attachments. SWAT-2-13-00, request to CPM to use condensate water for dust control submitted to CPM on 11/20/2014, CPM approved on 11/24/2014, please see attachments.**

SOIL&WATER-4

Well abandonment status for remaining abandonments submitted to CPM on 09.06.12, As of 09.06.12, the CEC has approved all well abandonments with the exception of wells 11 and 14 (stuck pump wells). They require a wildlife survey in the area of the two wells to ensure that their habitats won't be disrupted with the use of explosives for the stuck pump wells. As of 10.13.2012, the well contractor was able to remove the pump from Well #11 by conventional means. However, Well #2 has now been determined as having a stuck pump and needing explosives to remove. The abandonment package was revised and resubmitted to the CEC on 10.22.2012. CEC has approved the use of explosives on Wells #2 and #14 as of October 31, 2012. As of March 5, 2013, the remaining wells to be abandoned are: Ryken and Wetlands. Wells #2 and #14 (by explosives) and 8, 10, 19, were abandoned during January 2013 but their well completion reports were finalized this month, please see attachments. Ryken and Wetlands wells were approved to be abandoned by SBC on May 7, 2013. Final abandonment was completed on May 17, 2013 and well completion reports were submitted to the CEC for approval. ASI and Abeinsa EPC have agreed on a new location of the Beta #4. An exhibit indicating final production well locations (including Beta #4) was provided to CPM on 11/27/2013. CPM responded asking for the well design by well contractor that will show a sealed upper layer which prevents any infiltration of the perched layer into the lower aquifer. Well contractor submitted a permit to SBC on 12/07/2013 but decision was made to go with a different contractor. New contractor submitted a permit for the Beta #4 well on 01/14/2014, SBC approved on 01/31/2014 based on the condition that Beta #1 be retrofitted as a monitoring well and the Beta #2 conductor casing be destroyed. The CPM further approved the use of Beta #1 for construction water while Beta #3 construction was completed. CPM approved the Beta #4 permit on 02/04/2014. A request to extend the discharge permit for well test water to the BLM marsh was submitted to CPM on 02/10/2014, CPM approved on 02/12/2014. Beta #4 well completion report submitted to CPM on 05/22/2014. SBC final well cards for Alpha #1 and #2, SWAT-4-14-00 and SWAT-4-15-00 respectively, provided by SBC on 09/02/2014, submitted to CPM on 09/30/2014, approved on 10/10/2014. **SWAT-04-13-01, contractor well certification letter submitted to CPM on 09/09/2014. SBC final well card for Beta #4, SWAT-4-12-00, provided by SBC, submitted to CPM on 09/04/2014. CEC approved SWAT-0-12-00 on 11/10/2014, please see attachment.**

SOIL&WATER-5

Beginning six (6) months after the start of construction, the project owner shall prepare a semi-annual summary report of the amount of water used for construction purposes. The

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summary shall include the monthly range and monthly average of daily water usage in gallons per day.

For November 2014, 4,541,000 gallons were pumped from Beta #4, 871,000 gallons from Alpha #2 (North), and 3,178,000 gallons from Alpha #1 (South). SBC used 28,000 gallons of water from the project for the month. The overall total site water usage for November 2014 is 8,590,000 gallons. The running total of water usage for construction/testing purposes from January 1, 2014 to November 30, 2014 is 52,951,451 gallons. To date, there have been 266 working days for 2014 which equates to 199,066 gal/day. This equates to 4,813,768 gal/month, please see attachments.

SOIL&WATER-6

The project owner shall do all of the following:

1. At least sixty (60) days prior to project construction, the project owner shall submit to the CPM, for review and approval, a comprehensive plan (Groundwater Level Monitoring and Reporting Plan) presenting all the data and information required in Item A above. The project owner shall submit to the both the CPM all calculations and assumptions made in development of the plan.
2. During project construction, the project owner shall submit to the CPM quarterly reports presenting all the data and information required in Item B above. The project owner shall submit to the CPM all calculations and assumptions made in development of the report data and interpretations.
3. No later than sixty (60) days after commencing project operation, the project owner shall provide to the CPM, for review and approval, documentation showing that any mitigation to private well owners during project construction was satisfied, based on the requirements of the property owner as determined by the CPM.
4. During project operation, the project owner shall submit to CPM, applicable quarterly, semi-annual, and annual reports presenting all the data and information required in Item C above. The project owner shall submit to the CPM all calculations and assumptions made in development of report data and interpretations, calculations, and assumptions used in development of any reports.
5. The project owner shall provide mitigation as described in Item D above, if the CPM's inspection of the monitoring information confirms project-induced changes to water levels and water level trends relative to measured preproject water levels, and well yield has been lowered by project pumping. The type and extent of mitigation shall be determined by the amount of water level decline and site-specific well construction and water use characteristics. The mitigation of impacts will be determined as set forth in Item D above.
6. No later than 30 days after CPM approval of the well drawdown analysis, the project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.
7. The project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.
8. If mitigation includes monetary compensation, the project owner shall provide documentation to the CPM that compensation payments have been made by March 31 of each year of project operation or, if a lump-sum payment is made, payment shall be made by March 31 of the following year. Within 30

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days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

9. After the first 5-year operational and monitoring period, and every subsequent 5-year period, the project owner shall submit a 5-year monitoring report to the CPM for review and approval. This report shall contain all monitoring data collected and provide a summary of the findings and a recommendation about whether the frequency of water level measurements should be revised or eliminated.

10. During the life of the project, the project owner shall provide to the CPM all monitoring reports, complaints, studies, and other relevant data within 10 days of being received by the project owner.

Fourth quarter water quality report submitted to CPM on 03/28/2014 CPM provided comments, report resubmitted on 04/25/2014. SWAT6-09-00 2014 Q2 Water Quality Report submitted to CPM on 09/04/2014. **CEC provided comments on the GMN portion of the combined DMP/GMN plan on 09/29/2014, since the DMP and GMN are now combined, the CEC required the package to be submitted under both compliances. SWAT-6-01-01, DMP/GMN, rev 4, resubmitted to CPM on 10/27/2014, CPM approved on 11/13/2014, please see attachments. CPM requested that since the plan was combined that a submittal under both SWAT-2 and SWAT-6 be done. SWAT-6-10-00, Q3 2014 Water Quality report submitted to CPM on 11/11/2014, please see attachment.**

SOIL&WATER-9

Prior to the start of construction of the sanitary waste system, the project owner shall submit to the County of San Bernardino for review and comment, and to the CPM for review and approval, plans for the construction and operation of the project's proposed sanitary waste septic system and leach field. These plans shall comply with the requirements set forth in County of San Bernardino Code Title 3, Division 3, Chapter 8 Waste Management, Article 5, Liquid Waste Disposal and Title 6, Division 3, Chapter 3, and the Uniform Plumbing Code. Project construction shall not proceed until the CPM has approved the plans. The project owner shall remain in compliance with the San Bernardino County code requirements for the life of the project.

The septic plans were submitted to CEC on 04/03/2012 for review and approval. CEC approved on 04/23/2012. Plans were resubmitted to SBC on 12/16/2013 to include the addition of the sanitary lift station, comments received regarding the addition and reason for the sanitary lift station, package resubmitted to SBC on 02/19/2014, SBC approved on 02/20/2014. Plans were submitted to CPM on 02/28/2014, CPM approved on 04/23/2014.

SOIL&WATER-10

The project owner shall obtain a permit to operate a nontransient, non-community water system with the County of San Bernardino at least sixty (60) days prior to commencement of construction at the site. The project owner shall supply updates annually for all monitoring requirements and submittals to County of San

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Bernardino related to the permit, and proof of annual renewal of the operating permit. To date, potable water system is not installed, thus no monitoring requirements are in effect.

Alpha #1 well permit issued by San Bernardino County on 01/10/2012.

Alpha #2 well permit issued by San Bernardino County on 01/10/2012.

Beta #3 well permit issued by San Bernardino County on 06/04/2012.

Non-transient, non-community water system submitted to SBC on 05/05/2014.

Non-transient, non-community water system resubmitted to SBC on 07/30/2014.

Non-transient, non-community water system resubmitted to SBC on 08/27/2014. SBC returned with comments on 09/24/2014, SBC has agreed to schedule an inspection for 01/08/2015.

GEN-2

Provide schedule updates in the monthly compliance report.

All engineering disciplines have submitted updated master drawing/spec lists. In addition, the latest construction schedule and equipment list has been provided. Please see attached copies.

CIVIL-1

At least 15 days (or project owner and CBO approved alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the CBO for design review and approval. In the next monthly compliance report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

STRUC-1

Submit to the CPM, in the next monthly compliance report, a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

Struc-1-80.00: Alpha & Beta Warehouse building plans submitted to CBO on 06/16/2014, CBO approved on 11/18/2014, please see attachment.

MECH-1

Send the CPM a copy of the transmittal letter.

MECH-2

Alpha & Beta Inspections for Compressed Air and Steam Boiler Systems from California Industrial Relations performed on 10/08/2014.

ECN-1

Send the CPM a copy of the transmittal letter in the next monthly compliance report.

ELEC-1

Send the CPM a copy of the transmittal letter in the next monthly compliance report.

Elec-1-48.02: Alpha & Beta Short Circuit Protective Device Coordination and Arc Flash Report for the solar fields submitted to CBO on 10/20/2014, CBO approved on 11/10/2014, please see attachment.

Elec-1-58.00: Alpha & Beta Single Line Diagram and Power plan for fire pump bldg. submitted to CBO on 10/29/2014, CBO approved on 11/11/2014, please see attachment.

NOISE-7

At least 15 days prior to the first steam blow, the project owner shall notify all residents and business owners within two miles of the project site. The notification may be in the form of letters, phone calls, fliers, or other effective means as approved by the CPM. The notification shall include a description of the purpose and nature of the steam blow(s), the planned schedule, expected sound levels, and explanation that it is a one-time activity and not part of normal plant operation. During steam blow activities, noise levels will be monitored at receptor locations LT-1, ST-1, and ST-2 and the results reported to the CPM.

First steam blow occurred on 08/29/2014 at Alpha power block. All Neighbors within 2 miles of the project site were notified 15 days prior to first steam blow by registered mail and by personal verbal notification. **Steam Blow Decibel Readings submitted to CPM on 10/21/2014, all readings were below the maximum noise level as specified in the compliance, please see attachment.**

TRANS-3 [A/T]

No later than two months after the end of construction activities, the applicant shall submit an analysis of the roadway pavement conditions to San Bernardino County and Caltrans for review and comment and to the CPM for review and approval. The review will include photographs, the visual analysis of pavement and sub-surface conditions, and a schedule for repair. After the repairs are completed, the project owner shall submit a letter to San Bernardino County, Caltrans, and the CPM indicating such repairs are finished and ready for inspection. **Harper Lake Road Restoration plans being reviewed by registered engineer. Plans to be submitted to SBC on 10/06/2014. Submittal to CPM on 09/23/2014 to request that a pavement analysis is no longer valid due to SBC grinding the surface until a**

new road is in place. CPM approved that a pavement analysis is no longer needed on 09/23/2014 because it will be covered by SBC/CALTRANS comments.

TRANS-5 [A/T]

The project owner shall not allow hazardous materials deliveries during non-daylight periods (during both construction and operation) to enhance safety at the rail crossing. A record of hazardous materials deliveries shall be provided to the CPM as required in **HAZ-3**.
Please see attached Beck Oil delivery lists.

TSE-1

Provide schedule updates in the MCR.
Please see attached Electrical Master List.

TSE-4

At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report. The following activities shall be reported in the Monthly Compliance Report:

- A. Receipt or delay of major electrical equipment;
Please see attached list of receipt of major electrical equipment.
- B. Testing or energization of major electrical equipment;
Please see attachments for electrical tests to date.
- C. The number of electrical drawings approved, submitted for approval, and still to be submitted.

Please see attached Electrical Master List.

TSE-5

At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agreed to by the project owner and CBO), the project owner shall submit to the CBO for approval:

- A. Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

- B. For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions" and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission

element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", NEC, applicable interconnection standards, and related industry standards.

C. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements TSE-5 a) through f) above. 7 Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

D. The Special Protection System (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.

E. A letter stating the mitigation measures or projects selected by the transmission owners for each reliability criteria violation are acceptable,

F. An Operational study report based on the expected or current COD from the California ISO and/or SCE, and

G. A copy of the executed LGIA signed by the California ISO and the project owner.

Submittal of project LGIA sent to CPM on 11/08/2013, CPM approved on 12/02/2013.

TSE-7

The project owner shall provide the following Notice to the California Independent System Operator (California ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the California ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the California ISO Outage Coordination Department.

The project owner shall provide copies of the California ISO letter to the CPM when it is sent to the California ISO one week prior to initial synchronization with the grid. The project owner shall contact the California ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the California ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time. TSE-07-00, 7 day advance synchronization notification letter to CAISO submitted to CAISO and CPM on 10/23/2014, please see attachment. Synchronization was delayed, another letter was submitted to CAISO and CPM on 10/31/2014. **TSE-07-00-00, 7 day advance synchronization notification letter to CAISO resubmitted to CPM on 11/07/2014, please see attachment. TSE-07-01-00, 1 day phone notification to CAISO of synchronization submitted to CPM on 11/19/2014, please see attachment.**

TLSN-3

The project owner shall file copies of the pre and post energization measurements within 60 days after completion of the measurements.

ABENER TEYMA MOJAVE

13911 Park Avenue, Suite 208
Victorville, CA 92392
Phone: 480-287-1419

Pre-energization results were sent to the CPM on 06/09/2014. CPM approved on 07/07/2014.

TLSN-5

The project owner shall ensure that all permanent metallic objects within the right-of-way of the project-related lines are grounded according to industry standards regardless of ownership.

At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this Condition.

Confirmation letter sent to the CPM on 11/06/2013, CPM approved on 11/07/2013.

VIS-1


Revised Surface Treatment Package was submitted to CPM on 04/14/2014. CPM approved plans on 05/16/2014. Colored photographs from Key Observation Points (KOP's) 1-7a submitted to CPM as required by this compliance on 10/29/2014, please see attachment. No date has been set for CPM and CEC visual staff inspection of color schemes on all above ground equipment, buildings and structures.

VIS-3

Permanent Lighting plans. Package was submitted to CPM on 05/05/2014. CPM approved plans on 05/05/2014.

Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,



Steven Pochmara
ABEINSA EPC
13911 Park Avenue, Suite 208
Victorville, CA 92392
Cell: (480) 287-1419

KEY EVENTS LIST

PROJECT: MOJAVE SOLAR PROJECT

DOCKET #: 09-AFC-5

COMPLIANCE PROJECT MANAGER: DALE RUNDQUIST

EVENT DESCRIPTION	DATE
Certification Date	09/2010
Obtain Site Control	
Online Date	12/2014
POWER PLANT SITE ACTIVITIES	
Start Site Mobilization	08/2011
Start Ground Disturbance	08/2011
Start Grading	08/2011
Start Construction	08/2011
Begin Pouring Major Foundation Concrete	09/2011
Begin Installation of Major Equipment	07/2012
Completion of Installation of Major Equipment	07/2014
First Combustion of Gas Turbine	N/A
Obtain Building Occupation Permit	
Start Commercial Operation	11/2014
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start T/L Construction	11/2012
Synchronization with Grid and Interconnection	11/2014
Complete T/L Construction	02/2013
FUEL SUPPLY LINE ACTIVITIES	
Start Gas Pipeline Construction and Interconnection	N/A
Complete Gas Pipeline Construction	N/A
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	01/2013
Complete Water Supply Line Construction	08/2014

MOJAVE SOLAR LLC

42134 Harper Lake Rd
Hinkley, CA 92347

Subject: 09-AFC-5C
Condition Number: AQ-25
Description: TDS Meter Specification and Calibration Methodology
Submittal Number: AQ25-00-00

10/31/2014

Dale Rundquist, CPM
(09-AFC-5C)
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

Pursuant to the proposed revised language for Condition of Certification AQ-25, enclosed is the User Manual for the Hach MP-6 portable meter which, if the amendment is approved, will be used for TDS measurement of the Cooling Tower recirculation/blow down water. The proposed AQ-25 Verification requires submittal of the meter specifications and calibration methodology, which are contained in Sections 1 and 4 of the User Manual, respectively. We plan to use the "442 Natural Water TDS Standard Solution, 3000 ppm, Product #: 2974826" by HACH Company to calibrate the meter for TDS.

Thank you.

Kathleen L. Sullivan, P.E.
ABENGOA SOLAR LLC
42134 Harper Lake Rd
Hinkley, CA 92347
Office: 303-323-9113
Cell: 720-320-8991

Attachments: Hach MP Series Portable Meters User Manual



DOC022.53.80072

MP Series Portable Meters

USER MANUAL

October 2009, Edition 1

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Section 1 Specifications

Specifications are subject to change without notice.

General	
Display	4-digit LCD
Dimensions (L x W x H)	196 x 68 x 64 mm (7.7 x 2.7 x 2.5 in.)
Weight	352 g (12.4 oz)
Case material	VALOX®1
COND/RES/TDS cell material	VALOX
COND/TDS electrodes (4)	316 stainless steel
COND/RES/TDS cell cup capacity	5 mL (0.2 oz)
pH /ORP sensor cup capacity	1.2 mL (0.04 oz)
Power	9V alkaline battery
Battery life	>100 hours (5000 readings)
Operating/Storage Temperature	0 to 55 °C (32 to 132 °F)
Protection Ratings	IP67/NEMA 6
Warranty	MP Series Meter Warranty: Two years from date of shipment (see Section 9 on page 47)
	pH/ORP Sensor Warranty: Six months from date of shipment (see Section 9 on page 47)
Ranges	
pH (MP-6 and MP-6p models)	0 to 14 pH
ORP (MP-6 and MP-6p models)	±999 mV
Conductivity	0 to 9999 µS/cm 10 to 200 mS/cm in 5 autoranges
TDS	0 to 9999 ppm 10 to 200 ppt in 5 autoranges
Mineral/Salt (MP-6p model only)	0 to 9999 ppm 10 to 200 ppt in 5 autoranges
Resistivity (MP-6 and MP-6p models)	10 KΩ to 30 MΩ
Temperature	0 to 71 °C (32 to 160 °F)

Specifications

Resolution	
pH	±0.01 pH
ORP	±1 mV
Conductivity	0.01 (<100 µS) 0.1 (<1000 µS) 1.0 (<10 mS) 0.01 (<100 mS) 0.1 (<200 mS)
TDS	0.01 (<100 ppm) 0.1 (<1000 ppm) 1.0 (<10 ppt) 0.01 (<100 ppt) 0.1 (<200 ppt)
Mineral/Salt	0.01 (<100 ppm) 0.1 (<1000 ppm) 1.0 (<10 ppt) 0.01 (<100 ppt) 0.1 (<200 ppt)
Resistivity	0.01 (<100 KΩ) 0.1 (<1000 KΩ) 0.1 (>1 MΩ)
Temperature	0.1 °C/°F
Accuracy	
pH	±0.01 pH ²
ORP	±1 mV
Conductivity	±1% of reading
TDS	±1% of reading
Mineral/salt	±1% of reading
Resistivity	±1% of reading
Temperature	±0.1 °C
Auto temperature compensation	
pH	0 to 71 °C (32 to 160 °F)
Conductivity	0 to 71 °C (32 to 160 °F)
TDS	0 to 71 °C (32 to 160 °F)
Mineral/Salt	0 to 71 °C (32 to 160 °F)
Resistivity	0 to 71 °C (32 to 160 °F)
Adjustable temperature compensation	
Conductivity	0 to 9.99%/°C
TDS	0 to 9.99%/°C
Mineral/Salt	0 to 9.99%/°C
Resistivity	0 to 9.99%/°C

Specifications

COND/TDS ratios pre-programmed	
Conductivity	KCl, NaCl, 442™3
TDS	
Mineral/salt	
Adjustable COND/TDS ratio factor	
Conductivity	0.20 to 7.99
TDS	
Mineral/salt	

¹ Trademark of SABIC Innovative Plastics IP BV

² ± 0.2 pH in presence of RF fields 3 V/m and >300 MHz.

³ Trademark of Myron L Company

Section 2 General information

In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation. Revised editions are found on the manufacturer's website.

2.1 Safety information

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger, warning and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this manual.

2.1.1 Use of hazard information

DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation that is not related to personal injury.

2.1.2 Precautionary labels



Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user.

Note: For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.

2.2 General product information

The MP-4, MP-6 and MP-6p (see [Figure 2 on page 14](#)) handheld meters allow users to test water for pH, ORP, conductivity, resistivity, TDS (Total Dissolved Solids), mineral/salt concentration and temperature.

2.2.1 Overview

The MP Series portable meters measure various parameters in water. Data can be stored and (with the optional MP-Dock) transferred to a printer, PC, or USB storage device.

- **MP-4**—Measures conductivity, resistivity, TDS and temperature
- **MP-6p**—Measures pH, ORP, conductivity, mineral/salt concentration, TDS and temperature. The mineral/salt measurement is a TDS value based on an NaCl profile.
- **MP-6**—Measures pH, ORP, conductivity, resistivity, TDS and temperature

2.2.2 Features common to all models

- | | |
|---|---|
| • 4-digit LCD | • User-adjustable conductivity/TDS conversion ratio |
| • IP67 rating | • Accuracy of $\pm 1\%$ of reading or better |
| • Internal electrode sensors for maximum protection | • Autorange conductivity/TDS/resistivity |
| • Time and date-stamped data logging | • Memory stores 100 readings |
| • Automatic temperature compensation | • Factory-stored calibrations |
| • Download capability with optional MP-Dock | • Adjustable auto shut-off |

2.2.3 User mode features

- | | |
|---|--|
| • Adjustable conductivity/TDS conversion factor | • Programmable temperature compensation factor |
|---|--|

2.3 Conductivity and pH/ORP sensor cups

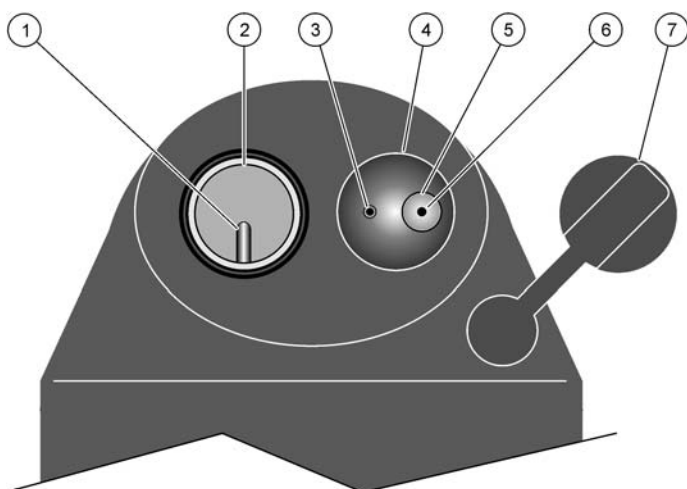


Figure 1 Model MP-6 conductivity and pH/ORP sensor cups

1	Temperature sensor	5	pH glass electrode
2	Conductivity cup (built-in electrodes)	6	Reference junction under glass pH bulb
3	ORP electrode	7	pH/ORP sensor protective cap
4	pH/ORP sensor cup (replaceable sensor)		

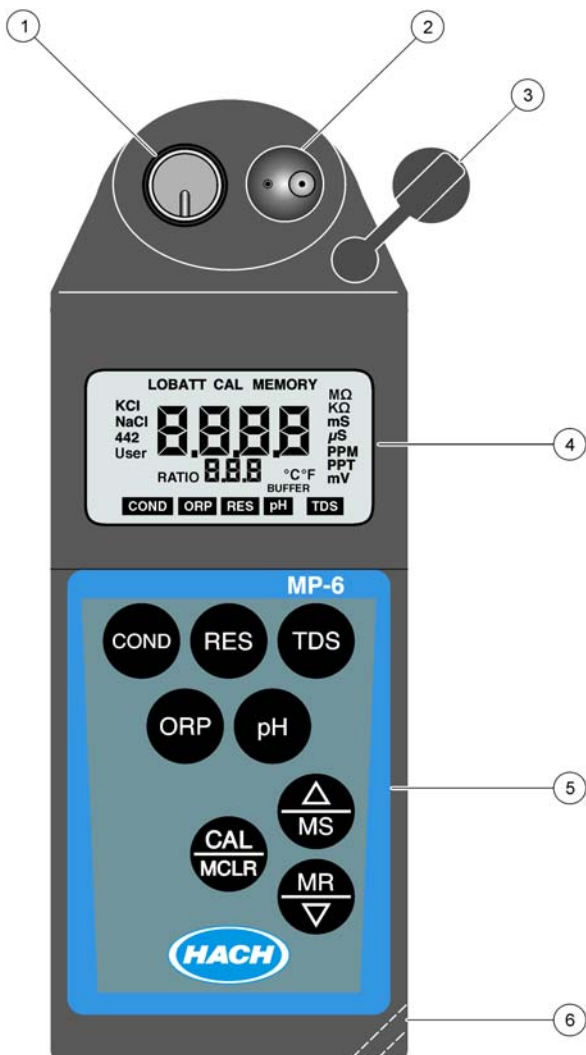


Figure 2 Model MP-6

1	Conductivity cup	4	Display
2	pH/ORP sensor cup	5	Keypad
3	pH/ORP sensor protective cap	6	Wrist strap slot (customer supplied)

Section 3 Operation

3.1 System startup

There is no ON key or OFF key. Press any measurement key to power on the meter. After 15 seconds of inactivity, the meter turns off (60 seconds in CAL mode). Users can adjust the automatic shut off time up to 75 seconds (see [section 3.19 on page 26](#)).

3.2 Display description

The meter display shows the temperature, units, parameter, test values, user mode, memory recall, memory store, calibration, date and time ([Figure 3](#)).

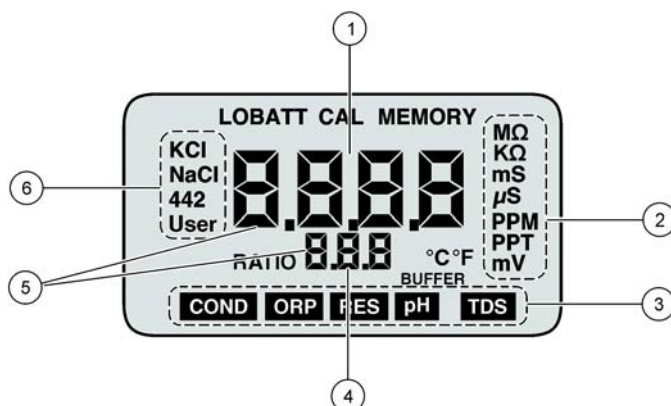


Figure 3 Model MP-6 display

1	Test value—Shows the test value.
2	Units of measurement—Shows the units of measurements.
3	Parameters—Shows the parameters being measured.
4	Multiple value readout—Shows the temperature value readout, user temperature compensation or conductivity/TDS ratio. Memory record location numbers or pH calibration. Also shows same date readout as the time and date indicator.
5	Time and date—Shows the time and date.
6	Selected solution—Shows the solution profile that is selected.

3.3 Keypad description

The MP-6 meter is used as an example for keypad description and function.

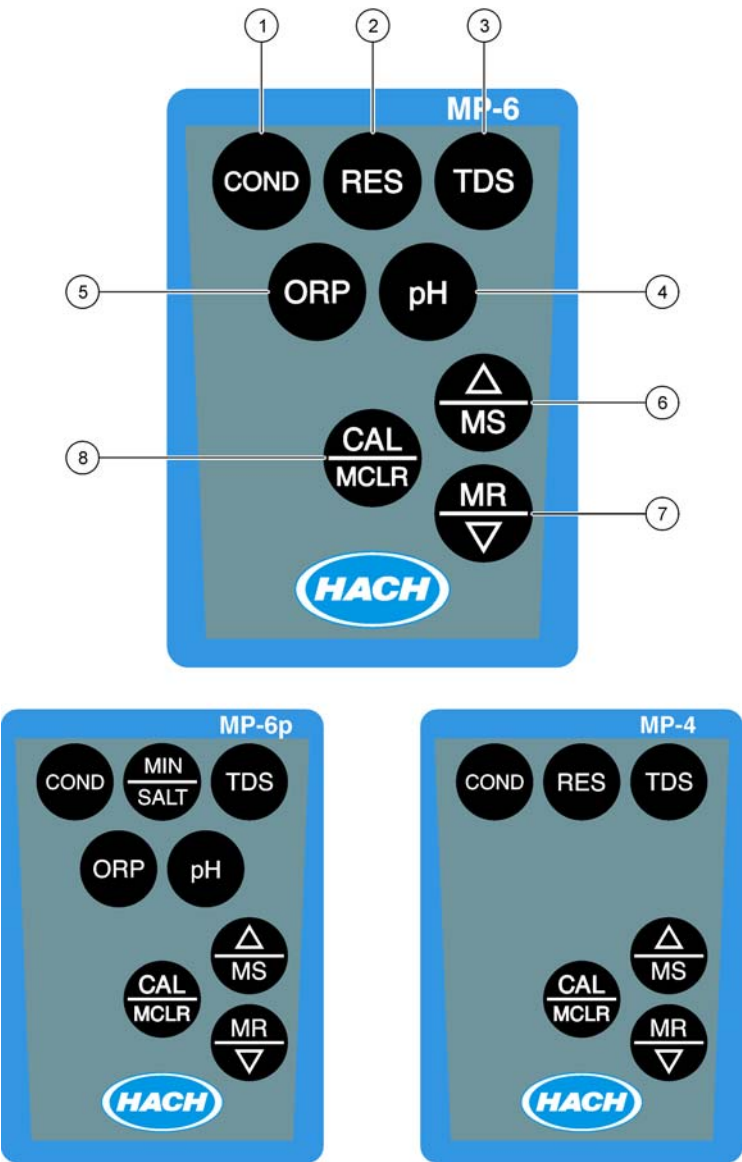


Figure 4 Keypads on MP Series meters

Operation

1	COND —Turns on the meter, measures conductivity, and exits any function
2	RES ¹ (MP-4 and MP- 6 only)—Turns on the meter, measures resistivity, and exits any function
3	TDS —Turns on the meter, measures TDS, and exits any function
4	ORP (MP-6 and MP-6p only)—Turns on the meter, measures pH, and exits any function
5	UP/MS —Scrolls up and stores value to memory
6	MR/DOWN —Scrolls down and recalls stored memory information
7	CAL/CMC LR —Enters the calibration mode, clears the memory, and provides confirmation

¹ The MP-6p meter has a **MIN/SALT** key instead of the **RES** key. The mineral/salt measurement is a TDS value based on an NaCl profile.

3.4 Take a measurement

To take a measurement:

1. Rinse the sensor cup with test solution three times and refill.
Note: If testing solutions that are highly concentrated or at extreme temperatures, more rinsing is required.
2. Push the desired measurement key.
Note: To prevent auto shut off, push the measurement key again and as needed.
3. Observe or record the value displayed, or push **UP/MS** to store the reading.

3.5 Measure conductivity

To measure conductivity:

1. Rinse the conductivity cup three times with the sample to be measured. This conditions the temperature compensation sensor and prepares the cell.
2. Fill the conductivity cup with the solution.
3. Push the **COND** key.
4. Observe or record the value displayed, or push **UP/MS** to store the reading. A display of [----] indicates an over range condition.

Note: Carefully fill conductivity cup to ensure that the air bubbles do not cling to the cell wall.

3.6 Measure resistivity (MP-4 and MP-6 models)

Resistivity is measured in low conductivity solutions. In the conductivity cup, the value can drift due to trace contaminants or absorption from atmospheric gasses. Therefore, measuring a flowing sample is recommended.

1. Make sure the pH/ORP sensor protective cap is secure to avoid contamination (MP-6 model).

Operation

2. Hold the meter at a 30 degree angle and let the sample flow into the conductivity cup continuously with no aeration.
3. Push the **RES** key.
4. Observe or record the value displayed.

Note: If reading is lower than 10 kΩ, [- - -] is shown. Measure conductivity for these samples.

3.7 Measure mineral/salt (MP-6p model only)

To measure mineral/salt:

1. Rinse the conductivity cup three times with the sample to be measured. This conditions the temperature compensation sensor and prepares the cell.
2. Fill the conductivity cup with the solution.
3. Push the **MIN/SALT** key.
4. Observe or record the value displayed, or push **UP/MS** to store the reading.

3.8 Measure TDS

To measure TDS:

1. Rinse the conductivity cup three times with the sample to be measured. This conditions the temperature compensation sensor and prepares the cell.
2. Fill the conductivity cup with the solution.
3. Push the **TDS** key.
4. Observe or record the value displayed, or push **UP/MS** to store the reading.

3.9 Measure ORP/Redox (MP-6 and MP-6p models)

To measure the ORP/Redox:

1. Remove the protective pH/ORP sensor cap. Squeeze the sides and pull up.
2. Rinse the sensor cup three times with the sample to be measured.
3. Shake the meter after each rinse to remove residual liquid.
4. Fill both sensor cups with the sample.
5. Push the **ORP** key.
6. Observe or record the value displayed, or push **UP/MS** to store the reading.

Important Note: After the test, fill the pH/ORP sensor cup with pH Storage Solution and replace the protective cap. Do not allow the pH/ORP sensor cup to dry out.

3.10 Measure pH (MP-6 and MP-6p models)

To measure pH:

1. Remove the protective pH/ORP sensor cap. Squeeze the sides and pull up.
2. Rinse the pH/ORP sensor cup three times with the sample to be measured.
3. Shake the meter after each rinse to remove residual liquid.
4. Fill both sensor cups with the sample.

Operation

5. Push the **pH** key.
6. Observe or record the value displayed, or push **UP/MS** to store the reading.

Important Note: After the test, fill the pH/ORP sensor cup with pH Storage Solution and replace the protective cap. Do not allow the pH/ORP sensor cup to dry out.

3.11 Select a solution

Conductivity, resistivity and TDS (including mineral/salt) require temperature compensation to 25 °C. The solution profile selection determines the temperature compensation of conductivity and calculation of TDS and mineral/salt from compensated conductivity.

There are four solution types:

- KCl
- NaCl
- 442
- User

On the left side of the display is the salt solution characteristic used to model temperature compensation of conductivity and its TDS conversion. By default, KCl is used for conductivity, NaCl is used for resistivity (and mineral/salt), and 442 (natural water characteristic) is used for TDS. The User selection allows a custom value to be entered for the temperature compensation of conductivity and the conversion ratio if measuring TDS.

Check the display to see if the solution profile displayed is the solution type desired for that measurement. To change a solution:

1. Push the **COND** key, the **RES** key, the **MIN/SALT** key or the **TDS** key to select the parameter to change the solution type.
2. Push and hold the **CAL/MCLR** key for three seconds and wait for **SEL** to appear in the display.
3. Push **UP/MS** or **MR/DOWN** to scroll to the desired solution type.
4. Push the **CAL/MCLR** key to accept the new solution.

3.11.1 Temperature compensation

Electrical conductivity indicates solution concentration and ionization of the dissolved material. Because temperature affects ionization, conductivity measurements change with temperature and must be corrected to read at 25 °C.

Temperature compensation uses the characteristics of salt solutions. The selected salt solution is displayed on the left side of the display. By default, the meter uses KCl for conductivity, NaCl for resistivity and 442 for TDS (see [Appendix B on page 51](#)).

The User mode customizes the temperature compensation and the conversion ratio if measuring TDS.

Note: Calibration of each solution type is performed separately and calibration of one solution does not affect the calibration of the other solution types.

3.12 Change the user-selected temperature compensation factor

Select the User mode to change the temperature compensation factor. This feature does not apply to pH or ORP. For user mode information, (see [section 2.2.3 on page 12](#)).

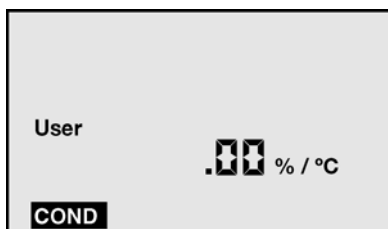
1. Select the User mode (see [section 3.11 on page 19](#)).
2. Push the **CAL/MCLR** key.
3. Push **UP/MS** or **MR/DOWN** to adjust the temperature compensation factor from 0-9.99%/°C.
4. Push the **CAL/MCLR** key twice to skip calibration adjustment and accept the new temperature compensation (three times if in TDS or MIN/SALT mode).



5. Measure samples with the new temperature compensation factor.

3.12.1 Disable temperature compensation

1. Select the User mode (see [section 3.11 on page 19](#)).
2. Push the **CAL/MCLR** key. Hold the **MR/DOWN** key until the temperature compensation shows .00%/°C.



3. Push the **CAL/MCLR** key twice (three times for TDS or MIN/SALT).
4. Temperature compensation is now disabled (=0) for measurements in the User mode.

3.13 Change the user-selected conductivity/TDS ratio

Select the User mode to change a custom conductivity/TDS conversion ratio in the range of 0.20 to 7.99.

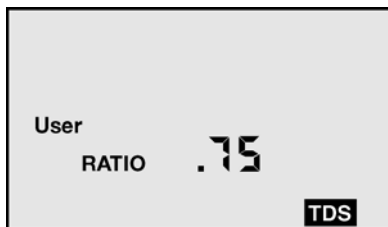
To determine the conversion ratio for a custom solution of a known TDS ppm value, measure the solution conductivity at 25 °C with the MP Series meter and divide the

Operation

ppm value by the μS value. For example, a solution of known 75 ppm TDS and measured $100\mu\text{S}$ conductivity at 25°C has a conversion ratio of $75/100$ or 0.75 .

To enter a new conversion ratio:

1. Push the **TDS** key.
2. Select the User mode (see [section 3.11 on page 19](#)).



3. Push the **CAL/MCLR** key twice (to skip over temperature compensation adjustment) and the ratio will appear.
4. Push **UP/MS** or **MR/DOWN** until the new conversion ratio is displayed.
5. Push the **CAL/MCLR** key twice (to skip over calibration adjustment) to accept the new conversion ratio.
6. Use the new conductivity/TDS ratio to measure samples.

3.14 Settings

3.14.1 Store a value in the memory

The MP series handheld meters have memory storage for up to 100 readings. Time and date is recorded with each stored reading.

To download this stored data to a computer, see [section 3.21 on page 29](#).

1. Push the **UP/MS** key to record a value.
2. The **MEMORY** icon appears and the temperature display is briefly replaced by a number (1-100) that shows the position of the record. [Figure 5](#) shows a reading of $1806\mu\text{S}$ stored in memory record # 4.



Figure 5

3.14.2 View the memory recall

To view the records in memory:

1. Push any measurement key.
2. Push the **MR/DOWN** key. The **MEMORY** icon appears, and shows the last record stored.
3. Push **UP/MS** or **MR/DOWN** to scroll to the location desired.

***Note:** The temperature display alternates between temperature recorded and location number.*

4. Push the **CAL/MCLR** key to show the time and date stamp.
5. Push any measurement key to leave memory recall.

3.14.2.1 Clear a single record

After the user recalls a specific record location, push and hold the **CAL/MCLR** key to clear that memory location. This memory location is used for the next stored memory record unless the user scrolls to another empty memory position before the recall sequence ends.

3.14.3 Clear all records

To clear all records in the memory:

1. Push the **MR/DOWN** key.
2. Scroll down until CLR ALL is displayed.



3. Push the **CAL/MCLR** key. This clears all records.

3.15 Time and date

Change the time and date for travel or for a battery replacement that takes longer than three minutes.

3.15.1 Set the time

Time is displayed in a 24-hour format.

1. Push the any measurement key.
2. Push the **MR/DOWN** key repeatedly until the time is displayed. To quickly scroll through all stored memory records, hold down the **MR/DOWN** key.

3. Push the **CAL/MCLR** key to begin. The **CAL** icon shows the time.



4. Push **UP/MS** or **MR/DOWN** to change the time.
5. Push the **CAL/MCLR** key to accept the new time.

3.15.2 Set the date

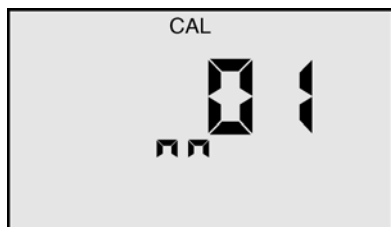
To change the date format, refer to [section 3.15.3 on page 24](#). The default format for the date is US (mo/dy/yr).



1. Push any measurement key. To quickly scroll through all stored memory records, hold down the **MR/DOWN** key.
2. Push the **MR/DOWN** key repeatedly until the date shows in the display. For example: 01.05/05 (January 5, 2005)
3. Push the **CAL/MCLR** key to begin. The **CAL** icon displays above the year.



4. Push **UP/MS** or **MR/DOWN** to change the year.
5. Push **CAL/MCLR** to accept the new setting for the year.
6. Push **UP/MS** or **MR/DOWN** to change the month.
7. Push **CAL/MCLR** to accept the new setting for the month.

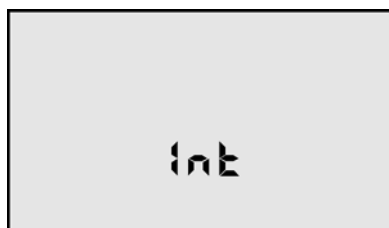
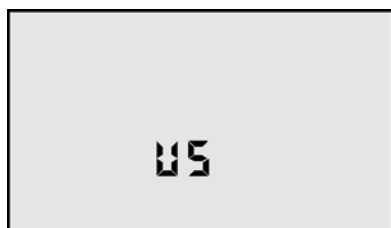


8. Push **UP/MS** or **MR/DOWN** to change the day.
9. Push **CAL/MCLR** to accept the new setting for the day.

3.15.3 Set the date format

To set the date format:

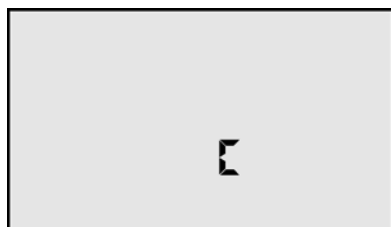
1. Push any measurement key.
2. Push the **MR/DOWN** key repeatedly until US or Int displays. To quickly scroll through all stored memory records, hold down the **MR/DOWN** key.
3. Push **CAL/MCLR** to change the date format. The new format is now displayed.



3.16 Temperature format

To set the temperature format:

1. Push any measurement key.
2. Push the **MR/DOWN** key repeatedly until C or F is displayed. To quickly scroll through all stored memory records, hold down the **MR/DOWN** key.



3. Push the **CAL/MCLR** key to switch units.
4. Push any measurement key to accept the unit preference for all temperature readings.

Note: Temperature compensation is always displayed in %/°C.

3.17 Return to factory settings

To set all calibrations to factory settings or to erase all records, follow the steps below.

1. Push any measurement key.
2. Push the **MR/DOWN** key repeatedly until FAC SEL is displayed. To quickly scroll through all stored memory records, hold down **MR/DOWN**.



3. Push the **CAL/MCLR** key to accept the factory reset. The meter returns to the measurement mode.

3.18 Cell check

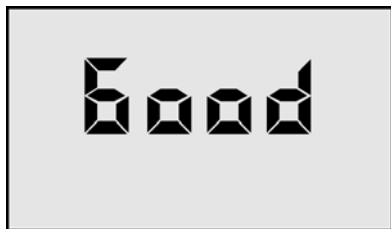
The cell check verifies the cleanliness of the conductivity/TDS/resistivity sensor. If the display shows **.00** when the cell cup is dry, the sensor is probably clean.

In normal use, the conductivity cell may become dirty or coated and require cleaning. To perform a cell check:

1. Push the **COND** key.
2. Push the **MR/DOWN** key repeatedly until the display shows CELL ch. To quickly scroll through all stored memory records, hold down **MR/DOWN**.



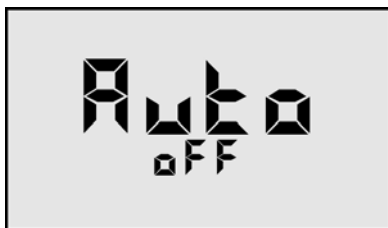
3. Push the **CAL/MCLR** key to test. If the cell is clean, "Good" displays briefly. If cell is dirty, "Cell cLn" displays. To clean the sensors, (see [section 5.4 on page 38](#)).



3.19 Auto off

Auto off turns the meter off when there is no activity for a period of time after a key is pushed. The default time is 15 seconds, and 60 seconds in the CAL (calibration) mode. This time may be adjusted up to 75 seconds.

1. Push any measurement key.
2. Push the **MR/DOWN** key repeatedly until the display shows Auto oFF. To quickly scroll through all stored memory records, hold down **MR/DOWN**.

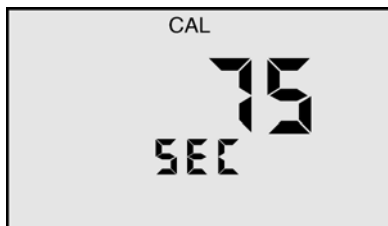


3. Push the **CAL/MCLR** key to begin. The **CAL** icon displays above the 15 SEC display.



Operation

4. Push **UP/MS** or **MR/DOWN** to change the time. The maximum time is 75 seconds.



5. Push the **CAL/MCLR** key to accept the new auto shut off time.

3.20 User mode calibration Linc^{TM1} function

The **LincTM** function allows for calibration when the meter is in the User mode and the user does not have a user standard solution to calibrate the meter. This ensures more accurate measurements. When the Linc function is used, the User mode is linked to another standard solution. For example: If User and KCl are linked, a KCl standard solution is used to calibrate the instrument.

***Note:** When a "Linc" is established for the User mode, the Linc applies to all measurement modes using the User solution selection.*

3.20.1 Calibrate meter for User mode

To calibrate the meter for the User mode:

1. Push the **COND** key, the **MIN/SALT** key, or the **TDS** key.
2. Calibrate the meter using a standard solution (see [section 4.4 on page 31](#)).
3. Select the User mode (see [section 3.11 on page 19](#)).
4. Set the calibration Linc.

3.20.2 Set User mode calibration Linc

The Linc function sets the calibration offset factor of a standard solution to the User solution mode. The Linc stays intact in future calibrations until it is canceled (see [section 3.20.3 on page 28](#)).

Follow the steps below to set the KCl, NaCl or 442 calibration factor to the User solution mode.

1. Push a measurement key to Linc (i.e., **COND**, **RES**, **MIN/SALT** or **TDS**).
2. Select the User mode (see [section 3.11 on page 19](#)).

¹Trademark of Myron L Company

Operation

3. Push the **MR/DOWN** key until Linc displays.



4. Push the **CAL/MCLR** key. SEL displays with the **User** icon.

Note: Any additional display of KCl, NaCl or 442 icons indicates a Linc between the additional solution and the User solution. If none of the solution selection icons are displayed, nothing is linked to the User mode.



5. Push **UP/MS** or **MR/DOWN** to select a standard solution to link to the User mode calibration constant.



6. Push the **CAL/MCLR** key to accept the setting. The User mode now uses the calibration offset constant that was created here.

Note: To exit without changing the setting, push any measurement key.

3.20.3 Cancel User mode calibration Linc

To cancel the User mode calibration Linc:

Note: The MP series meter must be in User linked mode to cancel the "Linc."

1. Push a (linked) measurement key such as **COND**, **RES**, **MIN/SALT**, or **TDS**. Two solutions are displayed on the left side of the display: User and another, such as KCl.
2. Push the **MR/DOWN** key until Linc displays.
3. Push the **CAL/MCLR** key. SEL, User and the linked solution appear on the display.

Operation

4. Push the **MR/DOWN** key until User is the only solution icon that displays.
5. Push the **CAL/MCLR** key. The User mode Linc is now canceled.

3.21 Download stored data

The MP-Dock accessory package (HMPDOCK) allows the user to download stored test data to a PC or spreadsheet. The MP-Dock receives power through the USB port, and requires no external power source. The data is transferred through the Infrared (IR) data port on the bottom of the MP meter (Figure 6) to the MP-Dock, and then to the PC.

The MP Datalink software, which is included with the MP-Dock, operates on Windows 2000 and XP, and Macintosh OS9.2 and OSX-based operating systems.

For the latest instructions on communication port selection and data download, refer to the Hach Company MP-Dock User Manual.

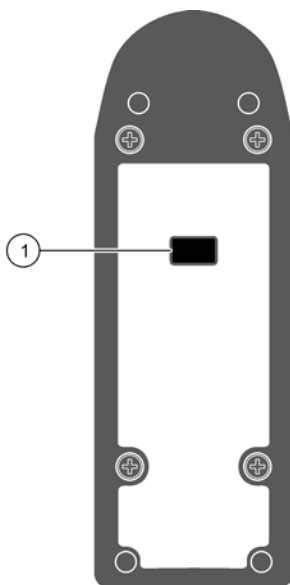


Figure 6 MP meter—bottom view

1 Infrared data port

Section 4 Calibration

4.1 Calibration intervals

The MP Series meters are designed to not require frequent calibration. Calibration is recommended about once per month with conductivity or TDS solutions. Check the calibration with pH solution twice per month. Some applications may require calibration frequencies to differ from these suggested guidelines.

4.2 Calibration limits

The MP Series meters have built in calibration limits. A nominal “FAC” value is an ideal value stored by the factory. Attempts to calibrate too far ($\pm 10\%$ or ± 1 pH unit) from this value causes the displayed value to be replaced with “FAC”. If the **CAL/MCLR** key is pushed, the value is accepted, and the original default factory calibration for this measurement is shown. The need to calibrate so far out that “FAC” appears indicates a procedural problem, incorrect standard solution, a very dirty cell cup or an aging pH/ORP sensor.

4.3 Calibration records

To minimize calibration efforts, keep records. If the calibration adjustments are minimal, calibration can occur less often. Record the following information:

- Record changes in conductivity in percentages.
- Record changes in pH calibration in pH units.
- Conductivity cell calibration is purposely limited to $\pm 10\%$. Changes beyond that indicate damage, not drift.
- Calibration changes are limited to ± 1 pH unit. Changes beyond that indicate the end of the sensor's lifetime and replacement is recommended.

4.4 Calibrate the meter

1. Push the measurement key for the parameter to be calibrated.
2. Push **CAL/MCLR**.
3. Measuring continues. The **CAL** icon is on. This indicates that calibration can occur now.
4. Push **UP/MS** or **MR/DOWN** to change the reading to the known value.
5. Calibration for each of the four solution types can be performed in either conductivity, mineral/salt or TDS mode.

Note: *The number of steps to calibrate depends on what is to be calibrated.*

Parameter	KCl, NaCl or 442	User
COND	Gain only	Temperature compensation, then Gain
RES	Done in conductivity	Done in conductivity or TDS
TDS	Gain only	Temperature compensation, Ratio, then Gain
MIN/SALT	Gain only	Temperature compensation, Ratio, then Gain
pH	7, acid, and/or base	
ORP	Zero set with pH 7 automatically	

6. Push the **CAL/MCLR** key to accept the new calibration value. The meter accepts the value and presents the next value for adjustment. If there are no more adjustments, the meter exits CAL mode.

***Note:** In the CAL mode, the **CAL/MCLR** key becomes an **ACCEPT** key. To bypass a calibration step, push the **CAL/MCLR** key to accept the present value.*

4.5 Exit calibration mode

When the **CAL** icon turns off, calibration is complete. To exit calibration mode when the **CAL** icon is still on, push any measurement key. This cancels any changes not accepted and exits the CAL mode. When CAL mode for pH is exited after the second buffer, the meter enters the same gain for the third buffer.

4.6 Calibrate conductivity, mineral/salt or TDS

To make sure calibration is accurate, follow the items listed below.

1. Clean oily films or organic material from the conductivity cell with foaming cleaner or mild acid.
2. Do not scrub inside the conductivity cell.
3. Rinse the conductivity cup with pure water after taking measurements.
4. Rinse the conductivity cup three times with the standard solution to be used for calibration (KCl, NaCl, or 442).

***Note:** Failure to rinse can cause crystals to form in the cup and contaminate future samples.*

5. Fill the conductivity cup with same standard.
6. Push the **COND** key, the **MIN/SALT** key or the **TDS** key.
7. Push the **CAL/MCLR** key. The **CAL** icon appears on the display.
8. Push the **UP/MS** key or the **MR/DOWN** key to adjust to the standard value, or hold down the key to adjust rapidly.
9. Push the **CAL/MCLR** key once to confirm the new value and end the calibration sequence for this solution type.
10. To calibrate another solution type, change solution type (e.g., KCl, NaCl, or 442) and repeat this procedure.

4.7 Calibrate resistivity

Resistivity is the reciprocal of conductivity. Resistivity is automatically calibrated based on the solution type used during a conductivity calibration.

4.8 Reset factory calibration—conductivity, mineral/salt or TDS

If calibration is suspect or known to be incorrect, and no standard solution is available, it is possible to replace the calibrated value with the original factory value for that solution. This ideal factory (**FAC**) value is the same for all MP Series meters, and it returns to a known state without solution in the cup.

The **FAC** internal electronic calibration is not intended to replace calibration with conductivity standard solutions.

1. Push the **COND** key, the **MIN/SALT** key or the **TDS** key.
2. Push the **CAL/MCLR** key twice in **COND** or three times in **TDS**.

***Note:** In the User mode, push the **CAL/MCLR** key twice in the **COND** mode and three times in the **TDS** mode or the **MIN/SALT** mode. (This bypasses temperature correction and ratio adjustments.)*

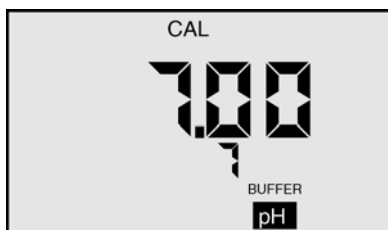
3. Push the **UP/MS** key until the **FAC** icon appears.
4. Push the **CAL/MCLR** key to accept the factory calibration setting.
5. If another solution needs to be reset, select another solution type and repeat the procedure.

4.9 pH calibration

***Note:** Always zero-out the MP Series meter with a pH 7 buffer solution before calibrating with acid or base buffers such as pH 4 or pH 10 solutions.*

To perform a pH calibration:

1. Rinse the sensor cups three times with a pH 7 buffer solution.
2. Fill both sensor cups with pH 7 buffer solution.
3. Push the **pH** key to verify the pH calibration. If the display shows 7.00, skip the pH zero calibration and proceed to [section 4.10 on page 34](#).



Calibration

4. Push the **CAL/MCLR** key to enter calibration mode. The **CAL**, **BUFFER** and **7** icons appear. The value displayed is for the uncalibrated sensor.

Note: If a wrong buffer is added (outside of pH 6-8), **7** and **BUFFER** will flash and the meter does not adjust. The uncalibrated pH value that shows in step 4 assists in determining the accuracy of the pH sensor. If the pH reading is below pH 6 or above pH 8 with pH 7 buffer solution, the sensor cup needs more rinses, or the pH sensor is defective and needs to be replaced.

5. Push **UP/MS** or **MR/DOWN** until the display reads 7.00.

Note: Attempted calibration of > 1 pH point from factory calibration causes the **FAC** icon to appear. This means that either sensor replacement (see [Section 6 on page 41](#)) or a fresh buffer solution is needed. Push the **CAL/MCLR** key to accept the preset factory value.

6. Push the **CAL/MCLR** key to accept the new value.

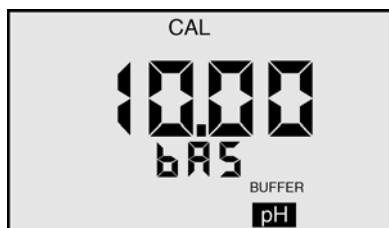
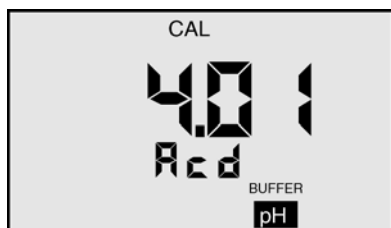
The pH zero calibration is now complete. It is recommended that the user performs the multiple point pH calibration (see [section 4.10](#)). If the user does not wish to continue, push any measurement key to exit.

4.10 Set multiple point pH calibrations

Important Note: Acid or base solution can be used for the second point calibration and then use the other solution for the third point. To verify that a buffer is in the sensor cup, the display shows either the **Acid** icon or the **bAS** icon.

Note: If the **Acid** icon or the **bAS** icon flash, fill the sensor cup with either an acid or base solution to resolve the error.

1. Push the **CAL/MCLR** key twice while in the pH measurement mode to complete the pH zero calibration or verify the pH 7 buffer. The **CAL**, **BUFFER** and **Acid** or **bAS** icons are displayed.



2. Rinse the sensor cups three times with acid or base buffer solution.
3. Fill both sensor cups again with the same solution.
4. Push **UP/MS** or **MR/DOWN** until the display agrees with the buffer value.
5. Push the **CAL/MCLR** key to accept the second point of calibration. The display indicates the next type of buffer to be used.

The two point calibration is complete now. The user can continue with the third point of the calibration or exit the calibration process. Push any measurement

Calibration

key to exit. If the user exits, the gain value accepted for the buffer is used for both acid and base measurements.

6. Rinse the sensor cup three times with the third buffer solution.
7. Fill the sensor cups again with the same solution.
8. Push **UP/MS** or **MR/DOWN** until the display agrees with the buffer value.
9. Push the **CAL/MCLR** key to accept the third point of calibration. The calibration procedure is now complete.

***Note:** Fill the pH/ORP sensor cup with pH storage solution and replace the protective sensor cap when the meter is not in use. Do not allow the cup to dry.*

4.11 ORP calibration

The ORP electrodes rarely give false readings unless there is a problem in the reference electrode. For this reason, and because the calibration solutions for ORP are highly reactive and potentially hazardous, the MP meter has an electronic ORP calibration. This causes the zero point on the reference electrode to be set whenever the pH 7 calibration is done.

4.12 Temperature calibration

Temperature calibration is not necessary in the MP series meters.

Section 5 Maintenance

Practice the following care and maintenance of the MP series handheld meters:

- Rinse with clean water after each use
- Always fill the pH/ORP sensor cup with Hach pH storage solution and replace the protective cap when not in use.
- Avoid solvents
- Avoid drops. Shock damage can damage the meter and void the warranty

5.1 Temperature extremes

Solutions in excess of 71 °C (160 °F) should not be placed in the sensor cups. This activity can damage the meter. The pH sensor can fracture if the meter's temperature falls below 0 °C (32 °F). Take care not to exceed operating temperatures.

Note: Do not leave an MP series meter in a vehicle or a storage shed on a hot day. This activity can subject the meter to temperatures in excess of 66 °C (150 °F) and void the warranty.

5.2 Battery replacement

NOTICE

If the meter is not completely dry before you open the meter, damage to the internal electronics of the meter can occur.

Perform the following steps to replace the battery:

1. Dry the meter completely.
2. Remove the four screws from the base of the meter.
3. Open the meter carefully.
4. Take care to detach the battery from the circuit board.
5. Replace the battery with a new 9V alkaline battery.
6. Replace the bottom housing, ensuring that the sealing gasket is installed in the groove of the top half of the case.
7. Replace the screws; tighten evenly and securely. Do not overtighten.

Note: All data stored in memory and all calibration settings are protected during power loss or battery replacement. Loss of time and date can occur, however, if the battery is removed for more than 3 minutes (180 seconds).

5.2.1 Maintain the conductivity cup

Rinse the conductivity cup with clean water after taking measurements to prevent buildup on the electrodes. Do not scrub the cup. For oily films, add a few drops of foaming, non-abrasive cleaner or isopropyl alcohol, then rinse.

Note: When sampling low-conductivity solutions, make sure the pH/ORP sensor cap is well-seated so that solution does not wash from the pH/ORP sensor cup into the conductivity cup.

5.2.2 Maintain the pH/ORP sensor cup

Keep the pH/ORP sensor cup hydrated with Hach pH Storage Solution. Before replacing the pH/ORP sensor cap, rinse and fill the sensor cup with the storage solution. Never use distilled water to store the sensor cup.

5.3 pH/ORP sensor replacement

Complete installation instructions are included with each replacement sensor. Tools required include a #2 Phillips screwdriver and 1/4-inch wrench.

Note: When the pH/ORP sensor is replaced, it is also a good time to replace the battery.

5.4 Clean the sensors

Perform these procedures to clean the various sensors.

5.4.1 Clean the conductivity/resistivity/TDS sensor

Keep the conductivity cell cup (Figure 7) as clean as possible.

Note: Flush with clean water after use to prevent buildup on electrodes.

When a dirty sample is left in the cup, a film forms. This film reduces accuracy.

To clean a visible film of oil, dirt or scale that is in the cell cup or on the electrode:

1. Use isopropyl alcohol or a foaming, non-abrasive household cleaner. Hach acid electrode cleaning solution may also be used less frequently.
2. Pour any of these solutions in the cell cup and allow it to soak for no more than five minutes.
3. Use a cotton swab to *gently* clean the electrodes.
4. Rinse out the cleaning solution.

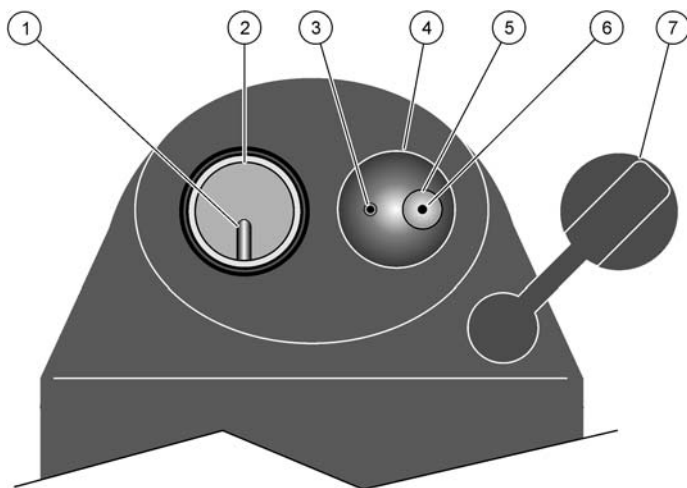


Figure 7 Model MP-6 sensor cups

1 Temperature sensor	5 pH glass electrode
2 Conductivity cell (built-in electrodes)	6 Reference junction under glass pH bulb
3 ORP electrode	7 pH/ORP sensor protective cap
4 pH/ORP sensor (replaceable)	

5.4.2 Clean the pH/ORP sensor

The pH/ORP sensor in the MP series meters is non-refillable and features a porous liquid junction. *It should not be allowed to dry out.* If it does dry out, the sensor can sometimes be restored by following the steps below.

1. Clean the sensor cup with isopropyl alcohol.
2. Rinse well. Do not scrub or wipe the pH/ORP sensor.
3. Follow the hot solution method described below:
 - a. Pour a *hot* salt solution ~60 °C (140 °F), such as pH storage solution in the sensor cup.
 - b. Allow the liquid to cool.
 - c. Retest.
4. If the hot solution method does not work, follow the Deionized (DI) water method below:
 - a. Pour DI water into the sensor cup.

Maintenance

- b. Allow to stand for no more than four hours (more standing time can deplete the reference solution and damage the glass bulb).
 - c. Retest.
5. If neither of the above methods are successful, the sensor must be replaced.

5.4.2.1 Drifting test results

A film on the pH sensor bulb or the reference can cause drifting. Use isopropyl alcohol to clean the glass bulb.

Note: *The sensor bulb is very thin and delicate. Do not scrub the pH/ORP sensor.*

To clean the sensor:

1. Use isopropyl alcohol or a foaming, non-abrasive household cleaner. Hach acid electrode cleaning solution may also be used less frequently.
2. Pour any of these solutions in the cell cup and allow it to soak for no more than five minutes.
3. Use a cotton swab to *gently* clean the electrodes.
4. Rinse out the cleaning solution.
5. Fill the sensor cup with Hach pH storage solution before the pH/ORP sensor cap is replaced.

5.4.2.2 Solutions that damage the pH/ORP sensor

Samples that contain chlorine, sulfur or ammonia can damage the pH electrode. Rinse the sensor thoroughly with clean water immediately after any measurement of these liquids.

Samples that reduce (add an electron to) silver, such as cyanide will attack the reference electrode.

Leaving alkaline solutions in the pH sensor cup for long periods of time can damage the sensor.

Section 6 Troubleshooting

Symptom	Possible cause	Action
No display even though measurement key is pushed	Battery is weak or not connected.	Check the connections or replace the battery (see section 5.2 on page 37).
Inaccurate pH reading	pH calibration is needed (see section 4.9 on page 33)	Recalibrate the meter.
	Cross-contamination from residual buffers or samples in sensor cup	Rinse the sensor cup.
	Calibration with expired pH buffers	Recalibrate using fresh buffers.
No response to pH changes (MP-6 and MP-6p models)	Sensor bulb is cracked or an electromechanical short is caused by an internal crack.	Replace the pH/ORP sensor (see section 5.3 on page 38).
Meter does not adjust down to pH 7 (MP-6 and MP-6p models)	pH sensor has lost KCl	Clean and restore the sensor (see section 5.4 on page 38) and recalibrate. If there is no improvement, replace the pH/ORP sensor (see section 5.3 on page 38).
pH readings drift or respond slowly to change or FAC displays repeatedly	Temporary condition due to memory of solution in pH sensor cup for long periods	Clean and restore the sensor (see section 5.4 on page 38) and recalibrate. If there is no improvement, replace the pH/ORP sensor (refer to section 5.3 on page 38).
	Bulb dirty or dried out	
	Reference junction clogged or coated	
Unstable conductivity, TDS or resistivity readings	Dirty electrodes	Clean the cell cup and the electrodes (see section 5.4 on page 38). Minimize the test sample exposure to air (see section 3.6 on page 17).
	Test samples that are greater than 1 MΩ	
Meter cannot calibrate Conductivity or TDS	Film or deposits on electrodes	Clean the cell cup and the electrodes (see section 5.4 on page 38).
Resistivity reading is much lower than expected	Contamination from previous samples or from the pH sensor cup	Rinse the sensor cup more thoroughly before measurement.
	Carbon dioxide in the test sample	Make sure the pH cap is snugly in place (see section 5.4 on page 38).

Section 7 Contact Information

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Section 8 Replacement parts and accessories

8.1 Replacement parts

Description	Item No.
pH/ORP sensor	HMPSENS
9V alkaline battery	00024Q

8.2 Accessories

Description	Item No.
MP-Dock (facilitates data download to PC or spreadsheet)	HMPDOCK

8.3 Consumables

Description	Quantity	Item No.
Buffer solution, pH 4.01	50 mL	2283426
Buffer solution, pH 4.01	500 mL	2283449
Buffer solution, pH 4.01	4L	2283456
Buffer solution, pH 4.01	20 L	2283461
Buffer solution, pH 7.00	50 mL	2283526
Buffer solution, pH 7.00	500 mL	2283549
Buffer solution, pH 7.00	4 L	2283556
Buffer solution, pH 7.00	20 L	2283561
Buffer solution, pH 10.01	50 mL	2283626
Buffer solution, pH 10.01	500 mL	2283649
Buffer solution, pH 10.01	4 L	2283656
Buffer solution, pH 10.01	20 L	2283661
pH electrode storage solution, 500 mL	500 mL	2756549
pH electrode storage solution, 50 mL	50 mL	2756526
0.001M KCl Conductivity Standard Solution, 148 μ S/cm	500 mL	2974249
0.001M KCl Conductivity Standard Solution, 148 μ S/cm	50 mL	2974226
0.01M KCl Conductivity Standard Solution, 1413 μ S/cm	500 mL	2974349
0.01M KCl Conductivity Standard Solution, 1413 μ S/cm	50 mL	2974326
0.1M KCl Conductivity Standard Solution, 12.88 mS/cm	500 mL	2974449
0.1M KCl Conductivity Standard Solution, 12.88 mS/cm	50 mL	2974426

8.3 Consumables (continued)

Description	Quantity	Item No.
442-30 Natural Water™ ¹ TDS Standard Solution, 30 ppm	500 mL	2974549
442-30 Natural Water TDS Standard Solution, 30 ppm	50 mL	2974526
442-300 Natural Water TDS Standard Solution, 300 ppm	500 mL	2974649
442-300 Natural Water TDS Standard Solution, 300 ppm	50 mL	2974626
442-1000 Natural Water TDS Standard Solution, 1000 ppm	500 mL	2974749
442-1000 Natural Water TDS Standard Solution, 1000 ppm	50 mL	2974726
442-3000 Natural Water TDS Standard Solution, 3000 ppm	500 mL	2974849
442-3000 Natural Water TDS Standard Solution, 3000 ppm	50 mL	2974826
100 µS/cm NaCl Conductivity Standard Solution	500 mL	2971849
100 µS/cm NaCl Conductivity Standard Solution	50 mL	2971826
1000 µS/cm NaCl Conductivity Standard Solution	500 mL	1440049
1000 µS/cm NaCl Conductivity Standard Solution	50 mL	1440026
10,000 µS/cm NaCl Conductivity Standard Solution	500 mL	2972249
10,000 µS/cm NaCl Conductivity Standard Solution	50 mL	2972226
18.00 mS/cm NaCl Conductivity Standard Solution	500 mL	2307449
18.00 mS/cm NaCl Conductivity Standard Solution	50 mL	2307426

¹ Trademark of Myron L Company

8.4 Recommended cleaning consumables

Description	Quantity	Item No.
Isopropyl alcohol	100 mL	1227642
Isopropyl alcohol prep pads	200/pk	2938200
Cotton swabs	100/pkg	2554300
Acid electrode cleaning solution	50 mL	2975126
Acid electrode cleaning solution	500 mL	2975149

Section 9 Limited Warranty

Hach Company warrants to the original purchaser against any defects that are due to faulty material or workmanship for a period of two years from date of shipment unless otherwise noted in the product manual.

In the event that a defect is discovered during the warranty period, Hach Company agrees that, at its option, it will repair or replace the defective product or refund the purchase price excluding original shipping and handling charges. Any product repaired or replaced under this warranty will be warranted only for the remainder of the original product warranty period.

This warranty does not apply to consumable products such as chemical reagents; or consumable components of a product, such as, but not limited to, lamps and tubing.

Contact Hach Company or your distributor to initiate warranty support. Products may not be returned without authorization from Hach Company.

Warranty Limitations

This warranty does not cover:

- Damage caused by acts of God, natural disaster, labor unrest, acts of war (declared or undeclared), terrorism, civil strife or acts of any governmental jurisdiction
- Damage caused by misuse, neglect, accident or improper application or installation
- Damage caused by any repair or attempted repair not authorized by Hach Company
- Any product not used in accordance with the instructions furnished by Hach Company
- Freight charges to return merchandise to Hach Company
- Freight charges on expedited or express shipment of warranted parts or product
- Travel fees associated with on-site warranty repair

This warranty contains the sole express warranty made by Hach Company in connection with its products. All implied warranties, including without limitation, the warranties of merchantability and fitness for a particular purpose, are expressly disclaimed.

Some states within the United States do not allow the disclaimer of implied warranties and if this is true in your state the above limitation may not apply to you. This warranty gives you specific rights, and you may also have other rights that vary from state to state.

This warranty constitutes the final, complete, and exclusive statement of warranty terms and no person is authorized to make any other warranties or representations on behalf of Hach Company.

Limitation of Remedies

The remedies of repair, replacement or refund of purchase price as stated above are the exclusive remedies for the breach of this warranty. On the basis of strict liability or under any other legal theory, in no event shall Hach Company be liable for any incidental or consequential damages of any kind for breach of warranty or negligence.

Appendix A Temperature compensation

Electrical conductivity indicates solution concentration and ionization of the dissolved material. Because temperature greatly affects ionization, conductivity measurements are temperature dependent, and are normally corrected to read what they would be at 25 °C.

A.1 Compensation to 25 °C

The MP series handheld meters includes temperature compensation to 25 °C. Temperature compensation can be set to KCl, NaCl or 442 solutions or tailored for special measurements or applications.

A.2 Changes in temperature compensation

Most conductivity meters approximate the temperature characteristics of solutions, and assume a constant value, such as, 2%/°C. In fact, KCl temperature compensation changes with concentration and temperature in a non-linear fashion. Other solutions change even more. The MP series handheld meters use compensations that change with concentration and temperature instead of single average values (Figure 8).

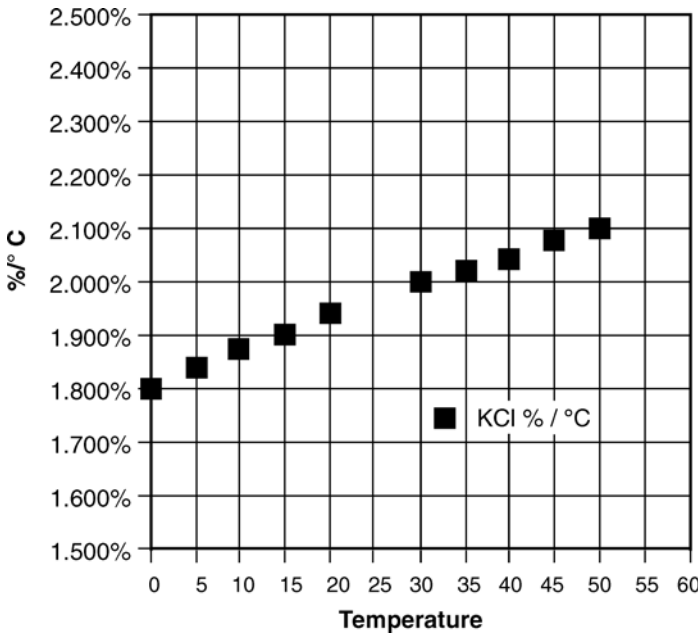


Figure 8

A.3 Graph of comparative error

In the range of 1000 μS , the error of using a KCl temperature compensation on a solution that should be calculated as NaCl or 442 is shown in the chart below (Figure 9).

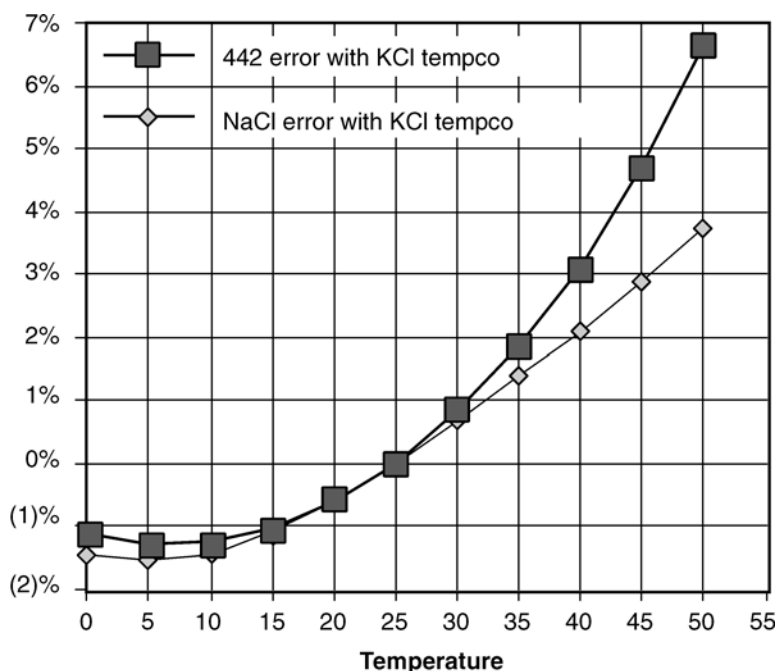


Figure 9

To measure natural water-based solutions to 1%, users must alter the internal temperature compensation to the more suitable, pre-loaded 442 values or stay close to 25 °C.

A.4 Other solutions

A salt solution like sea water or liquid fertilizer acts like NaCl. The NaCl solution compensation provides the greatest accuracy for these solutions.

Many solutions differ greatly from KCl, NaCl or 442. A sugar solution, a silicate, or a calcium salt at a high or low temperature may require a User value to provide readings close to the true compensated conductivity. This is determined experimentally.

The chosen solution characteristic should closely match the sample being tested to achieve accuracy of $\pm 1\%$.

Appendix B Conductivity conversion

B.1 How conductivity conversion works

When the effect of temperature is removed, the corrected conductivity depends on the concentration (TDS). Temperature compensation of the conductivity of a solution is performed automatically by the meter's internal processor with data derived from chemical tables. Any dissolved salt at a known temperature has a known ratio of conductivity to concentration. Tables of conversion ratios referenced to 25 °C have been published by chemists for decades.

B.2 Solution characteristics

Real-world applications have to measure a wide range of materials and mixtures of electrolyte solutions. To address this problem, industry applications tend to use the characteristics of a standard material as a model for their solution, such as KCl, which is favored by chemists for its stability.

Users who deal with sea water, etc., use NaCl as the model for their concentration calculations. Users who deal with freshwater work with mixtures including sulfates, carbonates and chlorides. These are modeled in the 442 standard solutions.

The meter contains algorithms for these three most commonly referenced compounds. The solution type in use is shown on the left side of the display. In addition to KCl, NaCl, and 442, a User choice is available. The User mode allows the user to enter the temperature compensation and TDS ratio by hand. This increases the accuracy of readings for a specific solution. That value remains a constant for all measurements, and should be reset for different dilutions or temperatures.

Appendix C Temperature compensation and TDS derivation

The MP series handheld meters contain internal algorithms for characteristics of the three most commonly referenced compounds. The selected solution type is shown on the left of the display. In addition to KCl, NaCl and 442, a User choice is available. The User mode allows the user to enter the temperature compensation and the TDS conversion ratio of a unique solution.

C.1 Conductivity characteristics

When taking conductivity measurements, the Solution Selection determines the characteristic assumed as the instrument reports what a measured conductivity would be if it were at 25 °C. The characteristic is represented by the temperature compensation, expressed in %/°C.

If a solution of 100 μS at 25 °C increases to 122 μS at 35 °C, then a 22% increase has occurred over this change of 10 °C. The solution is then said to have a temperature compensation of 2.2%/°C.

Temperature compensation always varies among solutions because it is dependent on their individual ionization activity, temperature and concentration. This is why the MP meters feature mathematically generated models for known salt characteristics that also vary with concentration and temperature.

C.2 Temperature compensation of unknown solutions

The user may need to find the corrected conductivity of a solution that differs from the three standard salts. In order to enter a custom fixed temperature compensation for a limited measurement range, enter a specific value through the User function. The temperature compensation can be determined by two different methods.

C.2.1 Find temperature compensation by calculation

1. Heat or cool a sample of the solution to 25 °C, and measure its conductivity.
2. Heat or cool the solution to a typical temperature where it is normally measured.
3. Select the **User** function.
4. Set the temperature compensation to 0%/°C (see [section 3.12.1 on page 20](#)).
5. Measure the new conductivity and the new temperature.
6. Divide the percentage decrease or percentage increase by the 25 °C value.
7. Divide that result by the temperature difference.

C.2.2 Find temperature compensation by adjustment

1. Heat or cool a sample of the solution to 25 °C, and measure its conductivity.
2. Heat or cool the solution to a typical temperature where it is normally measured.

Temperature compensation and TDS derivation

3. Set the temperature compensation to an expected value (see [section 3.12 on page 20](#)).
4. See if the compensated value is the same as the 25 °C value.
5. If the value is not the same, raise or lower the temperature compensation and measure again until the 25 °C value is read.

C.3 TDS ratio of unknown solutions

When the effect of temperature is removed, the compensated conductivity varies with the concentration (TDS). The ratio of TDS to compensated conductivity for any solution also varies with concentration. The ratio is set during calibration in the User mode (see [section 3.13 on page 20](#)). Measure the TDS of an unknown solution by evaporation and weighing. Then measure the conductivity of the solution, with the now-known TDS, and calculate the ratio. The next time this solution is measured, the ratio is known.

Appendix D Additional information on pH and ORP (MP-6 and MP-6p models)

D.1 pH

D.1.1 pH as an indicator

pH measures the acidity or alkalinity of an aqueous solution. Another way to describe pH is as the hydrogen ion activity of a solution.

pH measures the effective, not the total acidity of a solution. A 4% solution of acetic acid (pH 4, vinegar) can be quite palatable, but a 4% solution of sulfuric acid (pH 0) is a violent poison. pH provides the needed quantitative information by expressing the degree of activity of an acid or base.

In a solution of one known component, pH indicates concentration directly. Very dilute solutions may be very slow reading because very few ions take time to accumulate.

D.1.2 pH units

The acidity or alkalinity of a solution measures the relative availability of hydrogen (H^+) and hydroxide (OH^-) ions. An increase in H^+ ions increases acidity, while an increase in OH^- ions increases alkalinity.

pH is defined as the negative logarithm of hydrogen ion concentration. Where H^+ concentration falls below 10^{-7} mol/liter, solutions are less acidic than neutral, and therefore are alkaline. A concentration of 10^{-9} mol/liter of H^+ has 100 times less H^+ ions than OH^- ions and is an alkaline solution of pH 9.

D.1.3 pH sensor

The active part of a pH sensor is a thin glass surface that is selectively receptive to hydrogen ions. Available hydrogen ions in a solution accumulate on this surface and a charge builds up across the glass interface. The voltage can be measured with a high impedance voltmeter circuit.

The glass surface encloses a captured solution of potassium chloride that holds an electrode of silver wire coated with silver chloride. This is the most inert connection possible from a metal to an electrolyte. It can still produce an offset voltage, but using the same materials to connect to the solution on the other side of the membrane cancels the two equal offsets.

The other electrode, also called the reference junction, allows the junction fluid to contact the test solution, without significant migration of liquids, through the plug material.

The pH/ORP sensor in the MP series meters (MP-6 and MP-6p) (Figure 10) is a single construction in an easy-to-replace package. The sensor body holds an oversize solution supply for long life. The reference junction is a wick that is porous so that it can provide a stable, low, permeable interface. It is located under the glass pH sensing electrode.

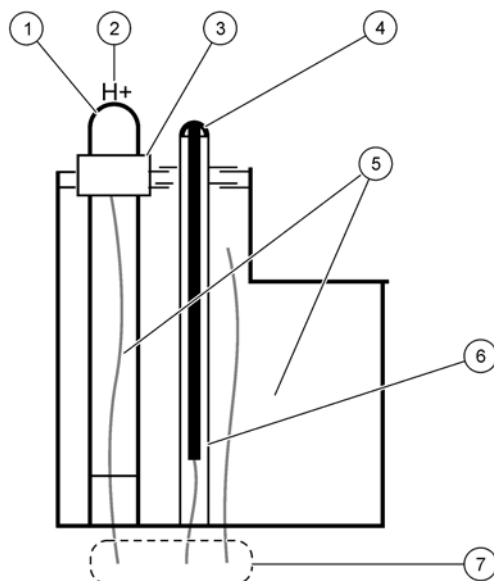


Figure 10 pH/ORP sensor construction

1 Glass surface	5 KCl solution
2 H ⁺ ions	6 Glass
3 Junction plug	7 Electrode wires
4 Platinum button	

D.1.4 Sources of error

D.1.4.1 Reference junction

The most common sensor problem is a clogged junction because a sensor is allowed to dry out. The symptom is a drift in the zero setting at pH 7. This explains why MP series meter does not allow more than one pH unit of offset during calibration.

D.1.4.2 Sensitivity errors

Sensitivity is the receptiveness of the glass surface. A film on the surface can diminish the sensitivity and cause a long response time.

D.1.5 Temperature compensation

pH sensor glass changes sensitivity slightly with temperature. When the solution is further from pH 7, this effect increases. For example, a pH of 11 at 40 °C is off by 0.2 units. The MP series meter senses the sensor cup temperature and compensates the reading.

D.2 Oxidation Reduction Potential/Redox (ORP)

D.2.1 ORP as an indicator

ORP measures the ratio of oxidizing activity to reducing activity in a solution. It is the potential of a solution to give up electrons (to oxidize other things) or gain electrons (reduce).

Similar to acidity and alkalinity, one aspect increases at the expense of the other. Therefore, a single voltage is called the Oxidation-Reduction Potential, and a positive voltage shows a solution that wants to steal electrons (an oxidizing agent). For example, chlorinated water shows a positive ORP value.

D.2.2 ORP units

ORP is measured in millivolts, with no correction for solution temperature. Like pH, it is not a measurement of concentration directly, but of activity level. In a solution of only one active component, ORP indicates concentration. Also, similar to pH, a very dilute solution takes time to accumulate a readable charge.

D.2.3 ORP sensor

An ORP sensor uses a small platinum surface to accumulate charge without reacting chemically. That charge is measured relative to the solution, so the solution “ground” voltage comes from a reference junction. [Figure 10](#) shows the platinum button in a glass sleeve. The same reference is used for both the pH and the ORP sensors. Both pH and ORP indicates 0 for a neutral solution. Calibration at zero corrects the error in the reference junction.

A zero calibration solution for ORP is not practical, so the MP series meters use the offset value determined during calibration to 7 in pH calibration (pH 7 = 0 mV). Sensitivity of the ORP surface is fixed so there is no gain adjustment.

D.2.4 Sources of error

Sources of error are similar to pH. Even though the platinum surface does not break like the glass pH surface, its protective glass sleeve can be broken. A surface film will slow the response time and diminish sensitivity.

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"Rundquist, Dale@Energy"

11/05/2014 04:07 PM

Send To	"Kathleen.Sullivan@solar.abengoa.com" <Kathleen.Sullivan@solar.abengoa.com>, Chris Anderson <canderson@mdaqmd.ca.gov>
cc	"nicholas.petrovitza@solar.abengoa.com" <nicholas.petrovitza@solar.abengoa.com>, "frances.sanchez@solar.abengoa.com" <frances.sanchez@solar.abengoa.com>, "neha.singh@solar.abengoa.com" <neha.singh@solar.abengoa.com>.
bcc	
Subject	RE: AQ25-00-00, TDS Meter Specification and Calibration Methodology (09-AFC-5C)

Hi Kathleen,

The Submittal for AQ-25 (TDS Meter Specification and Calibration Methodology) has been reviewed and approved by staff.

Thank you,

Dale R.

From: Kathleen.Sullivan@solar.abengoa.com [mailto:Kathleen.Sullivan@solar.abengoa.com]

Sent: Friday, October 31, 2014 1:21 PM

To: Rundquist, Dale@Energy; Chris Anderson

Cc: nicholas.petrovitza@solar.abengoa.com; frances.sanchez@solar.abengoa.com;

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manjunath.shivalingappa@abeinsaepc.abengoa.com

Subject: AQ25-00-00, TDS Meter Specification and Calibration Methodology (09-AFC-5C)

Dale and Chris,

In anticipation of the proposed changes to the language in Condition of Certification AQ-25 (MDAQMD Cooling Tower ATC Permit Nos. B011037 and B011038), as shown below, attached are the meter specifications and calibration methodology required by the proposed Verification.

AQ-25 ~~The project owner shall perform weekly specific conductivity tests of the blow down water to indirectly measure total dissolved solids (TDS). Quarterly tests of the blow down water will be done to confirm the relationship between conductance and TDS. The~~ **total dissolved solids (TDS) from the blow-down water** shall not exceed 10,000 ppm on a calendar monthly basis. **To verify compliance, weekly TDS measurement will be performed using a Hach MP-6 portable meter (or equivalent as approved by the District). The meter must be calibrated monthly to manufacturer specifications.**

Verification: **At least 30 days prior to the start of commercial operation, the project owner should submit to the CPM a copy of the meter specifications and the calibration methodology.** ~~The cooling tower recirculation water TDS content test results shall be provided to representatives for the District, ARB, and the Energy Commission upon request.~~

Thank you,
Kathleen

Regards,

Kathleen Sullivan - P.E.
Deputy Director of Engineering and Construction Supervision
Mojave Solar Project

ABENGOA

Abengoa Solar

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Kathleen.Sullivan@solar.abengoa.com



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ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: October 1, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: AQ-54
Description: **VOC Calculation and Testing**
Submittal No.: AQ-54-00-00
To: Mr. Chris Anderson
Mojave Desert Air Quality
Management District.

WE ARE SENDING YOU

Document Name	Title	REV
AQ-26 Technical Memo		
MDAQMD Rule 461 Testing form	VOC Calculation and Testing results	NA
Tiger Select PID Certification	Calibration Certificate	NA

THESE ARE TRANSMITTED as checked below:

☒ For Approval

REMARKS

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

ABENER TEYMA

MOJAVE

Technical Memo

Date:	October 1, 2014
Subject:	Mojave Solar Project (09-AFC-5C)
Condition Number:	AQ-54
Description:	VOC Calculation and Testing for Onsite Gasoline Tank
Submittal No.:	AQ-54 -00-00

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

Dear Mr. Anderson,

In compliance with AQ-54 we are submitting VOC Calculation and Testing results for the onsite gasoline tank of the Mojave Solar Project.

For your convenience, we are including the Compliance language below:

AQ-54: The project owner shall perform the following tests within 60 days of construction completion and annually thereafter in accord with the following test procedures:

- a. Determination of Static Pressure Performance of Vapor Recovery Systems at Gasoline Dispensing Facilities with Aboveground Storage Tanks shall be conducted per EO VR-401-A Exhibit 4. and,
- b. Phase I Adapters, Emergency Vents, Spill Container Drain Valve, Dedicated gauging port with drop tube and tank components, all connections, and fittings shall NOT have any detectable leaks; test methods shall be per EO VR-401-A Table 2-1, and
- c. Liquid Removal Test (if applicable) per TP-201.6, and Summary of Test Data shall be documented on a Form similar to EO VR-401-A Form 1.

The District shall be notified a minimum of 10 days prior to performing the required tests with the final results submitted to the District within 30 days of completion of the tests. The District shall receive passing test reports no later than six (6) weeks prior to the expiration date of this permit.

ABENER TEYMA MOJAVE

Verification: The project owner shall notify the District at least 10 days prior to performing the required tests. The test results shall be submitted to the District within 30 days of completion of the tests and shall be made available to the CPM if requested.

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer

ABEINSA EPC



Mojave Desert Air Quality Management District
14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • FAX 760.245.2022

www.mdaqmd.ca.gov

MDAQMD Rule 461 Testing Notification Form

Today's Date: 8.26.2014

Facility Information: MDAQMD Co. # 1876 Fac. # 3130 ATC / PTO # N011039
Name: Mojave Solar
Site Address: Harper Lake Road, Hinkley, CA 92347
Street City State Zip
Site Contact Person: _____ Site Phone: _____

Testing Company Information:

Name: Belshire Environmental Services, Inc.
Site Address: 25971 Towne Centre Drive Foothill Ranch CA 92610
Street City State Zip
Testing Person: Hensley Barbour Phone: 949-460-5200 Fax: _____
Reported By: Shawna Chambers Phone: 949-460-5200 Fax: _____

Test Information: Test Date: 9/4/2014 Test Time: 1:00PM 10-day Prior Notice - ☐ Yes or ☒ No

System Type: Balance: ☒ Assist: ☐ Hirt: ☐ Hasstech: ☐ Healy: ☐ VST: ☐ AGT: ☐ Exec. Order # VR-402
ATC Initial Test: ☒ Annual Test: ☐ Retest: ☐ Cancellation: ☐ Reschedule: ☐

The following TP list is not exhaustive, refer to District permit conditions and use blank spaces for tests not listed

Scheduled	P/F	TP #	Test	Scheduled	P/F	TP #	Test
		201.3	Leak Decay (2")			201.1D	Leak Rate of Drop Tube Overfill Prevention Device & Drain Valve
X	P	201.3B	AGT Leak Decay (2")	X	P	201.1E	Leak Rate and Cracking Pressure of Pressure/Vacuum Vent Valves
		201.3C	Tie Tank Test			Exhibit 4	Determination of Static Pressure Performance of Healy CAS VR-201/VR-202
X	P	201.4	Dynamic Back Pressure			Exhibit 5	Vapor to Liquid Volume Ratio; VR-201/202
		201.5	Air/Liquid Ratio			Exhibit 6	VST ECS Hydrocarbon Sensor Verification Test VR-203/204
X	P	201.6C	Determination of Liquid Removal of VR system*			Exhibit 7 OR 10	Nozzle Bag Test Procedure VR-202/201 OR VR-203/204
		201.1B	Static Torque of Rotatable Phase I Adaptors			Exhibit 8	Vapor Pressure Sensor Verification Test VR-203/204
		201.1C	Leak Rate of Drop Tube/Drain Valve Assembly			Exhibit 9	ISD Operational Test Procedure VR-202 OR VST ECS Processor Activation Pressure VR-203/204
						Exhibit 11, 12, 13	ISD Operational Test Procedures for VST system VR-204

Comments/notes/additional tests: _____

2 Inch Pressure Decay TP201.3

Ref. No.: _____
 Permit #: 10995
 Site Name: Abengoa Mojave Solar
 Address: 9 Miles North West
Hinkley Ca.
 Phone: 714-744-4049

Testing Company

Name: Orange Coast Petroleum Equipment
 Address: 1015 N. Parker
Orange, CA 92867
 Phone: 714-744-4049

Phase I System? Two Point
 Phase II System? Coaxial Balance

Tanks Manifolder? No
 Vapor Pot Present? No

Total # of Nozzles 1
 Products per Nozzle 1

Total # of Tanks 1

Tank Information		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>All</u>
1.	Product Grade	<u>87</u>				
2.	Actual Tank Capacity, gallons	<u>2,000</u>				
3.	Gasoline Volume, gallons	<u>500</u>				
4.	Ullage, (V) gallons (line #2 minus line#3)	<u>1,500</u>				
Test Information		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
5.	Start time	<u>7:00</u>				
6.	Initial Test Pressure, inches H ₂ O	<u>2.00</u>				
7.	Pressure after 1 minute, inches H ₂ O	<u>1.96</u>				
8.	Pressure after 2 minutes, inches H ₂ O	<u>1.92</u>				
9.	Pressure after 3 minutes, inches H ₂ O	<u>1.88</u>				
10.	Pressure after 4 minutes, inches H ₂ O	<u>1.83</u>				
11.	Pressure after 5 minutes, inches H ₂ O	<u>1.79</u>				
12.	Allowable Final Pressure	<u>1.72</u>				
13.	Pass / Fail (Enter "GF" for Gross failure)	<u>PASS</u>				

9/4/14
8:00 AM
MANIFOLDED
9/3/14
-1.86
2 CFM
2m. 2s.
4m. 4s.
Ø
2.01
PN056 11

Requested Test Date.
 Requested Test Time.
 What type of pressure device used?
 Calibration date for pressure device (90 days):
 Enter initial tank ullage pressure (Vent if over 0.5 in. w.c., then start the 30 min no dispensing period)
 Enter flowmeter rate, F (Must be 1 to 5 CFM).
 Calculate ullage fill time, t₂.
 Calculate gross failure time (Twice t₂).
 Enter ending value of drift test (Must be 0.01 in. w.c. or less).
 Record Vapor Coupler Integrity Test Assembly pressure after 1 minute and location.
 Nitrogen introduction point. Phase I vapor coupler or Phase II vapor riser?

$$t_2 = \frac{V}{[1522]F}$$

Tester: J Badders

Tester Id: _____

Signature: J Badders

Test Date: 9-4-14

AQUID

714-744-4049

9.4.14

Dynamic Pressure

TP 201.4

Testing Company

Name: Orange Coast Petroleum Equipment

Address: 1015 N. Parker

Orange, CA 92867

Phone: **714-744-4049**

Phone: **714-744-4049**

[illegible]

Rotameter calibration date (Annual)

Pressure measuring device calibration date (Annual)

Time of back pressure unit leak check (Prior to each sites' tests)

Final pressure decay of back pressure unit in 5 minute.

Tester Id: _____

Test Date: 9.4.19

Leak Rate and Cracking Pressure of P/V Vent Valves



Ref. No.: _____
 AQMD Id: 10995
 Site Name: Abengoa Mojave Solar
 Address: 9 Miles North West
Hinkley Ca.
 Phone: 714-744-4049

Testing Company

Name: Orange Coast Petroleum Equipment
 Address: 1015 N. Parker
Orange, CA 92867
 Phone: 714-744-4049
 Calibration Date of Flow Meter _____
 Calibration Date of Pressure Gauge _____

P/V Valve Manufacturer:	Husky	Model Number:	5885	Pass/Fail:	PASS
Manufacturer Specified Positive Leak Rate (CFH):	.05	Manufacturer Specified Negative Leak Rate (CFH):			.21
Measured Positive Leak Rate(CFH)	0	Measured Negative Leak Rate (CFH)			0
Positive Cracking Pressure (in. H2O)	5.30	Negative Cracking Pressure (in. H2O)			9.60

P/V Valve Manufacturer:		Model Number:		Pass/Fail:	
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):			
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)			
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)			

P/V Valve Manufacturer:		Model Number:		Pass/Fail:	
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):			
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)			
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)			

P/V Valve Manufacturer:		Model Number:		Pass/Fail:	
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):			
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)			
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)			

P/V Valve Manufacturer:		Model Number:		Pass/Fail:	
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):			
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)			
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)			

P/V Valve Manufacturer:		Model Number:		Pass/Fail:	
Manufacturer Specified Positive Leak Rate (CFH):		Manufacturer Specified Negative Leak Rate (CFH):			
Measured Positive Leak Rate(CFH)		Measured Negative Leak Rate (CFH)			
Positive Cracking Pressure (in. H2O)		Negative Cracking Pressure (in. H2O)			

Tester: Jeff Badgers

Tester Id: _____

Signature: [Signature]

Test Date: 9-4-14

BELSHIRE TESTING & COMPLIANCE SERVICES

WORK ORDER

Date <u>9-4-14</u>	Job No. <u>13692</u>	Truck No. <u>2</u>	Customer PO No.	Closeout No.
-----------------------	-------------------------	-----------------------	-----------------	--------------

Site Information:

Brand Name: MOJAVE SOLAR Address: HARPER LAKE RD.
Station No.: _____ City: HINKLEY Phone: _____

Job Type:

☐ Secondary Containment ☐ Monitor Certification ☒ Vapor Recovery Test ☐ Repairs ☐ Inspection / Other

Services Performed:

*FAST START-UP VAPOR RECOVERY TEST
TP201.3B PASS
TP201.4 PASS
TP201.6C PASS
TP201.1E PASS

Arrival: 6:30 Departure: _____ Time On-Site: _____ Number of Personnel: 2
(Less Meals)

Technician Name

Dealer/Manager Name

Technician Signature

Dealer/Manager Signature



CALIBRATION CERTIFICATE

Date of Calibration: 4-07-14

Calibrated by: C Sims

Customer: ICON Safety

Certificate Number - 4071401

Signed: 

Description: Tiger Select

Manufacturer: Ion Science

Type Number: N/A

Serial Number: T-107685

Calibration Due Date: 4-15

Status of instrument upon receipt : New

X	Correct Working Condition
	Minor Work Required
	Incorrect Operation or Mechanically Broken

Measurement standards are derived from volumetric and time sources, which themselves are traceable to NIST. The relevant procedures are recorded and are available for inspection if required. The following indicates the identification numbers of traceable items used during the calibration procedure.

LOT# BAN-21-5-8

ION Science hereby certifies that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.

RESULTS AFTER CALIBRATION

Applied Flow: 100ppm Isobutylene	Instrument Indication: 100ppm Isobutylene
Applied Flow: 5ppm Benzene	Instrument Indication 5.1ppm Benzene

Unrivaled detection

ION Science LLC 4153 Bluebonnet Drive, Stafford TX 77477

Call Free 1-877-864-7710 info@ionscienceusa.com www.ionscience.com



CHECKLIST FOR PHOCHECK TIGER PRODUCT RANGE

KIT CONTENTS

PhoCheck Tiger Instrument	
PhoCheck Tiger Select Instrument	✓
Li-ion Battery Pack	✓
Alkaline Battery Pack	
Instrument Boot	✓
Charger	✓
Power Supply (12V)	✓
Quick Start Guide (Standard)	
Quick Start Guide (Tiger Select)	✓
Warranty Registration Card	✓
USB Stick	✓
USB Cable	✓
Accessory Kit	✓

Benzene Pre-Filter Tubes (pack of 10)	✓
Benzene Tube Holder	✓
Benzene Tube Opener	✓

UPGRADES

H&S (STEL & TWA)	861300	
PPB (Sensitivity)	861301	
Data Logging (Full)	861303	
Single Log (Push to log)	861309	
Multi Log	861310	
Tiger Select		✓

QUALITY CHECK

Software version:	0.4.22
Integrity seal present?	Yes/No

Final instrument inspection date:		06/11/13
-----------------------------------	---	----------

PD-FM-075-07

Unrivalled Detecton.

www.ionscience.com

Ion Science Ltd, The Way, Fowlmere, Cambs, SG8 7UJ, UK. T: +44 (0)1763 208 503 E: info@ionscience.com

"Rundquist, Dale@Energy"

11/13/2014 02:51 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>, "canderson@mdaqmd.ca.gov" <canderson@mdaqmd.ca.gov>
cc	"Kathleen.Sullivan@solar.abengoa.com" <Kathleen.Sullivan@solar.abengoa.com>, "nicholas.petrovitza@solar.abengoa.com" <nicholas.petrovitza@solar.abengoa.com>, "frances.sanchez@solar.abengoa.com" <frances.sanchez@solar.abengoa.com>
bcc	
Subject	RE: AQ-54-00-00

Hi Steven,

Energy Commission staff has reviewed the submittal for **AQ-54-00-00**, VOC Calculations and Testing Results for the Onsite Gasoline Tank, and finds Abengoa to be in compliance with the condition.

Thank you,

Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Wednesday, October 01, 2014 1:12 PM

To: canderson@mdaqmd.ca.gov

Cc: Rundquist, Dale@Energy; Rundquist, Dale@Energy; Kathleen.Sullivan@solar.abengoa.com; nicholas.petrovitza@solar.abengoa.com; frances.sanchez@solar.abengoa.com; william.grisolia@solar.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; angel.muller@abeinsaepc.abengoa.com; vernon.leeming@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com

Subject: AQ-54-00-00

Good Afternoon Chris,

Please see attached for the VOC calculations and testing results for the onsite gasoline tank for the Mojave Solar site. Per the AQ-54 CEC compliance, we are required to submit this information to MDAQMD. No approval is required. Don't hesitate to contact me with any questions or concerns.

Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA

13911 Park Avenue, Suite 208

Victorville, CA 92392

Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

www.teyma.com

 Eco-Tip: Printing e-mails is usually a waste.

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ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: October 27, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: AQ-67
Description: **Carbon Adsorption System VOC Monitoring Procedure**
Submittal No.: AQ67-00-00
To: Mr. Chris Anderson
Mojave Desert Air Quality
Management District.

WE ARE SENDING YOU

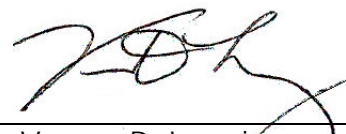
Document Name	Title	REV
AQ-67 Technical Memo		
Carbon Adsorption System VOC Monitoring Procedure	Carbon Adsorption System VOC Monitoring Procedure	0
Carbon Adsorption System	Carbon Adsorption System	0
VOC (as Hexane) Concentration Log	Attachment 1 VOC (as Hexane) Concentration Log	0
Tiger Select Calibration Sheet	Attachment 2 Phocheck Tiger Select Calibration Sheet	0
Tiger Instrument User Manual	Attachment 3 Phocheck Tiger Instrument User Manual	0
Tiger Select Instrument User Manual	Attachment 4 Phocheck Tiger Select Instrument User Manual	0

THESE ARE TRANSMITTED as checked below:

☒ For Approval

REMARKS

COPY TO: File SIGNED BY:


Vernon D. Leeming
Permitting Engineer

ABENER TEYMA MOJAVE

ABEINSA EPC

ABENER TEYMA MOJAVE

Technical Memo

Date: October 27, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: AQ-67
Description: **Carbon Adsorption System VOC Monitoring Procedure**
Submittal No.: AQ67-00-00

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

Dear Mr. Anderson,

In accordance with AQ-67 we are submitting the Carbon Adsorption System VOC Monitoring procedure for your approval. For your convenience, we are including the Compliance language below:

AQ-67:

During operation, the project owner shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

October 27, 2014

Mr. Chris Anderson
Mojave Desert Air Quality
Management District.
Permitting Department
14306 Park Ave
Victorville CA 92392
canderson@mdaqmd.ca.gov

PROCEDURE FOR MONITORING VOC (AS HEXANE) MEASURED AT OUTLET FROM THE
CARBON BEDS USING A DISTRICT APPROVED PHOTO IONIZATION DETECTOR (PID)

Dear Mr. Anderson:

This request is being submitted in behalf of Abeinsa EPC, primary contractor working at Mojave Solar LLC. Abeinsa EPC(AEPC) is requesting the Mojave Desert Air Quality Management District to review and approve the VOC monitoring procedure as per AQ-67 and the District's approval of using the PhoCheck Tiger Select Photo Ionization Detector.

Background

Mojave Solar LLC is a wholly owned subsidiary of Abengoa Solar Inc. The project will use established parabolic trough solar thermal technology to produce electrical power using a steam turbine generator fed from a solar steam generator. The solar steam generator receives heated heat transfer fluid (HTF) from solar thermal equipment comprised of arrays of parabolic mirrors that collect energy from the sun. The HTF is a synthetic material whose composition is a mixture of 26.5% biphenyl and 73.5% diphenyl ether. The HTF is heated to between 100 and 740 degrees Fahrenheit and through a series of heat exchangers, generates steam for power production. The California Energy Commission (CEC) has exclusive jurisdiction to license this project. The Mojave Solar site will occupy a 1,765-acre site in an unincorporated area of San Bernardino County near the community of Hinkley, California. The project site is accessed by Harper Lake Road, which is located approximately 20 miles west of Barstow along the Highway 58 corridor. The project site is approximately six miles north of where Harper Lake Road intersects with Highway 58.

The Project has two air pollution control devices – carbon adsorption system for the HTF/Ullage expansion system. According to the AQ-67 requirement, during operation, the project owner shall monitor volatile organic compound (VOC), as hexane, measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Scope of Application

This procedure is used to monitor the VOC concentrations (as hexane) weekly.

Summary of the Procedure

A vent gas sample is monitored for the VOC's using a Photo Ionization Detector (PID) at the Outlets of the Carbon Adsorption System.

Sampling Equipment

PhoCheck Tiger Select Photo Ionization Detector

Procedure

1. Identify the sampling location at the Outlet of the Carbon Adsorption System in operation.
2. Use the calibrated Photo Ionization Detector (PID) to measure VOC concentration in parts per million (ppm).
3. Setup the PID as per the manufacturer's O&M (Phocheck Tiger and Pho Check Tiger Select Manuals) before measuring. See attachments 3 and 4.
4. Once the PID is turned on, insert the PID at the Outlet location and wait for about 3 minutes to allow the reading to stabilize.
5. Once the reading is recorded, close the outlet sampling port.
6. The reading is recorded by following the manufacturer's O&M for Phocheck Tiger and PhoCheck Tiger Select Manuals.
7. Record the readings weekly in the VOC log sheet and save the electronic file.
8. The records shall be available for inspection for a period of 5 years.

Calibration

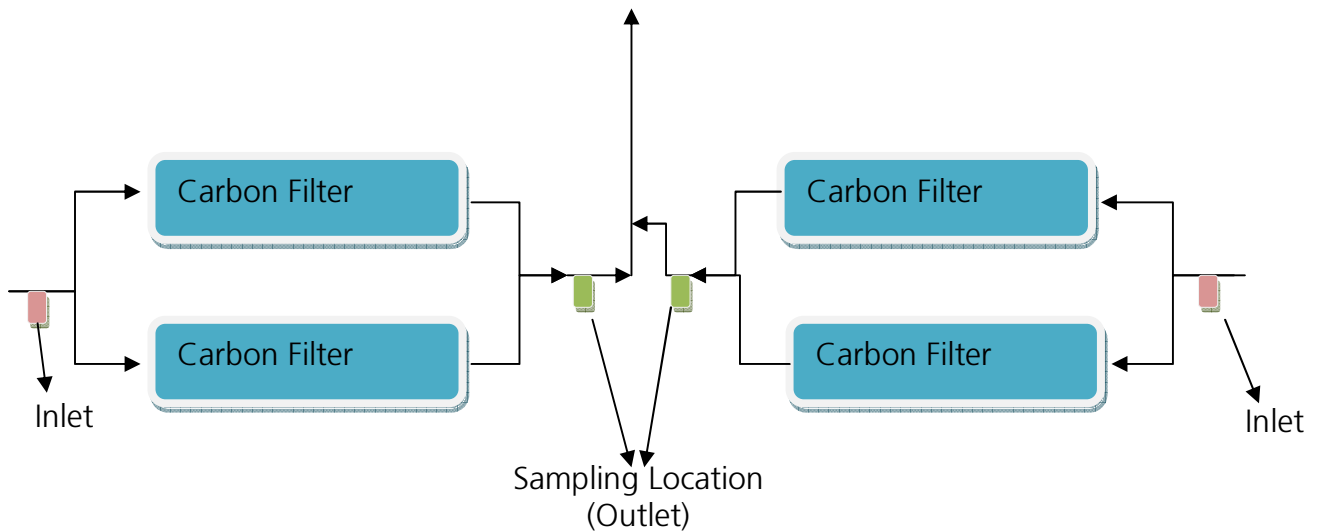
The PhoCheck Tiger Select Photo Ionization Detector will be calibrated as per the manufacturer's recommendations.

VOC concentration log

All measurements from the weekly VOC test shall be recorded in the VOC log table included in the appendix.

System Configuration

Carbon Adsorption System



Please confirm if the above described VOC testing procedure satisfies the requirements set forth in AQ-67.

Please feel free to contact the undersigned at (480) 768-7793 if you have any questions or require additional information.

Sincerely,

Manjunath Shivalingappa
Environmental Engineer
Abeinsa EPC, LLC

(480) 768-7793

Manjunath.shivalingappa@abeinsaepc.abengoa.com

Cc: Efrain Perez, Steven Pochamora

Attachments:

1. VOC (as Hexane) Concentration Log
2. Phocheck Tiger Select Calibration Sheet
3. Phocheck Tiger Instrument User Manual
4. Phocheck Tiger Select Instrument User Manual



MOJAVE DESERT AQMD
14306 Park Avenue, Victorville, CA 92392-2310

AUTHORITY TO CONSTRUCT

B011046

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co: 1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac: 3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:

HEAT TRANSFER FLUID ULLAGE/EXPANSION SYSTEM (ALPHA) consisting of:
Heat Transfer Fluid (HTF) expansion, storage, and condensation system as follows:

Capacity	Equipment Description
0	Four vertical ASME rated expansion vessels with a nitrogen ullage cooler on vent stack before scrubber
0	One horizontal ASME rated low boiler condensate receiver vessel
0	Ullage vent scrubber
0	Overflow tank vent scrubber
0	Activated carbon filters-ullage/overflow tank system (Permit C012015)
0	Two vertical HTF overflow/storage tanks with water cooled liquid HTF cooler
0	Associated temperature monitoring devices
0	HTF circulation pumps
0	Associated valves, flanges/connectors, pump seals, and pressure relief valves
0	One common vent stack venting carbon beds

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This system shall store only HTF, in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.
3. The four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF overflow tanks shall be operated at all times under a nitrogen blanket.
4. The ullage/expansion system nitrogen venting (to atmosphere) shall be carried out only through District permit unit C012015.
5. The owner/operator shall establish an inspection and maintenance program to determine, repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.
 - a. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating day.

Fee Schedule: 7(i)

Rating: 1 device

SIC: 4911

SCC: 40703601

Location/UTM(Km):
470E/3877N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

BY:


Eldon Heaston
Air Pollution Control Officer

DATE: 03/03/2014

- b. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.
- c. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, may be changed from quarterly to annual when two percent or less of the components within a component type are found to leak during an inspection for five consecutive quarters.
- d. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, shall be increased to quarterly when more than two percent of the components within a component type are found to leak during any inspection or report.
- e. If any evidence of a potential leak is found the indication of the potential leak shall be eliminated within 7 calendar days of detection.
- f. VOC leaks greater than 10,000-ppmv shall be repaired within 24-hours of detection.
- g. After a repair, the component shall be re-inspected for leaks as soon as practicable, but no later than 30 days after the date on which the component is repaired and placed in service.
- h. O/o shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, date of leak detection, emission level (ppmv), method of leak detection, date of and repair, date and emission level of reinspection after leak is repaired.
- i. O/o shall maintain records of the total number of components inspected, and the total number and percentage of leak components found, by component types made.
- j. O/o shall maintain record of the amount of HTF replaced on a monthly basis for a period of 5 years.

6. If current non-criteria substances become regulated as toxic or hazardous substances and are used in this equipment, the owner/operator (o/o) shall submit to the District a plan demonstrating how compliance will be achieved and maintained with such regulations.



MOJAVE DESERT AQMD
14306 Park Avenue, Victorville, CA 92392-2310

AUTHORITY TO CONSTRUCT

B011047

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co: 1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac: 3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:

HEAT TRANSFER FLUID ULLAGE/EXPANSION SYSTEM (BETA) consisting of:
Heat Transfer Fluid (HTF) expansion, storage, and condensation system as follows:

Capacity	Equipment Description
0	Four vertical ASME rated expansion vessels with a nitrogen ullage cooler on vent stack before scrubber
0	One horizontal ASME rated low boiler condensate receiver vessel
0	Ullage vent scrubber
0	Overflow tank vent scrubber
0	Two sets of activated carbon filters; ullage system and overflow system (Permit C012016)
0	Two vertical HTF overflow/storage tanks with water cooled liquid HTF cooler
0	

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This system shall store only HTF, in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.
3. The four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF overflow tanks shall be operated at all times under a nitrogen blanket.
4. The ullage/expansion system nitrogen venting (to atmosphere) shall be carried out only through District permit unit C012016.
5. The owner/operator shall establish an inspection and maintenance program to determine, repair, and log leaks in HTF piping network and expansion tanks. Inspection and maintenance program and documentation shall be available to District staff upon request.
 - a. All pumps, compressors and pressure relief devices (pressure relief valves or rupture disks) shall be electronically, audio, or visually inspected once every operating day.
 - b. All accessible valves, fittings, pressure relief devices (PRDs), hatches, pumps, compressors, etc. shall be inspected quarterly using a leak detection device such as a Foxboro OVA 108 calibrated for methane.
 - c. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, may be changed from quarterly to annual when two percent or less of the components within a component type are found to leak during an inspection for five consecutive

Fee Schedule: 7(i)

Rating: 1 device

SIC: 4911

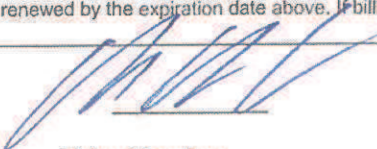
SCC: 40703601

Location/UTM(Km):
470E/3877N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

BY:


Eldon Heaston
Air Pollution Control Officer

DATE: 03/03/2014

quarters.

- d. Inspection frequency for accessible components, except pumps, compressors and pressure relief valves, shall be increased to quarterly when more than two percent of the components within a component type are found to leak during any inspection or report.
- e. If any evidence of a potential leak is found the indication of the potential leak shall be eliminated within 7 calendar days of detection.
- f. VOC leaks greater than 10,000-ppmv shall be repaired within 24-hours of detection.
- g. After a repair, the component shall be re-inspected for leaks as soon as practicable, but no later than 30 days after the date on which the component is repaired and placed in service.
- h. O/o shall maintain a log of all VOC leaks exceeding 10,000-ppmv, including location, component type, date of leak detection, emission level (ppmv), method of leak detection, date of and repair, date and emission level of reinspection after leak is repaired.
- i. O/o shall maintain records of the total number of components inspected, and the total number and percentage of leak components found, by component types made.
- j. O/o shall maintain record of the amount of HTF replaced on a monthly basis for a period of 5 years.

6. If current non-criteria substances become regulated as toxic or hazardous substances and are used in this equipment, the owner/operator (o/o) shall submit to the District a plan demonstrating how compliance will be achieved and maintained with such regulations.

AQ-7 (Deleted)

AQ-8 (Deleted)

Application No. 00010906 MD1000001202 and 00010907 MD1000001204 (Two - HTF Ullage/Expansion System)

EQUIPMENT DESCRIPTION

Two HTF ullage/expansion systems.

AQ-10 This system shall store only HTF, specially the condensable fraction of the vapors vented from the ullage system. in liquid and/or vapor phase (including low boilers and high boilers), and nitrogen for blanketing.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-11 The expansion tanks (5), nitrogen condensing tank four (4) vertical expansion vessels, low boiler condensate receiver vessel, and two (2) vertical HTF storage overflow tanks shall be operated at all times under a nitrogen blanket.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-12 The ullage/expansion system nitrogen venting shall be carried out only through vents which have vapor condensing coolers which shall be maintained at or below 120 degrees Fahrenheit. District permit numbers C012015 and C012016.

Verification: The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to the installation of the ullage/expansion vent system. The project owner shall have active temperature gauges that can be inspected to show compliance with this condition.

AQ-13 The HTF storage tank shall have in place a properly operating liquid HTF air cooler which shall maintain the tank at or below 165 degrees Fahrenheit.

Verification: The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to the installation of the HTF storage tanks. The project owner shall have active temperature gauges that can be inspected to show ongoing compliance with this condition.

AQ-14 The nitrogen condensing tanks shall be maintained at or below 176 degrees Fahrenheit.

Verification: The project owner shall provide the District and CPM manufacturer design specifications showing compliance with this condition at least 30 days prior to

~~the installation of the nitrogen condensing tanks. The project owner shall have active temperature gauges that can be inspected to show ongoing compliance with this condition.~~

~~**AQ-15** — Vent release and HTF storage tank temperatures shall be monitored in accordance with a District approved Inspection, Monitoring and Maintenance plan.~~

~~**Verification:** — The project owner shall provide the District for review and approval and the CPM for review the required Inspection, Monitoring and Maintenance plan at least 30 days prior to the installation of the HTF storage tanks and vent systems.~~

~~**AQ-13 (Reserved)**~~

~~**AQ-14 (Reserved)**~~

~~**AQ-15 (Reserved)**~~

~~**AQ-17** — The project owner shall submit to the District a compliance test protocol within sixty (60) days of start up and shall conduct all required compliance/certification tests in accordance with a District approved test plan. Thirty (30) days prior to the compliance/certification tests the project owner shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty five (45) days after testing.~~

~~**Verification:** — The project owner shall provide a compliance test protocol to the District for approval and CPM for review at least no later than sixty (60) days after start up and submit a test plan to the District for approval and CPM for review at least thirty (30) days prior to the compliance tests. The project owner shall notify the District and the CPM within ten (10) working days before the execution of the compliance tests required in **AQ-18** and **AQ-19**, and the test results shall be submitted to the District and to the CPM within forty five (45) days after the tests are conducted.~~

~~**AQ-18** — The project owner shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of initial start up. The following compliance tests are required:~~

- ~~a. VOC as CH₄ in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).~~
- ~~b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).~~

Verification: The project owner shall submit the test results to the District and to the CPM within 180 days after initial start up.

AQ-19 — The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:

- a. VOC as CH₄ in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).
- b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District personnel upon request.

Verification: — As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-20 — Emissions from this equipment may not exceed the following emission limits, based on a calendar day summary:

- a. VOC as CH₄ — 4.55 lb/day, verified by compliance test.
- b. Benzene — 1.9 lb/day, verified by compliance test.

Verification: — As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-17 (Reserved)

AQ-18 (Reserved)

AQ-19 (Reserved)

AQ-20 (Reserved)

Application No. 00010712 MD1000001206 and 00010713 MD1000001207 (Two - 4,190 HP 2,280kW Emergency IC Engine)

EQUIPMENT DESCRIPTION

Two - 490 HP 2,280kW diesel fueled emergency generator engines, each driving a generator.



MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

AUTHORITY TO CONSTRUCT

C012015

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co. #1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac. #3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:

CARBON ADSORPTION SYSTEM, HTF ULLAGE/EXPANSION SYSTEM (ALPHA) consisting of: Carbon adsorption system having two (2) multi-bed carbon filter sets capturing ullage/expansion system emissions. Ullage vent scrubber and overflow tank vent scrubber will each vent only to their own carbon filter set. Both sets will vent to atmosphere through one common stack.

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit B011046 is venting.
3. This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit B011046. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Fee Schedule: 7 (h)

Rating: 1 device

SIC: 4911

SCC: 30688801

Location/UTM(Km):
470E/3877N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

By:

Eldon Heaston
Air Pollution Control Officer

4. The owner/operator shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.
5. Total emissions of VOC to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.
6. Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.
7. During operation, o/o shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).
8. PID shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.
9. The o/o shall maintain an operations log (in electronic or hardcopy format) current and on-site for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.
 - a. Date and time of VOC monitoring;
 - b. Results of VOC monitoring; and
 - c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).
10. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.
11. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).
12. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.
13. The o/o shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of COD. The following compliance tests are required:
 - a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).
 - b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).
14. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
 - a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).
 - b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District

personnel upon request.



MOJAVE DESERT AIR QUALITY MANAGEMENT DISTRICT

14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 -- 800.635.4617 -- FAX 760.245.2022

AUTHORITY TO CONSTRUCT

C012016

If construction is not completed by the expiration date of this permit, it may be renewed for one additional year upon payment of applicable fees. Any additional extension will require the written approval of the Air Pollution Control Officer. This Authority to Construct may serve as a temporary Permit to Operate provided the APCO is given prior notice of intent to operate and the Permit to Operate is not specifically denied.

EXPIRES LAST DAY OF: SEPTEMBER 2014

OWNER OR OPERATOR (Co. #1876)

Mojave Solar LLC
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

EQUIPMENT LOCATION (Fac. #3130)

Mojave Solar
Harper Lake Road, adjacent to SEGS VIII & IX
Hinkley, CA 92347

Description:

CARBON ADSORPTION SYSTEM, HTF ULLAGE/EXPANSION SYSTEM (BETA) consisting of: Carbon adsorption system having two (2) multi-bed carbon filter sets capturing ullage/expansion system emissions. Ullage vent scrubber and overflow tank vent scrubber will each vent only to their own carbon filter set. Both sets will vented to atmosphere through one common stack.

CONDITIONS:

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.
2. This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit B011047 is venting.
3. This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit B011047. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Fee Schedule: 7 (h)

Rating: 1 device

SIC: 4911

SCC: 30688801

Location/UTM(Km):
470E/3877N

This permit does not authorize the emission of air contaminants in excess of those allowed by law, including Division 26 of the Health and Safety Code of the State of California and the Rules and Regulations of the District. This permit cannot be constructed as permission to violate existing laws, ordinances, statutes or regulations of this or other governmental agencies. This permit must be renewed by the expiration date above. If billing for renewal fee required by Rule 301(c) is not received by expiration date above, please contact the District.

Mojave Solar LLC
13911 Park Avenue, Suite 206
Victorville, CA 92392-2407

By:
Eldon Heaston
Air Pollution Control Officer

4. The owner/operator shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.
 5. Total emissions of VOC to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.
 6. Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.
 7. During operation, o/o shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).
 8. PID shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.
 9. The o/o shall maintain an operations log (in electronic or hardcopy format) current and on-site for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.
 - a. Date and time of VOC monitoring;
 - b. Results of VOC monitoring; and
 - c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).
 10. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.
 11. Prior to January 31 of each new year, the o/o of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).
 12. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.
 13. The o/o shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of COD. The following compliance tests are required:
 - a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).
 - b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).
 14. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
 - a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25A and 18 or equivalent).
 - b. Benzene in ppmvd and lb/hr (measured per CARB method 410 or equivalent).
- Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District

personnel upon request.

Verification: The project owner shall submit to the CPM gasoline throughput records demonstrating compliance with this condition as part of the Annual Compliance Report. The project owner shall maintain on site the annual gasoline throughput records and shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-59 The project owner shall install, maintain, and operate **Enhanced Vapor Recovery (EVR) Phase I and Phase II** in compliance with CARB Executive Order VR 401 A, and Phase II vapor recovery in accordance with G 70 116-~~F132~~ **A current ARB Executive Orders with the exception that hanging hardware shall be EVR Balance Phase II type hanging hardware (Vapor Systems Technologies [VST] or other ARB Approved EVR Phase II Hardware)**. In the event of conflict between these permit conditions and/or the referenced EO's the more stringent requirements shall govern. **[Rule 204]**

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-60 **The project owner shall install, maintain, and operate this equipment in compliance with these permit conditions and 40 CFR Part 63 Subpart CCCCC; in the event of conflict the more stringent requirements shall govern. [Rule 204]**

Verification: **The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.**

Application No. MD100000tbd and MD100000tbd (Two Air Pollution Control Devices- Carbon Adsorption System for the HTF Ullage/Expansion system)

EQUIPMENT DESCRIPTION

Two Air Pollution Control Devices- Carbon Adsorption System for the HTF Ullage/Expansion system

AQ-61 **Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.**

Verification: **The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.**

AQ-62 **This equipment must be in use and operating properly at all times the HTF ullage/expansion system with valid District Permit numbers B011046 and B011047 is venting.**

Verification: **The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.**

AQ-63 This carbon adsorption system shall provide at a minimum 95% control efficiency of VOC emissions vented from the HTF ullage/expansion system under valid District Permit numbers B011046 and B011047. Control efficiency shall be demonstrated by sampling VOC emissions per US EPA Method 25 at the inlet and outlet of the carbon beds during initial and annual compliance tests.

Verification: The project owner shall notify the District and the CPM within fifteen (15) working days before the execution of the compliance test required in this condition. The initial test results shall be submitted to the District and to the CPM within 180 days of initial start up. As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with control efficiency.

AQ-64 The project owner shall prepare and submit a monitoring and change-out plan for the carbon adsorption system which ensures that the system is operating at optimal control efficiency at all times for District approval 60 days prior to commercial operation date (COD). Once approved, any subsequent changes to the monitoring and change-out plan must be submitted in writing to the District for approval prior to implementation.

Verification: The project owner shall provide the District for review and approval and the CPM for review the required monitoring and change-out plan within the timeframe required by this condition.

AQ-65 Total emissions of volatile organic compounds (VOC) to the atmosphere shall not exceed 792.1 lbs/year, calculated based on the most recent test results.

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-66 Total emissions of benzene to the atmosphere shall not exceed 507.4 lbs/year, calculated based on the most recent test results.

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-67 During operation, the project owner shall monitor VOC (as hexane) measured at outlet from the carbon beds. Sampling is to be performed at a minimum on a weekly basis. Samples shall be analyzed using a District approved photo ionization detector (PID).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-68 The photo ionization detector shall be considered invalid if not calibrated in accordance with the manufactures recommended calibration procedures.

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-69 The project owner shall maintain an operations log (in electronic or hardcopy format) current and onsite for a period of five (5) years. The log shall contain at a minimum the following information and shall be provided to District personnel upon request.

a. Date and time of VOC monitoring;

b. Results of VOC monitoring; and

c. Date and description of all maintenance, malfunctions, repairs, and carbon change out(s).

Verification: The project owner shall make the site available for inspection of records and equipment by representatives of the District, ARB, and the Energy Commission.

AQ-70 Prior to January 31 of each new year, the project owner of this unit shall submit to the District a summary report of all VOC emissions (based on annual source test results).

Verification: As part of the Annual Compliance Report, the project owner shall include the test results demonstrating compliance with this condition and the project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-71 The project owner shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

Verification: The project owner shall make the site available for inspection of records by representatives of the District, ARB, and the Energy Commission.

AQ-72 The project owner shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a

written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing is completed.

Verification: The project owner shall provide a compliance test protocol to the District for approval and CPM for review at least thirty (30) days prior to the compliance tests. The project owner shall notify the District and the CPM within ten (10) working days before the execution of the compliance tests required in AQ-73 and AQ-74, and the test results shall be submitted to the District and to the CPM within forty-five (45) days after the tests are conducted.

AQ-73 The project owner shall perform the following initial compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District within 180 days of the commercial operation date (COD). The following compliance tests are required:

a. VOC as hexane in ppmvd and lb/hr (measured per USEPA Reference Methods 25 and 18 or equivalent).

b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent).

Verification: The project owner shall notify the District and the CPM within thirty (30) working days before the execution of the compliance test required in this condition. The test results shall be submitted to the District and to the CPM within 180 days of initial start up.

AQ-74 The project owner shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:

a. VOC as hexane in ppmvd and lb/hr (measured per US EPA Reference Methods 25A and 18 or equivalent).

b. Benzene in ppmvd and lb/hr (measured per ARB Method 410 or equivalent).

Additionally, records of all compliance tests shall be maintained on site for a period of five (5) years and presented to District personnel upon request.

Verification: As part of the Annual Compliance Report, the project owner shall include information demonstrating compliance with operating emission rates.

IT IS SO ORDERED.

CERTIFICATION

The undersigned Secretariat to the Commission does hereby certify that the foregoing is a full, true, and correct copy of an Order duly and regularly adopted at a meeting of the California Energy Commission held on April 22, 2014.

AYE: Weisenmiller, Douglas, Hochschild, Scott

NAY: None

ABSENT: McAllister

ABSTAIN: None



Harriet Kallemeyn,
Secretariat

VOC Concentration Log

Operator's Name:

Plant:

Carbon Bed Name:

[illegible]



CALIBRATION CERTIFICATE

Date of Calibration: 4-07-14

Calibrated by: C Sims

Customer: ICON Safety

Certificate Number - 4071401

Signed: 

Description: Tiger Select

Manufacturer: Ion Science

Type Number: N/A

Serial Number: T-107685

Calibration Due Date: 4-15

Status of instrument upon receipt : New

X	Correct Working Condition
	Minor Work Required
	Incorrect Operation or Mechanically Broken

Measurement standards are derived from volumetric and time sources, which themselves are traceable to NIST. The relevant procedures are recorded and are available for inspection if required. The following indicates the identification numbers of traceable items used during the calibration procedure.

LOT# BAN-21-5-8

ION Science hereby certifies that on the day of calibration the instrument was working according to the manufacturer's original sales specification as checked by the calibration procedure, unless otherwise stated.

RESULTS AFTER CALIBRATION

Applied Flow: 100ppm Isobutylene	Instrument Indication: 100ppm Isobutylene
Applied Flow: 5ppm Benzene	Instrument Indication 5.1ppm Benzene

Unrivaled detection

ION Science LLC 4153 Bluebonnet Drive, Stafford TX 77477

Call Free 1-877-864-7710 info@ionscienceusa.com www.ionscience.com



CHECKLIST FOR PHOCHECK TIGER PRODUCT RANGE

KIT CONTENTS

PhoCheck Tiger Instrument	
PhoCheck Tiger Select Instrument	✓
Li-ion Battery Pack	✓
Alkaline Battery Pack	
Instrument Boot	✓
Charger	✓
Power Supply (12V)	✓
Quick Start Guide (Standard)	
Quick Start Guide (Tiger Select)	✓
Warranty Registration Card	✓
USB Stick	✓
USB Cable	✓
Accessory Kit	✓

Benzene Pre-Filter Tubes (pack of 10)	✓
Benzene Tube Holder	✓
Benzene Tube Opener	✓

UPGRADES

H&S (STEL & TWA)	861300	
PPB (Sensitivity)	861301	
Data Logging (Full)	861303	
Single Log (Push to log)	861309	
Multi Log	861310	
Tiger Select		✓

QUALITY CHECK

Software version:	0.4.22
Integrity seal present?	Yes / No

Final instrument inspection date:		06/11/13
-----------------------------------	---	----------

PD-FM-075-07

Unrivalled Detecton.

Ion Science Ltd, The Way, Fowlmere, Cambs, SG8 7UJ, UK. T: +44 (0)1763 208 503 E: info@ionscience.com

www.ionscience.com

TIGER

Instrument User Manual V3.2



Register
your instrument
online to receive
your extended
warranty.

Unrivalled Detection.

www.ionscience.com

Register your instrument online for extended warranty

Thank you for purchasing your Ion Science product.

The standard warranty of your instrument can be extended to up to five years on Tiger and two years on other Ion Science product.

To receive your extended warranty, you must register your instrument online within one month of purchase (terms and conditions apply.)

Visit www.ionscience.com/instrument-registration



Warnings

USER MANUAL:	Read and understand this user manual completely before operating the TIGER instrument.
Intrinsically Safe:	This instrument has been designed and certified intrinsically safe.
STATIC HAZARDS:	Do not use abrasive or chemical detergents to clean the TIGER instrument as this may reduce the antistatic properties of the materials used, clean it using a damp cloth only.
MATERIAL EXPOSURE	The TIGER must not be exposed to atmospheres known to have an adverse effect on Thermoplastic polyolefin or Anti-static PC/ABS.
SERVICING:	<p>No part of the TIGER may be opened in a hazardous area except for replacement of the battery pack. The TIGER must be serviced in a Non Hazardous environment and by Ion Science Ltd authorised service centres only.</p> <p>Do not service the instrument live; Remove the battery pack before servicing.</p> <p>Substitution of components may impair intrinsic safety.</p>
BATTERY CHARGING:	Charge TIGER and its Lithium ion battery pack in a Non Hazardous environment only.
BATTERY REPLACEMENT:	Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.
BATTERY CONNECTION:	<p>The TIGER's Lithium ion and Alkaline battery packs have been specially designed to allow connection to the TIGER Instrument while in potentially hazardous atmospheres.</p> <p>The TIGER instruments ingress protection rating is reduced to IP 20 when its battery pack is removed so avoid changing batteries in dusty or wet environments.</p>
FUNCTIONAL TEST:	The TIGER must be functionally checked prior to entering a hazardous area after every occasion when a connection has been made to the USB port. The instrument must complete its start up routine and display legible readings. If the LCD display fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.
USB CONNECTION:	The USB port can only be used in a Non Hazardous environment

Special Conditions for safe use	<p>If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.</p> <p>The TIGER must be functionally checked prior to entering a hazardous area after every occasion when a connection been made to the USB port. The instrument must complete its start up routine and display legible readings. If the LCD display fails to show an intelligible and uncorrupted display the instrument must not enter a hazardous area.</p>
--	--



Declaration of conformity

Manufacturer: Ion Science Ltd, The Way, Fowlmere, Cambridge, UK. SG8 7UJ

Product: TIGER

Product description: Intrinsically safe photo-ionisation gas detector for detecting volatile organic compounds

Directive 94/9/EC **Required Coding** -  II 1 G Ex ia IIC T4 Ga

$T_{amb.} = -15^{\circ}\text{C}$ to $+45^{\circ}\text{C}$ (with Lithium ion Battery pack)

$T_{amb.} = -15^{\circ}\text{C}$ to $+40^{\circ}\text{C}$ (with Alkaline Battery pack)

Certificate Number- ITS09ATEX26890X IECEx ITS 10.0036X

Notified body: Intertek, 0359, Chester, UK

Report number: 11052972D1

Intertek 3193491 Conforms to UL Std. 913, 61010-1 & Certified to CAN/CSA Std. C22.2 No.61010-1

Standards

BS EN 60079-0: 2009 Electrical apparatus for explosive gas atmospheres. General requirements

BS EN 60079-11: 2007 Explosive atmospheres. Equipment protection by intrinsic safety "i"

BS EN61326-1:2006 Electrical equipment for measurement, control and laboratory use - EMC requirements. Group 1, Class B equipment - (emissions section only)

BS EN61326-1:2006 Electrical equipment for measurement, control and laboratory use - EMC requirements. Industrial location immunity - (immunity section only)

BS EN50270:2006 Electromagnetic compatibility - Electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen. Immunity Type 2 - industrial environments.

CFR 47:2008 Class A Code of Federal Regulations: 15 Subpart B- Radio Frequency Devices - Unintentional Radiators

Other Standards

BS EN ISO 9001: 2008 Quality Management System - Requirements

BS EN 13980: 2002 Potentially Explosive Atmospheres - Application of Quality Systems

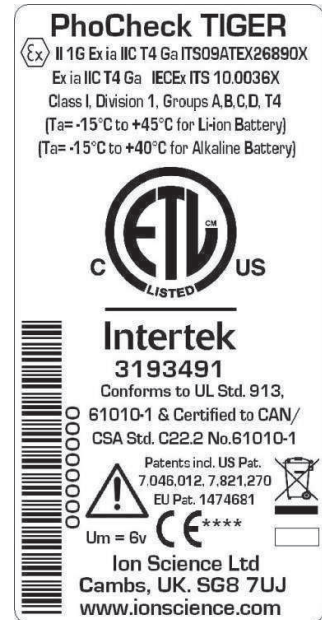
On behalf of Ion Science Ltd, I declare that, on the date this product accompanied by this declaration is placed on the market, the product conforms to all technical and regulatory requirements of the above listed directives.

Name: Mark Stockdale

Position: Technical Director

Signature:

Date: 20th January 2010





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Statements

Responsibility for Use

TIGER instruments detect a large range of gases which are potentially dangerous from both a poisoning and/or an explosive perspective. TIGER instruments have many adjustable and selectable features allowing the detector to be used in a variety of ways. Ion Science Ltd can accept no responsibility for the incorrect adjustment of features that cause harm or damage to persons or property. TIGER can be used as a personal safety device. It is the user's responsibility to respond appropriately to an alarm situation.

Inadequate performance of the gas detection equipment described in this manual may not necessarily be self-evident and consequently equipment must be regularly inspected and maintained. Ion Science Ltd recommends that personnel responsible for equipment use a regime of regular checks to ensure it performs within calibration limits, and that a record be maintained which logs calibration check data. The equipment should be used in accordance with this manual, and in compliance with local safety standards.

IMPORTANT

It is essential that the TIGER is always used with a supplied 0.5 micron PTFE Filter Disc fitted to the front of the instrument. Without a filter, particles of debris and dust can be drawn into the detector inhibiting the function of the instrument. These filters are consumable and should be changed after every 100 hours of use. The frequency of replacement should be increased for dusty or moisture laden environments. Filters are available from your distributor or at www.ionscience.com.

Quality Assurance

TIGER has been manufactured in compliance with ISO9001:2008, which ensures that the equipment supplied to our customers has been designed and assembled reproducibly, from traceable components, and leaves Ion Science Ltd calibrated to stated standards.

Disposal

Dispose of TIGER, its components and any used batteries in accordance with all local and national safety and environmental requirements. This includes the European WEEE (Waste Electrical and Electronic Equipment) directive. Ion Science Ltd offers a take back service. Please contact us for more information. The TIGER field case material is recyclable polypropylene.

Calibration Facility

Ion Science Ltd offers a calibration service including the issue of certification confirming calibration with equipment traceable to national standards. A TIGER calibration kit is available from your distributor or service centre or at www.ionscience.com. Ion Science Ltd recommends annual return of all instruments for yearly service and calibration.

Legal Notice

Whilst every attempt is made to ensure the accuracy of the information contained in this manual, Ion Science Ltd accepts no liability for errors or omissions, or any consequences deriving from the use of information contained herein. It is provided "as is" and without any representation, term, condition or warranty of any kind, either express or implied. To the extent permitted by law, Ion Science Ltd shall not be liable to any person or entity for any loss or damage which may arise from the use of this manual. We reserve the right at any time and without any notice to remove, amend or vary any of the content which appears herein.



Introduction to Tiger

TIGER is a portable gas detector that uses Photo-ionization technology to detect a large range of Volatile Organic Compounds (VOC's) which can be dangerous from both a poisoning and explosive perspective.

The TIGER uses a Photo-Ionization Detector (PID) to measure gas concentrations. The patented fence electrode technology minimises the effects of moisture and contamination, avoiding the need for compensation.

Survey is the default mode of operation. This mode is often used in applications such as Head Space Sampling and Leak Detection where several areas (or Zones) are to be monitored and readings data logged. All sensor readings are real time measurements and alarm levels are set manually.

Health and Safety (optional) mode is used to check for conformity of short-term exposure levels (STEL) or time-weighted averages (TWA) that are specific for particular hazardous environments (for example EH40 in the UK and OSHA in the USA). In this mode of operation STEL's and TWA's are continually calculated and compared to levels set in the instrument's gas table.

The TIGER can be upgraded from the users own desk top. Additional features can be added without the need to return the instrument to a service centre.

Like its predecessor, PhoCheck+, the TIGER also has an intuitive graphical interface allowing easy access to instrument settings. Two soft keys A and B can be configured to suit the user's application, so many functions can be selected without entering the main menu structure. This improves efficiency of use, particularly with repeatable tasks.

TIGER PC (the TIGER's PC Software) maintains the intuitive look and feel by adopting the same graphical symbols. TIGER PC also helps manage logged data files and multiple instrument settings in a clear and concise way.

The TIGER uses a Lithium-ion battery pack that not only boasts an impressive running time and short charge time, but also allows the battery pack to be replaced in potentially hazardous environments. Field replaceable alkaline battery packs (non-rechargeable) are also available for when power to recharge is unavailable.

The TIGER has true USB capability so the instrument can be connected directly to a PC via a standard USB cable. It also offers fast data download.

A loud audio output, vibration and bright LED's indicate alarm conditions. Orange and Red LED's indicate High and Low conditions respectively. This colour scheme is used within TIGER PC to offer clear indication of alarm levels within logged data.



Getting started

Thank you for choosing TIGER from Ion Science Ltd. We hope that your TIGER will give you many years of active and trouble-free service.

The Manual

Ion Science Ltd recommend that you familiarise yourself with this manual before using your TIGER. The 'Statements' and 'Introduction to TIGER' sections contain important information, which should be read before you turn your TIGER on for the first time.

Inlet Nozzles

Ensure that the inlet nozzle supplied is fitted to your TIGER. Details on how to fit and change inlet nozzles is detailed in the 'Maintenance' section. If the supplied inlet nozzle is unsuitable for your application, details of alternative inlet nozzles can be found in the 'Maintenance' section as well.

Turn On

Press the **Enter / On/Off** key once to turn TIGER on.



Turn Off

Press and hold the **Enter / On/Off** key for 3 seconds, indicated by a 3 second countdown, to turn TIGER off. (**Note:** If the TIGER fails to shut down, press the **Escape (Esc)** key once or twice to return to the main screen, then press and hold the **Enter / On/Off** key again.)



Batteries

Check that your TIGER has sufficient charge for use. The battery icon (see 'Understanding the display screen') should show at least two full segments.

Rechargeable Batteries


TIGER instruments leave the factory with the Rechargeable Battery Pack (A2) fully charged. However prolonged periods of storage may result in the battery pack discharging. We recommend charging the instrument for seven hours before use. See the 'Batteries' section of this manual pages 33 to 35.

Alkaline Batteries

An alkaline AA Battery Pack (A3) is also supplied with the TIGER. For more information please see the 'Batteries' section of this manual.

Select the Gas

TIGER instruments leave Ion Science Ltd pre-set for gas type TVOC (total volatile organic compounds). Instruments are factory calibrated against isobutylene and all response factors are equivalent to this. By changing the gas from the internal gas table all readings will be given using that gas's response factor. Switch the TIGER on by pressing the Enter / On/Off key once.

Press the **Information** icon  (see 'Using your TIGER') and check the correct gas alarms are selected. Change the gas (if necessary) as instructed under Gas Selection in the 'Using your TIGER' section.

Set Alarm Levels

We recommend that alarm levels are set to user specifications as soon as possible before the TIGER is used for the first time. Please see the 'Using your TIGER' section of the manual for details of how to set alarm levels.

TIGER PC. The full functionality of your TIGER can only be realised through the TIGER PC software. Ion Science Ltd recommend that you load the software supplied with your instrument and set up your TIGER according to the instructions in the 'TIGER PC Software' section of this manual.



Understanding the keypad

General Description

The keypad comprises two soft keys: **A** and **B**, **Up** and **Down** arrow keys, an **Escape (Esc)** key, and an **Enter / On/Off** button. In general, setup and application settings are selected and adjusted via the soft keys, options are selected by the arrow keys and confirmed by the **Enter** key. A single press is used as a switching operation. A continuous press is used to adjust numbers or change gas selections by automatically rolling.

Keypad Function Descriptions

	Soft keys A and B rely on graphical prompts on the display to indicate their functionality.		
	Note: Pressing both soft keys together switches the flashlight / torch on and off.		
	Up and Down keys are used to adjust settings and navigate through the menu structure.		
	Enter / On/Off key is used to accept adjustments and select functions; also to turn the TIGER on and off.		
	Escape (Esc) key is used to abort an adjustment or exit from a menu.		



Understanding the display screen

Screen Display

The display is divided into four sections.

Fixed LCD Status icons fill the top of the screen offering instrument status at a glance. The Icons display only when a function is selected. The main central viewing screen will display readings in large numbers only, 4 digits and decimal place will display 0.001 ppm to 19,999 ppm. Two soft key areas have been set aside as soft key indicators. The area between the soft key indicators displays the measurement units.



Left is the default display with no functions active.



Right is the display with all functions active.

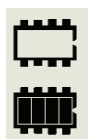
Status icon



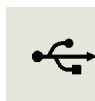
Health and Safety (optional): The icon consists of a single part and will flash in an alarm condition and when health and safety readings are being collected.



Peak Hold: When peak hold is switched on, the icon appears.



Memory Status: This icon only appears if the instrument has the data logging functionality. Four sections within the border fill as the data log memory is filled. Empty border = 100% memory available through to full, where all segments are present.



USB: The icon will appear when connected to a host device.



Battery Status: This icon consists of a border and four segments. The segments fill or empty to indicate 0-25, 26-50, 51-75 and 76-100% full. When discharging, the border will flash for 1 minute before the instrument shuts down. When charging, the segments will successively fill until 100% charge is reached.



Understanding the display screen



Backlight: Light beam lines appear when the backlight is on.



Sound: The main body of the icon is present at all times.
The disable lines appear if all 3 alarm sounders are disabled and the volume is at 0%.
Three sound projection lines indicate the volume level.
However there are four sound levels and the quietest level has no line.



Alarm Bell: The icon consists of 2 parts, the Bell and the sound bars. When the instrument reaches a 'Low alarm' the Bell and one sound bar will flash; when a 'High alarm' is reached the Bell and both sound bars flash.



Flashlight / Torch: When the flashlight / torch is illuminated the light beams appear.



Lock: The Lock icon will appear when the configuration of the TIGER has been locked in TIGER PC. Soft keys in Button **A** column are enabled and Buttons in column **B** disabled, see page 13.

Main Screen Area

During normal operation this area displays the readings in four large numbers, with the units of measurement below.

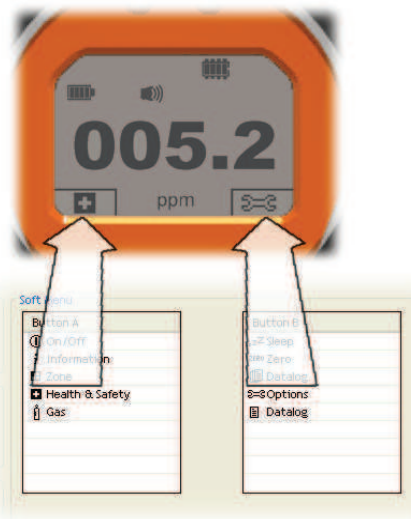
During setup and adjustment, a function bar overlays the main screen.



Understanding display screen

Soft key areas

The following icons will appear in the soft key areas as soft key options. They are selected using the **Up** and **Down** keys. Those labelled 'optional' will only appear if your TIGER has that functionality. These icons can be reorganised using the TIGER PC software.



Button A



	Information
	Zone(s)
	Gas Selection
	Options
	Health and Safety (optional)
	Multiple Data Log (optional)

Button B



	Sleep
	Zeroing
	Peak Hold
	Average
	Data Log (optional)
	Stealth



Using your Tiger

Instrument functionality is broken into two parts; Application and Setup. Application settings are initially selected via the soft keys **A** and **B**. Setup functions like Backlight, Sound, Calibration and Alarm setting are adjusted within **Options**. Many of the screens have a 2 second time out which returns to the main screen if no other keys are pressed.

On

To switch the TIGER on press the **Enter / On/Off** key once. Startup screen 1 appears showing the TIGER logo. Startup screen 2 contains variable text sent from the TIGER PC configuration screen. The lower half of the screen contains the instrument IRN (Internal Reference Number) and firmware version. The third screen shows TIGER checking that the lamp has 'struck'. When 'OK' appears, the working screen will follow. If the lamp fails to strike, turn the TIGER off, wait for 30 seconds and try again. If the problem persists, change the lamp or contact Ion Science Ltd or your distributor.

Off

To switch the TIGER off press and hold the **Enter / On/Off** key. A 3 second count down takes place before the instrument shuts down. During this count down the instrument activates the upper alarm. viz. Red LED's flash and audible alarm sounds. This is done to alert the user to avoid accidental switch off.




Sleep

Press and hold the **Zzz** soft key to send the TIGER to sleep. A 3 second count down takes place before entering sleep mode. This function is not available when the instrument is locked. All peripherals switch off. Only Zzz remains on the screen. Press the **Esc** key to awaken the instrument. (The instrument can also enter 'Sleep mode' during data logging when the duration between logs exceeds 2 minutes. This is a power saving function which only occurs when a tick box is set in TIGER PC.)




Zeroing

Pressing the **Zero** soft key presents two zero options  selected with the **Up** or **Down** keys. The upper symbol represents an absolute zero. The lower symbol represents a relative zero which follows the drift of the PID detector. Having made your selection, press **Esc**. If the relative zero has been selected TIGER will zero itself before returning to the main screen.




Zones

Press the **Zone** soft key to display the currently selected Zone:  The TIGER's default is 'Zone 1' Zones are set up in TIGER PC only and the name given to the zone(s) will appear on the screen. Use the **Up** and **Down** keys to select alternative zones.



Single Data Log (optional)


Press the **Single Data Log** soft key to take a single data log reading. The single data log symbol appears

with a tick:  Press **Esc** to return to the main screen. Press the **Single Data Log** soft key again to take another reading. The fixed LCD memory icon flashes off when a single log is taken.



Multiple Data Log (optional)



Pressing the **Multiple Data Log** soft key results in the multiple log symbol appearing with a question mark:

 Press the **Enter** key to start the data logging process based on TIGER PC setup. A tick appears beside the question mark, confirming that data logging has started. The fixed LCD memory icon flashes at 1 Hz while continuous data logging is in progress. Press **Esc** to return to the main screen. To stop data logging, press the soft key again. A crossed out data log symbol is presented with a question mark. Press the **Enter** key to confirm the action. A tick appears beside the question mark, confirming that data logging has stopped and the LCD memory icon ceases to flash. Press **Esc** to return to the main screen.



Using your Tiger

Health and Safety (optional)



Press the **Health and Safety** (H&S) soft key to display the H&S symbol with a question mark to ask if the user wishes to proceed:  Press **Enter** to start the calculation. The STEL (Short Term Exposure Level) and TWA (Time Weighted Average) values are shown. The fixed LCD H&S icon will continually flash while calculating. Pressing the **Enter** key while the values are displayed presents the user with a screen asking if the calculation should stop. Press **Enter** again to stop the calculation. Press **Esc** to return to the main screen. If a gas has no STEL and TWA level allocated in the gas table the following symbol will appear: .

IMPORTANT: TIGER STEL.

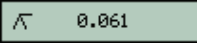
While the TIGER calculates the 15 minute STEL the instrument displays the ongoing STEL as it is calculated. This ongoing calculation is for indication purposes only to allow the user to gauge how the calculation is progressing. Only the final reading at the end of the calculation is logged by the instrument and should be referenced by the user.

Gas Selection

Press the **Gas Selection** soft key to display an alphabetical letter which can be changed using the **Up** and

Down keys:  Press the **Enter** key to present the gases beginning with that letter. Using the **Up** and **Down** keys scroll through the gases starting with that letter to find the subject gas. Press **Enter** to select the chosen gas. If a tick appears, press **Enter** again and TIGER will use the relevant data for the chosen gas from the gas table for alarms and response factor etc. Should the selected gas have no numeric response factor then a warning screen  will appear. The message can be cleared by pressing the **Enter** key and the gas will still be selected. An alternative lamp type may then be selected to match the chosen gas. Should an incompatible gas/lamp combination be selected the instrument will show the warning screen again.

Peak Hold

Press the **Peak Hold** soft key to present the screen  When Peak Hold is selected the sub display will appear and this will continue to display the peak reading until peak hold is no longer required. To deselect the peak hold function press **Esc**

Average

Press the **Average** soft key to display a rolling average over 10 seconds. A tick appears when time is up. Pressing the **Average** soft key again resets the calculation even if there is an average already running. Press **Esc** to return to the main screen.

Stealth

When selected all audible and visual alarms are disabled except for the alarm indicator on the screen. This function may help avoid triggering panic in public places.

Options

Press the **Options** soft key to give access to various adjustable features, selected with the **Up** and **Down** keys. Press **Enter** to confirm selection.



Backlight

Four options are presented: 'Permanently Off', 'Permanently On', 'On in low ambient light' and 'Timed' (Set the time in TIGER PC). Select the preferred option with the **Up** and **Down** keys and confirm with **Enter**.



Using your Tiger



Sound

The sound options are presented as set up in TIGER PC. Use the **Down** key to select either keypad beep, alarm sound, crescendo or percentage volume. Press **Enter** to turn selection on or off. For percentage volume, press **Enter** again to confirm selection. The frame will flash. Use **Up** and **Down** keys to change the percentage volume and press **Enter** to confirm the chosen value. Press **Esc** twice to return to the main screen.



Calibration

Only two options are presented: Factory Calibration and Custom Calibration. Select the preferred option with the **Up** and **Down** keys and confirm with **Enter**. Whichever calibration standard is selected, the TIGER will operate against that calibration. Readings taken against unsatisfactory calibrations may be unreliable.



Factory Calibration

Not for operator use.

Return to Ion Science Ltd or your distributor for calibration. (see the 'Maintenance' section of the manual page 37)





Custom Calibration

see the 'Maintenance' section of the manual page 37.



Alarms

Upper  and Lower  alarm settings are displayed. Select the subject alarm using the **Up** and **Down** keys and press **Enter**. The arrow(s) on the chosen alarm will flash. Adjust the level using the **Up** and **Down** keys and press **Enter**. Repeat, if necessary for the other alarm. Press **Esc** twice to return to the main screen.

Note: The Lower alarm setting must never be greater than the Higher alarm.



Units

Select the available units by using the **Up** and **Down** keys and then press **Enter**.



Lamp

Select the lamp type by pressing the **Up** and **Down** keys and then press **Enter**



Information

Pressing the **Information** soft key allows access to a number of other information screens. Use the **Down** key to scroll through the screens. Press **Esc** to return to the main screen:



Using your Tiger

First Screen	Gas selected	
	Response Factor	RF
	Upper alarm	
	Lower alarm	
Second screen	Lamp selected	
	Date of Factory calibration	
	Date of Custom calibration	
	Date of Select tube calibration (optional)	
Third Screen	SPAN 1	SPAN 1 (gas concentration set in TIGER PC)
	SPAN 2	SPAN 2 (gas concentration set in TIGER PC)
	PID detector in units	PID
	PID sensor A/D reading	A/D
Fourth Screen	Sort Term Exposure Levels (optional)	STEL
	Time Weighted Average (Optional)	TWA
	Internal Reference Number	IRN:
	Firmware version	Firmware:
	Bootloader version	Bootloader:
	Battery type and voltage	
Fifth Screen	Memory available	
	Gas Table Date	
	Date and time	
Sixth Screen	Features. A icon will appear for each feature available	Features ppb



Tiger PC software

PC Requirements

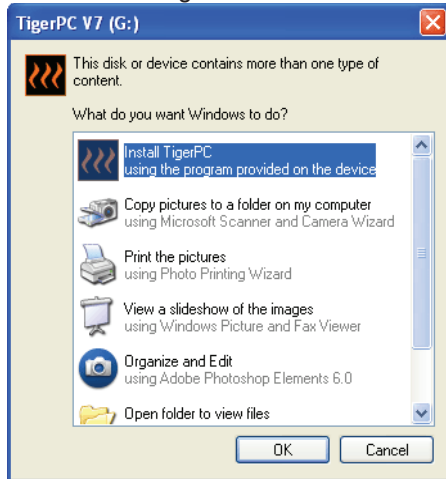
TIGER PC Software must be used in conjunction with a PC or laptop using Windows XP, Windows Vista or Windows 7. The software is supplied on a USB memory stick.

Installation of TIGER PC Software

When the memory stick is plugged into a USB socket the following screen (below left) should appear. If it doesn't, view the content of the memory stick and double click the file named:

'ion_cd_Tiger.exe'.

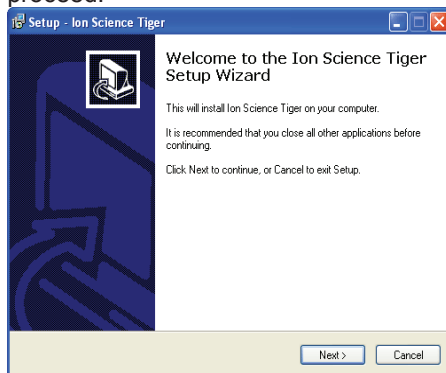
On the 'TigerPC' screen (below), select 'Install TigerPC' and click OK



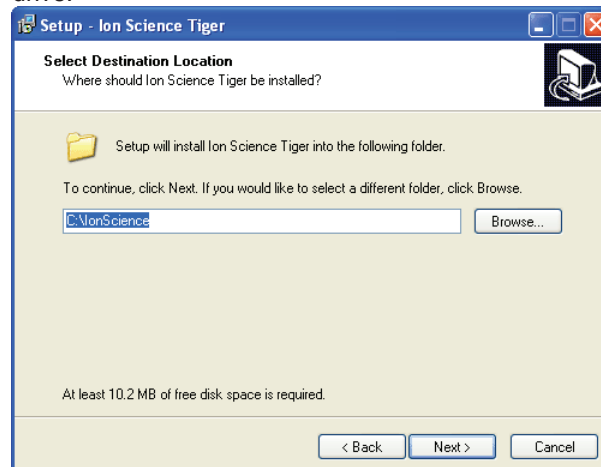
On the 'Ion Science' screen (below), select 'Install Tiger Software'



On the 'Welcome' screen (below), click 'Next' to proceed.



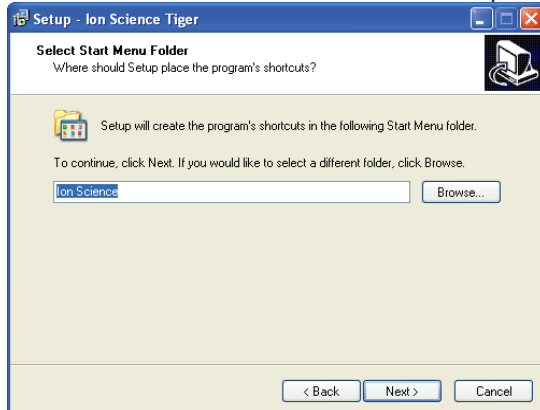
On the 'Select Destination Location' screen (below), click 'Next' to create an 'Ion Science' folder on your C drive.



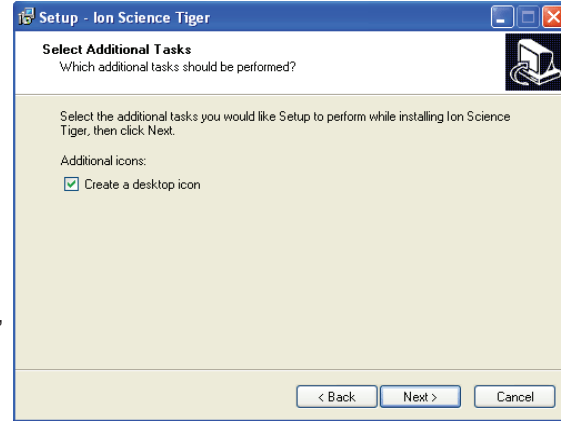


Tiger PC software

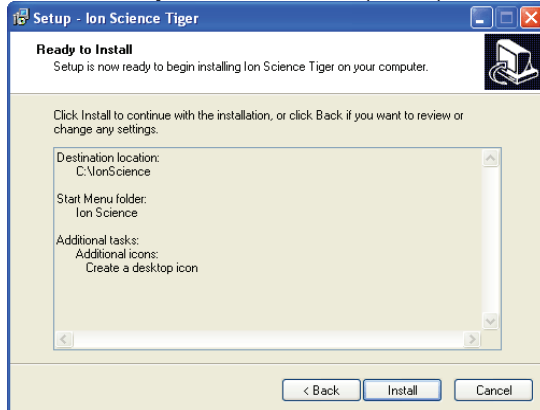
On the 'Setup' screen (below) click 'Next' to create an 'Ion Science' start up folder.



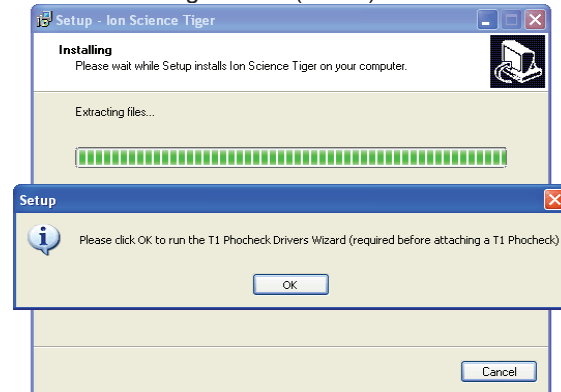
On the 'Select Additional Tasks' screen (below) tick the box and click 'Next' to Create a desktop icon



On the 'Ready to Install' screen (below), click 'Install'



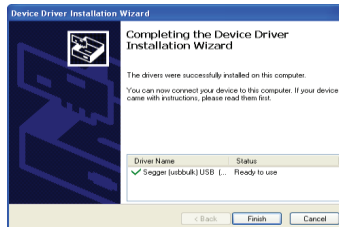
On the 'Installing' screen (below) Click 'OK'.



Click 'Next' on the 'Device Driver' screen,



'Finish' on the 'Installation Wizard'



and 'Finish' on the 'Setup Wizard'.





Tiger PC software

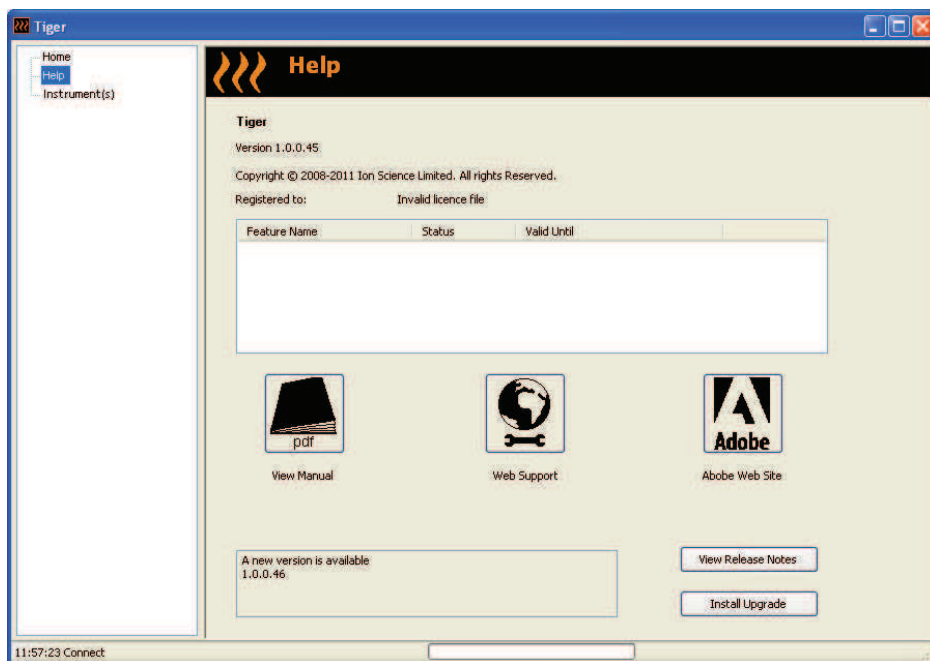
Connecting TIGER to a PC

1. Double click the TIGER icon on your desktop and open TIGER PC.
The Home page should appear:



The Help Screen

This screen will show you if a new version of PC software is available. You can then install the upgrade if required.

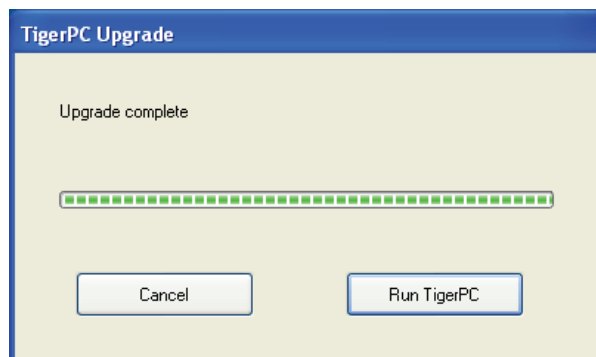
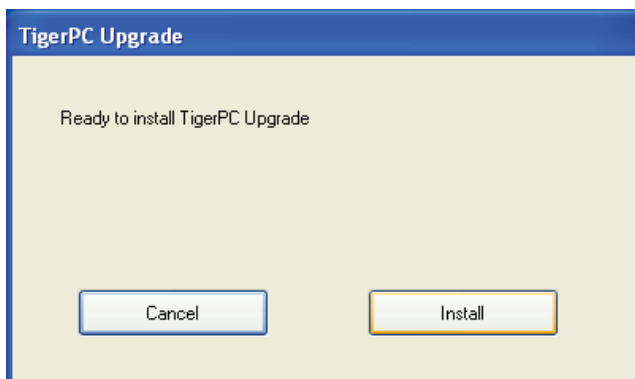




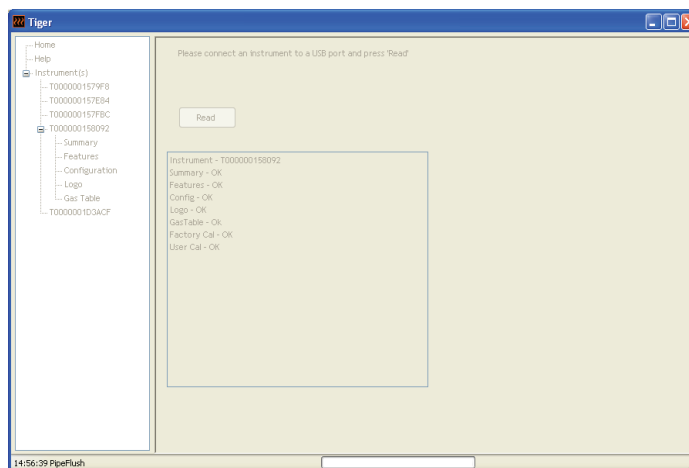
Tiger PC software

- Click on 'Instrument(s)'. If your TIGER has previously been connected to your PC your instruments IRN (Internal Reference Number) will appear.

Note: If, while using this software your TIGER should inadvertently be turned off or disconnected from your computer, click on 'Instrument(s)' again and proceed as below:



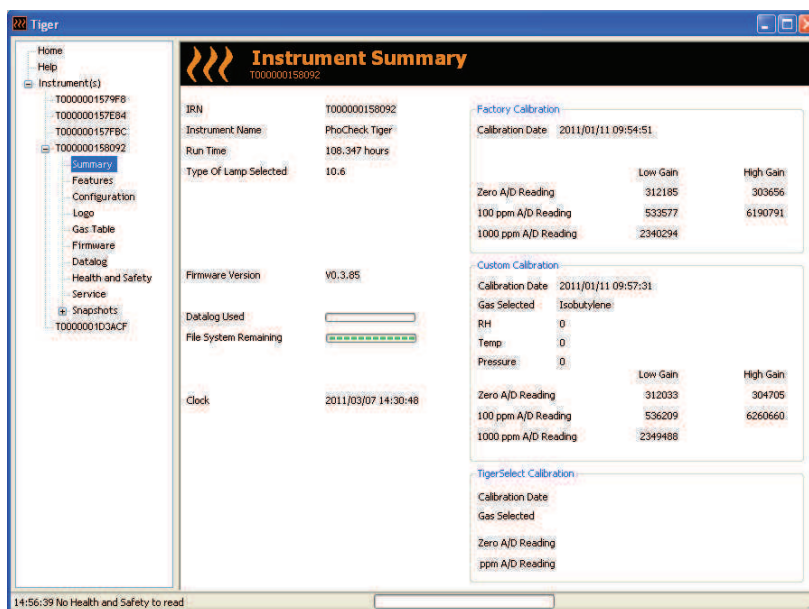
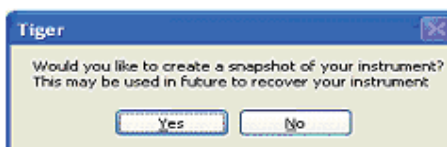
- Switch TIGER on and when fully booted up connect to a USB socket on your PC using the USB cable supplied. If the 'Found New Hardware' screen appears, follow the prompts to install your instrument on your PC.
- Click on 'Read'. Your instrument number will appear under 'instrument(s)' (if it was not there already) and the Instrument Summary page will appear.





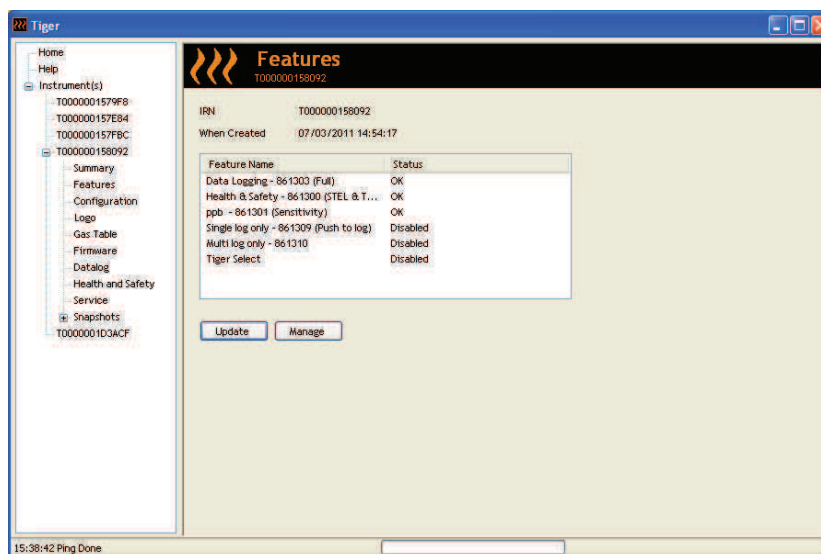
Tiger PC software

5. This page gives the current status of your TIGER. If the 'snapshot' screen appears click 'Yes'. You can delete the snapshot later if you wish (see 'TIGER PC Software').



The Features Screen

The 'Features' screen indicates which of the available updates has been added to your TIGER. Should you wish to purchase additional features, contact Ion Science Ltd or your Distributor. Some updates may be available on the website www.ionscience.com. Once the transaction is complete and confirmed, click on Update to add the relevant features to your TIGER.

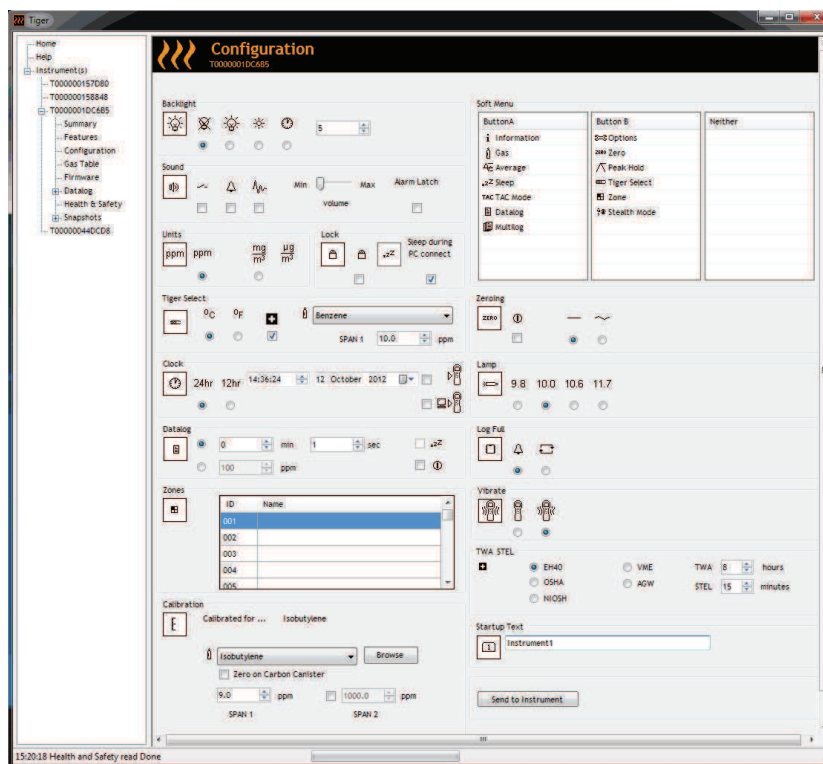




Tiger PC software

The Configuration Screen

Use this screen to configure your TIGER.



Backlight

Choose from 'Permanently Off', 'Permanently On', 'On in low ambient Light', or 'On For Limited Time'. The Backlight Timeout can be set from 1 to 99 seconds.

Sound

The three icons represent: key press; alarm; and crescendo. Crescendo increases the sound as the upper alarm is approached. Sound on each of these may be enabled or disabled by ticking or un-ticking the box. Sound volume is adjusted with the slider.

Units

The units of measurement may be chosen as parts per million (ppm) or milligrams per cubic meter cubed (mg/m^3). If you have the high the high sensitivity option / upgrade then Parts Per Billion (ppb) and Micrograms per meter cubed ($\mu\text{g}/\text{m}^3$) are also available.

Lock

The TIGER may be locked in any configuration to avoid unauthorised changes by the operator. A tick in the box locks the instrument. Soft keys in Button **A** column are enabled and Buttons in column **B** disabled. Sleep during PC connect will send the instrument into sleep mode while it is connected to the PC software. The instrument will awaken as soon as it is disconnected from the PC software.

Soft Menu

The various functions may be allocated to the soft buttons in any order of preference by dragging and dropping the icons.



Tiger PC software

Tiger Select

Please refer to the TIGER Select User Manual.

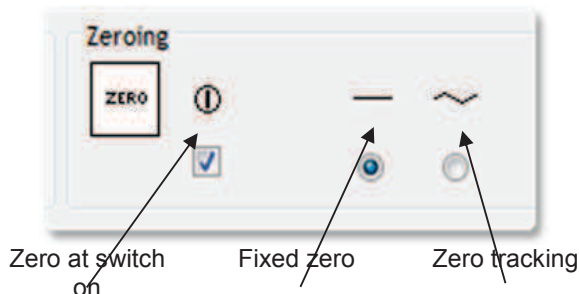
Zeroing

This function allows either an assumed constant zero or for the zero to be tracked compensating for the shift in the zero of the PID lamp during operation. The function may be enabled or disabled by ticking or un-ticking the box. Constant or tracked zero is selected by use of the radio buttons associated with the icons.

There are various options for zeroing a TIGER or TIGER Select. The symbols below are found on the configuration screen of TIGER PC.

Zero at switch on

When selected, the TIGER will automatically set its zero reading based on ambient air.
When deselected the instrument will use its calibration zero.



Fixed zero

When selected, TIGER uses the fixed calibration Zero. If used in conjunction with the 'Zero at switch on' feature the instrument will zero at switch on and then remain at that level.

Zero tracking

When selected, the Zero level will move negative if a cleaner ambient air is detected. This ensures 0.0 ppm is displayed in clean air and ensures sub ppb levels are always detected.

Clock

Select 24 or 12 hour format using the radial buttons. Set the time and date and tick the box on the right to set the time on your TIGER. Alternatively, tick the lower box to synchronise your TIGER with the time on your computer.

Lamp

Enables the selection of different lamp types you may have purchased to use with your instrument. Ensure that the lamp selected is the same as that fitted in your TIGER. If not, select the correct lamp from the options provided.

IMPORTANT

If you have purchased the instrument with the MiniPID Lamp (Argon)11.7eV (LA4SM700), there are a number of things related to applications that you must take into consideration before using the lamp.

1. It is important for the lamps to be stored in their desiccated vials in cool conditions (15-25°C).
2. The lamps should not be used in:
 - Chemically severe environments, i.e. those containing significant concentrations of acids and strong solvents such as dichloromethane.
 - Conditions of condensing humidity; always pass dry cool air through the instrument before storage. For long storage periods, remove the lamp and return it to the desiccated vial.
 - Physically severe environments: large temperature changes may initiate lamp failure.



Tiger PC software

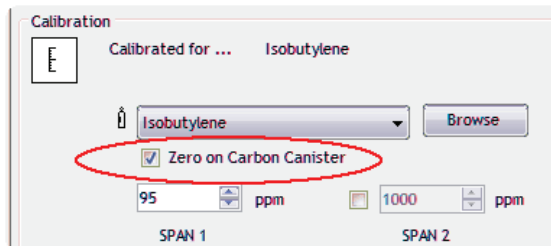
11.7 eV lamps may not strike/illuminate first time and result in a 'lamp fail' alarm on the TIGER instrument, particularly if the lamps are unused for an extended period. If the TIGER instrument raises a lamp fail alarm please switch the instrument off and then switch on again. Several start cycles may be required.

11.7 eV lamps have a relatively short life partly due to the type of lamp window material. Prolonged exposure to airborne moisture slowly degrades the lamp window. Therefore the lamps should be removed from the TIGER and stored in their desiccated vial when not in use.

11.7 eV lamps have quite different characteristics to the standard 10.6 eV lamps.

In applications where the detected gas levels are expected to be below 100 ppm then only a two point calibration (Zero and 100 ppm IE) is necessary however in applications that require measurement above 100 ppm (IE) a three point calibration (Zero, 100 ppm and 1,000 ppm IE) should be carried out.

When setting up the custom calibration on TIGER PC's configuration screen select the 'Zero on Carbon Canister' option, this will ensure a near zero reading after calibration. The fixed zero option should also be selected on the configuration screen, do not select 'Zero at switch on'.



Datalog

Use this area to set the interval between readings. The minimum time permitted is one second. If you wish your TIGER to switch to sleep mode during data-logging, tick or un-tick the sleep box to enable or disable the function. The sleep mode will only operate for datalog intervals of 2 minutes or greater.

Log Full

If you select the bell symbol your TIGER will alarm when the memory log is full. Alternatively, if you wish new data to overwrite the oldest stored data in the memory and continue to store new data during data-logging, select the recycle symbol.

Zones

Use this table to define and name up to 128 separate zones. The name field is limited to eight characters including spaces.

Vibrate

To set your TIGER to vibrate under alarm conditions select the 'vibrate' symbol.

TWA STEL

Select the appropriate regulatory code to which you are working.



Tiger PC software

Calibration

Use this area to define your Custom Calibration parameters.

First connect TIGER to your PC as detailed above under 'Connecting your TIGER to a PC'.

If no gas is shown in the drop down box, browse your system to find the gas table for your instrument. Go to the location where the TIGER PC software files are saved. Follow the path:

IonScience/TIGER/software/instruments/serial no./gas table

Select the appropriate instrument number and open the Gas Table.

Select the calibration gas using the drop-down box.

TIGER PC offers a two-point calibration

(zero + span 1) or three-point (zero + span 1 + span 2) calibration. Enter the SPAN 1 concentration. For two-point calibration ensure that the box is un-ticked. For three-point calibration tick the box and enter the SPAN 2 concentration. Send this information to your TIGER. The calibration procedure is detailed under the 'Maintenance' section of this manual.

Startup Text

Enter the text you wish to appear on the startup screen of your TIGER.

Send to Instrument

When you have configured your instrument or completed your changes, send them to your TIGER by clicking the 'Send to Instrument' box. If the message 'There was a problem sending to the instrument' appears, click OK and return to the Home screen. Repeat the procedure under 'Connecting your TIGER to a PC' above. If the 'Summary' screen for your TIGER appears, visit the configuration screen again. If not, repeat the entire procedure. If your PC still fails to read or write to your TIGER seek advice from your distributor or from Ion Science Ltd.



Tiger PC software

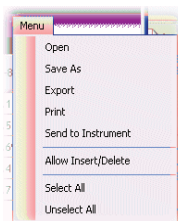
The Gas Table Screen (including setting alarm levels)

Connect your TIGER to your PC as described previously. Any fresh data-logged readings will be downloaded as the software 'reads' your TIGER.

Select 'Gas Table' from the menu to display the Gas Table.

Gas name	Abbreviation	Formula	Molecular weight	8-4 lamp	9-8 lamp	10-6 lamp
Benzyl alcohol		C7H8O	108	1.399	1.1	1.25
Benzyl chloride		C7H7Cl	127	0	0.5	0.55
Benzyl formate		C8H8O2	136	0	0.699	0.769
Biphenyl		C12H10	154	0	0.4	0.4
Bis(2,3-epoxypr...	2,3-epoxy-Pr et...	C6H10O3	130	0	2.7	3
Boron trifluoride		BF3	68	0	0	0
Bromine		Br2	160	0	0	20
Bromine pentafluoride	Bromine(V)fluoride	BrF5	175	0	0	0
Bromobenzene		C6H5Br	157	0	0.6	0.699
Bromochloromethane	R 1101	CH2ClBr	129	0	0	0
Bromoethane		C2H5Br	109	0	8	5
Bromoethyl methylether	Br-ethylmet. et...	C3H7OBr	139	0	2.299	2.5
Bromoform		CHBr3	253	0	0	2.799
Bromopropane, 1-		C3H7Br	123	0	2	1.299
Bromotrifluoromethane	R 13B1	CF3Br	149	0	0	0
Butadiene		C4H6	54	0	0.699	0.829
Butadiene diepoxide	Butadiene diepox.	C4H6O2	86	0	3.599	4
Butane, n-butane		C4H10	58	0	0	46
Butanol, 1-butanol		C4H10O	74	0	3.599	4.011

You are now able to modify this table and then download it to your instrument.



If you wish to add new gases to the table, select the 'Menu' tab, and from the drop down menu select 'Allow Insert/Delete'.

This will add an additional line at the bottom of the Gas Table which allows the user to add new gas types as below.

Xylene mixed isomers		C8H10	106	0	0.43	
Xylene, m-		C8H10	106	0.4	0.439	
Xylene, o-		C8H10	106	0.689	0.6	
Xylene, p-		C8H10	106	0.62	0.55	
Xylidine, all		C8H11N	121	0	0.699	
New gas	Mix					

Upper and lower alarm levels in Survey mode can be adjusted via the Gas Table. Type the desired alarm level in the appropriate column (either high or low alarm) against the gas you wish to change.

Always save modified gas tables under a different file name, keeping the original complete.

To send the Gas Table to the instrument, select 'Send to Instrument' from the dropdown menu shown above.



Tiger PC software

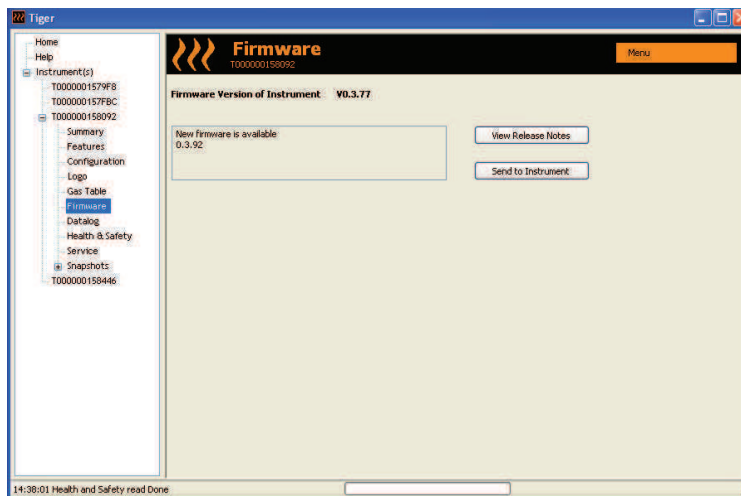
The Firmware Screen

This screen displays the current firmware version installed on your TIGER. It also provides a facility to download updated versions to your TIGER.

At this point you can also check the 'View Release Notes' information which is a description of the changes in the new version as shown here.

To download a firmware update, connect TIGER to your computer as detailed previously. Ensure that your instrument is in normal Survey mode, is not in an alarm condition and that no datalogging or Health and Safety readings are being collected. Check that the battery pack is sufficiently charged (at least two bars).

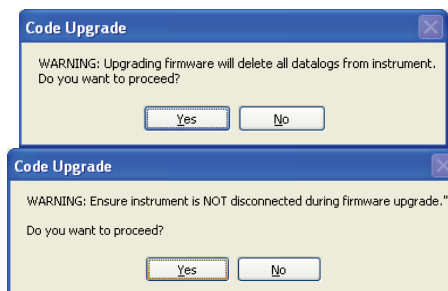
IMPORTANT: The 'Firmware' upgrade process will delete all data from the instrument. To avoid loss of any data during the upgrade process, take a snapshot of the instrument before proceeding. The snapshot can be re-installed after the update process is complete.



When you are ready to send the new Firmware to the instrument. Select 'Send to Instrument'.

You will now see a message that will warn you that all the data will be lost on your instrument. If you are happy to continue confirm with 'Yes'.

A 'WARNING' message will appear. If you are happy to continue confirm with 'Yes'.

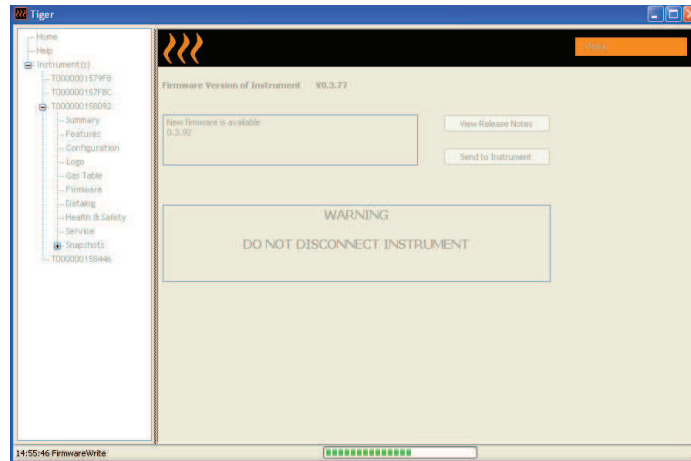




Tiger PC software

IMPORTANT: Do not attempt to operate your TIGER during the update process.

The firmware on your TIGER will be updated and the new version will be shown on the 'Firmware' screen.



A bar at the bottom of the screen will indicate the progress of the update.

IMPORTANT: Do not disconnect the TIGER at this point. Please follow the next part before disconnecting the TIGER.

After the PC Software has completed sending the upgrade to the TIGER the instrument will then have to finish the upgrade process. The TIGER will flash the two torch LED's and the screen on the Tiger will remain blank for approximately 30 Seconds. A bar will then appear and travel across the screen. A message will be displayed as follows, 'verifying file system'. The Firmware is now installed on to the instrument and will start up automatically.





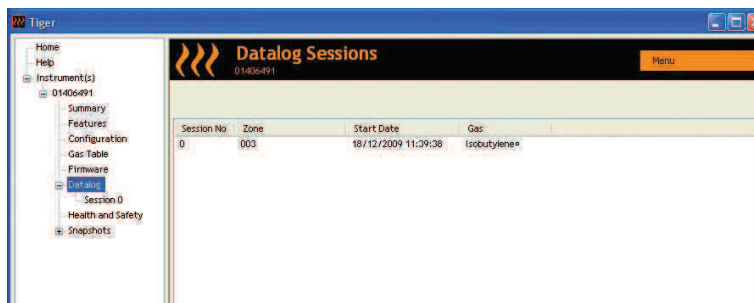
Tiger PC software

Downloading Data Logged Readings

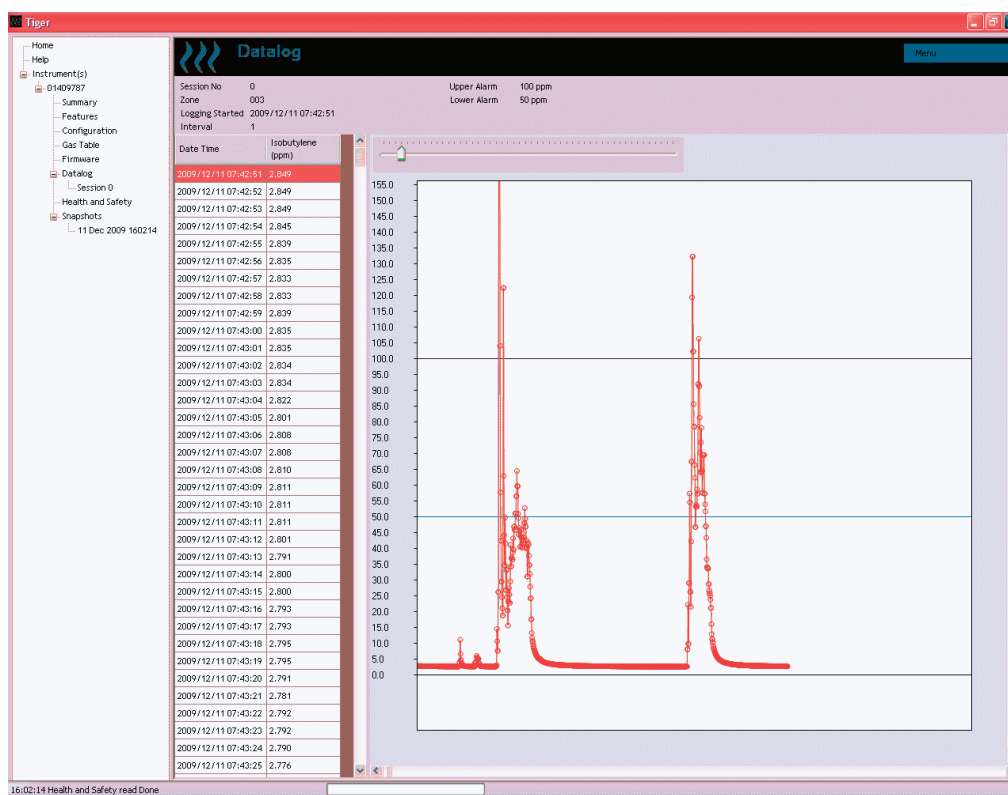
Connect your TIGER to your PC as described previously. Any fresh data-logged readings will be downloaded as the software 'reads' your TIGER.

Go to the datalog screen and a list of the datalog sessions is presented.

Expand the datalog folder and select the session of interest.



Details of the data collected during that session are presented in numerical and graphical form.



Use the menu function at the top right hand corner of the window to print, export or delete the data.

CAUTION:

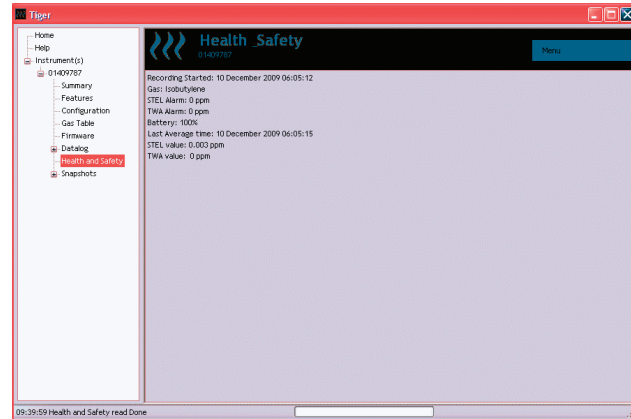
The delete function deletes all logged data from your TIGER. Ensure all valuable data is exported to your PC before selecting 'Delete'.



Tiger PC software

The Health Safety Screen

This screen displays the latest Health and Safety readings held on your TIGER. Click 'Menu' then 'Export' to save this data to a file on your computer. The next readings will overwrite the data on your TIGER.

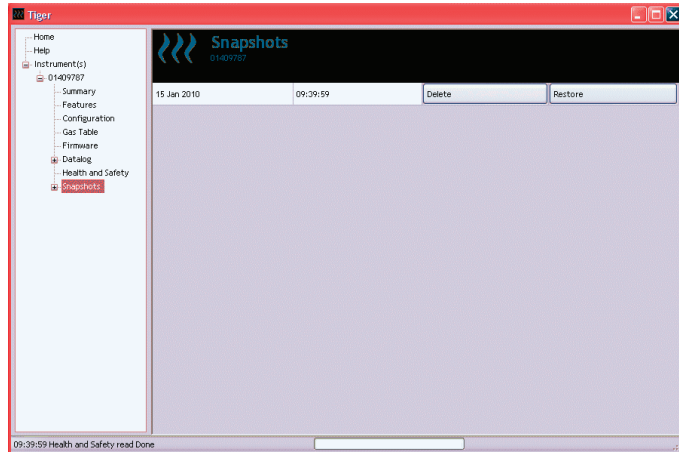


The Snapshots Screen

A snapshot records the settings and calibration data on your TIGER at any particular point in time. The 'Snapshots' screen displays a list of all those stored on your PC.

Click 'Delete' to remove a selected snapshot.

To restore the stored settings to your TIGER, first ensure that your instrument is fully booted and connected to your PC as detailed previously. Ensure that your instrument is in normal Survey mode, is not in an alarm condition and that no data logging or Health and Safety readings are being collected. Click 'Restore' against the relevant snapshot



Be aware that this process will replace all setup and calibration files

On the restore screen click 'Yes'. When complete, click 'Close' and restart your TIGER. Your TIGER will now be restored to the settings and calibration data stored at the time of that snapshot.

The snapshot menu also allows review of stored data when an instrument is not attached.

Expand the menu until the latest or relevant snapshot is displayed. Double-click on the snapshot and all the data stored in that snapshot can be accessed.



Tiger PC software

Software Disclaimers

Termination of Software Licence

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The SOFTWARE and accompanying materials (including the user's manual) are provided "as is" without warranty of any kind including the implied warranties of merchantability and fitness for a particular purpose, even if Ion Science Ltd have been advised of that purpose. Furthermore Ion Science Ltd does not warrant, guarantee, or make any representation regarding the use, or the results of the use, of the SOFTWARE or written materials in terms of correctness, accuracy, reliability, current revision, or otherwise. Ion Science Ltd specifically does not warrant the SOFTWARE after you assume operation. If the SOFTWARE or written materials are defective you, not Ion Science Ltd or its dealers, distributors, agents, or employees, assume the entire risk and costs of all necessary servicing, repair, or correction, except as stated below.

Defective CD or Memory Stick

As the only warranty under this Agreement, Ion Science Ltd warrants, to the original Licensee only, that the CD(s) or Memory Stick(s) on which the software is recorded is free from defects in materials and workmanship under normal use and service for a period of ninety (90) days from the date of delivery as evidenced by a copy of the Receipt. This limitation will apply where allowed.

Replacement of Defective CD or Memory Stick

Ion Science Ltd entire liability and the original Licensee's exclusive remedy under this agreement are at the discretion of Ion Science Ltd, to either (a) return of payment as evidenced by a copy of the Receipt, or (b) replacement of the disk or memory stick that does not meet Ion Science Ltd limited warranty and which is returned to Ion Science Ltd with a copy of the Receipt. If failure of the disk or memory stick has resulted from accident, abuse, or misapplication, Ion Science Ltd will have no responsibility to either replace the item or refund payment. Any replacement disk or memory stick will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer. This warranty gives you limited, specific legal rights. You may have other rights in some places.

No Right to Reply

No oral or written information or advice given by Ion Science Ltd, its dealers, distributors, agents or employees will create a warranty or in any way increase the scope of the obligations of Ion Science Ltd under this agreement, and you may not rely on any such information or advice.

Limitation of Liability

Ion Science Ltd will not be liable for any direct, indirect, consequential or incidental damages (including damages for loss of business profits, business information, or possibility of such damages). The above limitation will apply where allowed under local laws.

Governing Law

The laws of the United Kingdom govern this Agreement.



Batteries

Warnings

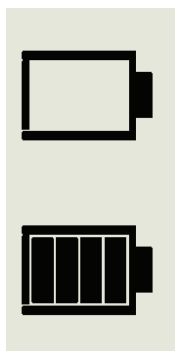
BATTERY CHARGING:	Charge TIGER and its Lithium ion battery packs in a Non Hazardous environment only.
BATTERY REPLACEMENT:	Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.
BATTERY CONNECTION:	The TIGER's Lithium ion and Alkaline battery packs have been specially designed to allow connection to the TIGER Instrument while in potentially hazardous atmospheres. The TIGER instruments ingress protection rating is reduced to IP 20 when its battery pack is removed so avoid changing batteries in dusty or wet environments.

Two battery packs are available for use with the TIGER instrument. A lithium ion Rechargeable Battery Pack (**A2**) and non-rechargeable AA Battery Pack (**A3**), (that may be fitted with 3 AA Alkaline batteries). The rechargeable pack is recommended for normal operation with the Non-rechargeable pack available when power is not available and the use of the instrument is needed. The rechargeable pack is normally fitted as standard to the instrument when shipped.

Recharging Batteries

Ensure the TIGER is charged for at least 7 hours before using it for the first time. To ensure optimum charging the TIGER should be switched off during charging. If left on, the TIGER will take longer to charge, but should not suffer any damage. The TIGER should be charged in a non hazardous environment only.

To charge your TIGER, first connect the Charger Cradle (**A4**) to the mains, and switch on. A red light will indicate that the charger is ready. Place the TIGER in the Charger Cradle such that the contacts on the TIGER are aligned with those in the cradle. (There is no need to remove the Instrument Boot (**8**) from the TIGER during charging.) During charging, the charger will display an orange light. A green light indicates that charging is complete.



Discharged

The battery icon on the TIGER will display the level of charge.

Fully Charged

- Note:**
1. Only use the Charger Cradle supplied with your TIGER to charge your instrument.
 2. Ion Science Ltd recommends keeping your TIGER on charge at all times when not in use, as batteries can lose power over time.

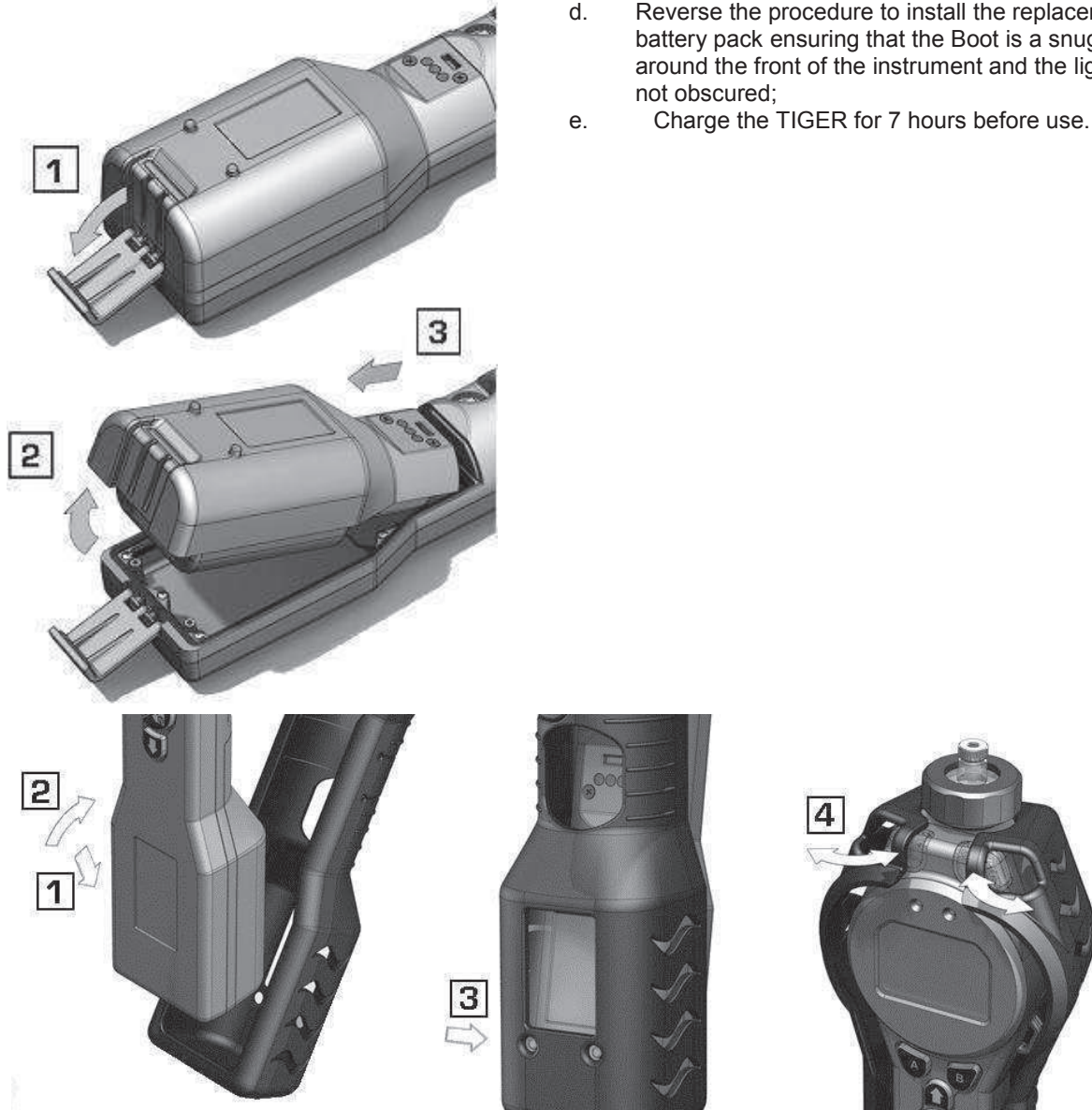


Batteries

Replacement / Exchange of Battery Packs

To replace the Rechargeable Battery Pack (**A2**), proceed as follows:

- a. Ensure TIGER is switched Off;
- b. Remove the Instrument Boot (**8**) from your TIGER (this is most easily achieved by starting at the front end of the instrument (step 4 below));
- c. Release the clip at the rear end of the instrument and lift the Rechargeable Battery Pack (**A2**) away from the Instrument Body (**A1**), coincidentally sliding it slightly backwards;
- d. Reverse the procedure to install the replacement battery pack ensuring that the Boot is a snug fit around the front of the instrument and the lights are not obscured;
- e. Charge the TIGER for 7 hours before use.



Item numbers in (bold) refer to the illustrations and parts list on page 41.



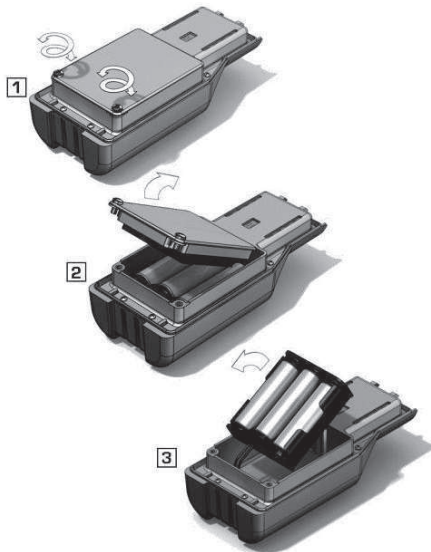
Batteries

Replacement of Non-rechargeable Batteries in Battery Pack

WARNING

BATTERY REPLACEMENT: Never replace primary Alkaline battery cells while in a potentially explosive or hazardous location. Use only Duracell Procell Alkaline batteries MN1500.

- a. Ensure TIGER is switched Off.
- b. Remove the AA Battery Pack (**A3**) as in (b) and (c) on page 34;



- c. Remove the screws retaining the battery cover and lift it off. This reveals a set of 3 x AA cells contained in a removable battery holder;
- d. Remove the battery holder;
- e. Replace the exhausted batteries; Use Duracell PROCELL Alkaline batteries MN1500
- f. Check all batteries have the correct polarity before replacing the battery holder;
- g. Assemble the battery holder into the AA Battery Pack (**A3**), refit the battery cover and fix in place using the securing screws. Replace the Instrument Boot (**8**) ensuring that it is a snug fit around the front of the Instrument Body (**A1**) and the lights are not obscured.

CAUTION:

Fitting batteries or connecting the battery pack with the wrong polarity may result in damage to the instrument!

CAUTION:

Non-rechargeable batteries must not be replaced in the field. Batteries should be loaded into the battery holder in a safe environment only. Only the assembled AA Battery Pack (A3**) may be changed in the field.**

CAUTION:

Do not make any connections to the USB port of this instrument whilst in a hazardous area.

Note: When loading batteries check for correct battery polarity before connecting them.

Note: Dispose of used batteries in accordance with all local and national safety and environmental requirements.



Diagnostics

Basic faults or diagnostics are presented as symbols. Should a fault occur most can be corrected by pressing **Enter** or **Esc** to clear the fault message. All fault conditions cause the TIGER to alarm.

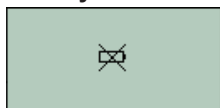
Pump failure



Pump blocked or pump failure

The flow of gas through the instrument has fallen below 100cc/minute. Check the probe and filter for signs of blockage. Water or dirt in the probe, a bent probe, dirty filter on the inlet or blockage of the exhaust (finger over hole on the back?) can all cause low flow. If the blockage can be removed, press **Esc** to clear the alarm. If the fault persists send the instrument to your distributor for service.

Battery dead



Battery low or battery failure

The TIGER will shut down when the battery level falls below 2%. Recharge the battery as instructed in the 'Batteries' section of this manual ensuring that all connections are sound and the indicator lights on the charger are in order. If the battery fails to charge, fit another battery pack if available. If using alkaline batteries, replace them. If the fault persists send the instrument and charger to your distributor for service.

Lamp out



Lamp failure

The PID lamp has failed to strike (illuminate); this may occur at switch on or during use. Switch the TIGER off and replace the lamp. See the 'Maintenance' section.

Memory full



Memory cannot receive more data

The data log memory is full. This will only happen if the Log Full box is set to 'alarm' on the TIGER PC configuration screen. Press the **Esc** key to continue, but the TIGER will no longer continue to log data. Select 'recycle' in TIGER PC and the TIGER will overwrite the oldest data and no alarm will be raised.

System error



Total system failure

The instrument's firmware is corrupted. In the unlikely event of this message appearing, contact Ion Science Ltd or your nearest authorised service centre.



Maintenance

Calibration

Ion Science Ltd recommends an annual service and calibration for users who require a traceable calibration. During this service the lamp and detector are brought back to factory specifications and new Factory Calibration data is stored.

Due to the linear output of the Ion Science PID detector, a two-point calibration is often adequate. TIGER scales its linear output across a ZERO level (clean air reference) and the SPAN 1 user defined gas concentration. For more exacting requirements, TIGER offers a three-point calibration with a higher SPAN 2 gas concentration.

TIGER offers the options of Factory Calibration or Custom Calibration. 'Factory Calibration' is set by Ion Science Ltd during instrument manufacture or on re-calibration. 'Custom Calibration' can be set by the instrument user.

For **Factory Calibration** contact Ion Science Ltd or your distributor.

'Factory Calibration' offers a safe set of three-point calibration data. This should be used if the custom calibration fails and will keep the unit working until a good custom calibration is completed.

For **Custom Calibration**, first set up the parameters in TIGER PC - see the 'TIGER PC Software' section of the manual.

TIGER allows you to custom calibrate using any gas from the Gas Table at any concentration from 10ppm. You will need a cylinder of the selected gas at each of the chosen concentrations. Each cylinder should be regulated for a flow rate above 250ml/min.

Have the cylinder(s) of gas, regulator(s) and the zero carbon filter (included in the Calibration Kit (A-861418) for your TIGER) on hand before starting the procedure. Alternatively a known clean air supply may be used as the 'zero' gas. Please ensure you are familiar with the entire calibration procedure before attempting to calibrate your TIGER.


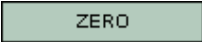
Note: The calibration of your TIGER must be carried out in a clean air environment. Ensure all parts of the Calibration Kit are available and ready for use.

Never calibrate the zero with the span gas connected.

Press the **Options** soft key  on your TIGER to access the adjustable features.



Then use the **Up** or **Down** key to select calibration.  Press **Enter** to confirm selection.

Select **Custom Calibration**  and press **Enter** to confirm. On confirming the selection, the user is presented with a 15 second count down. 

Remove both caps from the Carbon Filter Assembly (A-31057) and then fit onto the probe of your TIGER. Press **Enter** to start the 'zero' countdown. At the end of the count down a tick '✓' will appear, indicating that the Zero has been accepted. Disconnect the Carbon Filter Assembly and replace the cap ends. The useful life of the Carbon Filter Assembly will be shortened if the Carbon Filter Assembly is open to atmosphere for prolonged periods.





Maintenance

Press **Enter** again and the gas and concentration for Span 1 (previously set up in TIGER PC) are displayed along with a 15 second countdown. **[SPAN 1]** Attach the 'Span 1' gas using the Calibration Adaptor (861476) supplied in the Accessory Box (A-861267) (see 'Accessories') and press **Enter** to start the Span 1 countdown. At the end of the count down a tick '✓' will appear, indicating that the Span 1 has been accepted. For two-point calibration, press **Enter** and the calibration is complete.

For three-point calibration, press **Enter** to display the gas and concentration for Span 2 (previously set up in TIGER PC) along with a 15 second countdown. **[SPAN 2]** Attach the 'Span 2' gas and press **Enter** to start the Span 2 countdown. At the end of the count down a tick '✓' will appear, indicating that the Span 2 has been accepted.



Press **Enter** again and the calibration is complete.

Inlet Nozzle

Should the Inlet Nozzle become contaminated or damaged, replacement Inlet Nozzles may be obtained from your distributor or from Ion Science Ltd. Please note that a small O-Ring at the base of the Inlet Nozzle ensures the Inlet Nozzle is sealed, this can be seen in the transparent Filter Clamp when the Inlet Nozzle is removed.

The Inlet Nozzle can be removed for cleaning or replacement by unscrewing it from the transparent Filter Clamp.

Refit the Inlet Nozzle using fingers only, avoid using tools as this may damage the filter housing. To ensure the assembly is sealed, place a finger over the Inlet Nozzle to block the flow while the instrument is running. A flow alarm should occur if sealed correctly.



PTFE Filter Disc (861221)

The Filter Disc should be changed after every 100 hours of use. This frequency should be increased for dusty or moisture laden environments or whenever the filter appears 'dirty' when viewed through the transparent upper surface of the Filter Clamp. Filter Disc changing should be conducted in a suitably clean environment, with clean hands and equipment to avoid contamination of the new Filter Disc.

To change the Filter Disc, unscrew the Filter Housing Cap, lift off the Filter Clamp and O-Ring and lift the Filter Disc from the Instrument Body. Carefully place a new Filter Disc into the Instrument Body. **(Under no circumstances should a Filter Disc be used once it has been removed.)** Replace the Filter Clamp, ensuring the locating lugs are correctly positioned in the cut-outs in the Instrument Body and that the O-Ring is correctly seated. Replace the Filter Housing Cap. Do not over-tighten.



Maintenance

PID Sensor/Lamp Replacement and Cleaning

When using your TIGER in conditions of high ambient humidity, the PID may show unexpected readings appearing to increase. This occurs due to dust or other small particles within the detector becoming hydrated with humidity. This causes these particles to conduct a signal between the electrodes. The problem can be resolved by the user in the field using the procedure below and a can of computer duster air.

In normal use the lamp should be cleaned after every 100 hours of use (based on 30 ppm for 100 hours). Reduce this if TIGER is used in heavily gas contaminated environments. Please note that some esters, amines and halogenated compounds may accelerate window fouling; in these cases cleaning may be required after every 20 hours of use. Cleaning frequency will also depend upon alarm levels set and prevailing environmental conditions.

CAUTION!

The TIGER is a sensitive detector. Internal components must be handled with clean hands and clean tools. The TIGER lamp is fragile. Handle with great care. Never touch the window and do not drop!!

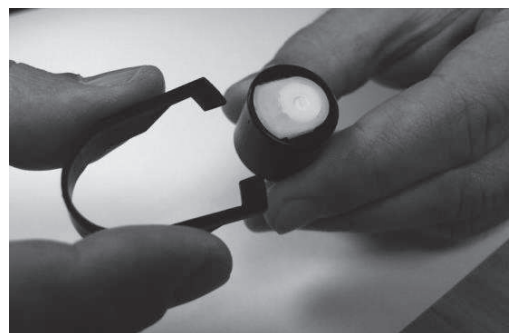
To remove the MiniPID Sensor for cleaning or lamp replacement, first ensure that the TIGER is turned off and that you are in a clean environment such that the sensor parts will not be contaminated by dust, oil or grease. Remove the Sensor Cover (see image on right). The centre screw may be turned with a small coin or a suitable flat bladed screwdriver.



Ensure that the Sensor Seal, on the inside of the Sensor Cover is not disturbed.

Carefully lift the MiniPID Sensor from the Instrument Body, ensuring that the two Inlet/Outlet Seals remain in place in the Instrument Body.

Using the special Removal Tool MiniPID Stack (846216) provided, locate its 'prongs' in the slots in the side of the Mini PID Sensor body. Using the forefinger to restrain the sensor, (the internal parts are spring-loaded and careless disassembly will leave you hunting for the spring!) squeeze the tool to release the lamp housing.



The lamp may now be removed.

To replace the lamp or install a new one, reverse the procedure, ensuring the seals are all in place. When replacing the Sensor Cover ensure that the markers are aligned correctly and that the cover is a snug fit.

The instrument MUST be re-calibrated after fitting a replacement or cleaned lamp.

CAUTION!

Never refit a damaged lamp!



Maintenance

Lamp Cleaning

The TIGER PID relies on an ultraviolet light source ionising VOC gases as they pass across the lamp window. This process may result in a very fine layer of contamination appearing on the detector window that must be removed on a regular basis.

CAUTION!

The TIGER is a sensitive detector. Internal components must be handled with clean hands and clean tools. The TIGER lamp is fragile. Handle with great care!

First ensure that the TIGER is turned off and that you are in a clean environment such that the sensor parts will not be contaminated by dust, oil or grease.

Remove the lamp as detailed on page 39.

Inspection of the lamp may reveal a layer of contamination on the detection window that presents itself as a 'blue hue.' To check for confirmation, hold the lamp in front of a light source and look across the window surface. Clean the window using the PID Lamp Cleaning Kit (A-31063) supplied.

USE of PID Lamp Cleaning Kit A-31063

The container of cleaning compound contains Aluminium Oxide as a very fine power (CAS Number 1344-28-1).

A full material safety data sheet MSDS is available on request from Ion Science Ltd. The key issues are listed below:

Always replace the lid after using the cleaning compound.

Hazard identification:

- May cause irritation of respiratory tract and eyes.

Handling:

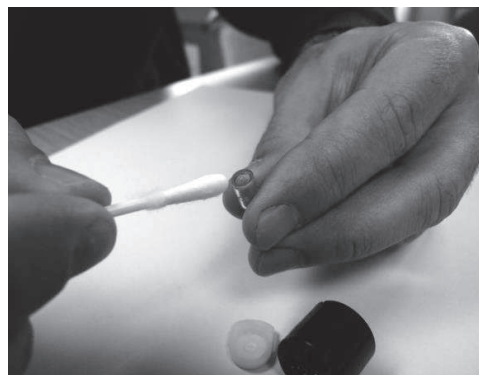
- Do not breathe vapour/dust. Avoid contact with skin, eyes and clothing;
- Wear suitable protective clothing;
- Follow industrial hygiene practices: Wash face and hands thoroughly with soap and water after use and before eating, drinking, smoking or applying cosmetics;
- The Compound has a TVL(TWA) of 10 mg/m³.

Storage:

- Keep container closed to prevent water adsorption and contamination.

To clean the lamp:

1. Open the vial of Aluminium Oxide polishing compound. With a clean cotton bud collect a small amount of compound;
2. Use this cotton bud to polish the PID lamp window. Use a circular action applying light pressure to clean the lamp window. Never touch the lamp window with fingers;
3. Continue polishing until an audible "squeaking" is made by the cotton bud with compound moving over the window surface (usually within fifteen seconds);
4. Remove the residual powder with short blast of air from the can of air duster;
5. The instrument MUST now be re-calibrated.





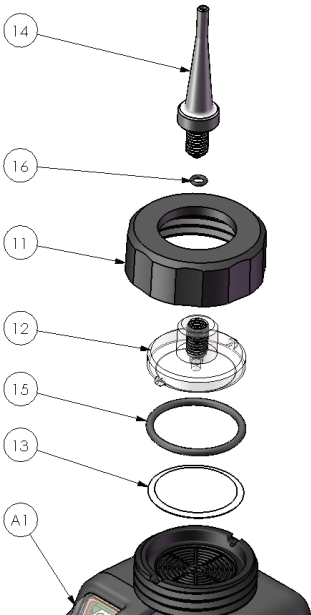
Tiger parts

Tiger main assembly

Diagram showing the Tiger main assembly components. The assembly includes the instrument body (A1), rechargeable battery pack (A2), AA battery pack (A3), charger cradle (A4), sensor cover (A5), MiniPID sensor (A6), sensor gasket (7), instrument boot (8), sensor seal (9), and inlet/outlet seal (10).

ITEM	DESCRIPTION	PART No.	QTY
A1	INSTRUMENT BODY	A-861274	1
A2	RECHARGEABLE BATTERY PACK	A-861240	1
A3	AA BATTERY PACK	A-861241	1
A4	CHARGER CRADLE	A-861220	1
A5	SENSOR COVER	A-861259	1
A6	MiniPID SENSOR	MP6SK6FX	1
7	SENSOR GASKET	861203-9	1
8	INSTRUMENT BOOT	861205	1
9	SENSOR SEAL	861214	1
10	INLET/OUTLET SEAL	861215	2
11	FILTER HOUSING CAP	861218	1
12	FILTER CLAMP	861219	1
13	FILTER DISC	861221	1
14	INLET NOZZLE	861443	1
15	O-RING	5/OV-02	1
16	O-RING	5/OV-04	1

Front end filter assembly





Accessories

Ion Science Ltd has developed an exclusive range of high quality accessories to compliment the TIGER. Please see a selection of these below:

Part Number	Accessory Description
1/jawu-01	2.1mm DC Jack - Cigar Lighter Plug Car Charger Lead – Allows the Charger Cradle (A4) to be powered from a standard vehicle cigar lighter (12 volt only)
861214	PID Sensor Seal (9) – Seal between the MiniPID Sensor (A6) and the Sensor Cover (A5)
846216	Removal Tool MiniPID Stack – Used to remove Stack / Pellet from the MiniPID Sensor (A6)
861205	Protective, Removable Rubber Boot (8) – Supplied with every TIGER, this is a replacement
861219	Filter Clamp (12) – Transparent clamp that covers the PTFE filter and accepts the Inlet Nozzle (14)
861230	USB Cable – Angled B Connector – Supplied with every TIGER, this is a replacement
861266	Leather instrument holster – TIGER can be carried on a belt around the waist allowing hands free operation
861412	Leather instrument harness – TIGER can be carried against upper body allowing hands free operation
861443	Inlet Nozzle (14)
A/OV-04	O’ring for use with Inlet Nozzle (14)
A-861474	O’rings for use with Inlet Nozzle (14) pack of 5
861476	Calibration Adaptor – Must be used when calibrating using flow regulators
A-31057	Carbon Filter – Used during calibration to set a zero
A-31063	PID Lamp Cleaning Kit- Contains Alumina powder and 40 cotton buds
A-861413	5m Extension Hose – Replaces the standard probe, pipe material: PTFE
A-861414	10m Extension Hose – Replaces the standard probe, pipe material: PTFE
A-861415	Diluter – Dilutes immediate sample with ambient air
A-861406	Flexible Probe Assembly – 300mm, replaces the standard probe, internal pipe material: PTFE
A-861240	Lithium ion battery pack, intrinsically safe – Replacement / spare
A-861241	Alkaline battery pack, intrinsically safe. 3 x AA batteries included – Replacement / spare
A-861267	Accessory box as supplied with the TIGER – Includes carbon filter, lamp cleaning kit, PID Stack / Pellet removal tool, lanyard, calibration adaptor and PID sensor seal
A-861472	Pack of 10 PTFE Filter Discs
A-861511	Anti vibration charger cradle – Allows wall mounting of vehicle charging, includes charge cradle
LA4TM600	MiniPID Lamp 10.6eV ppm
LA4SM700	MiniPID Lamp 11.7eV

For more information please visit www.ionscience.com/Tiger and select Accessories.



Instrument warranty and service

Warranty

Standard Warranty can be extended to up to 5 years on the TIGER when registering your instrument via our website: www.ionscience.com/instrument-registration To receive your Extended Warranty, you need to register within one month of purchase (Terms and Conditions apply).

To register your TIGER instrument, simply fill in the online form. You will need to enter your instrument serial (IRN) number to hand. To find this, switch on your instrument. Using your soft keys, go into the 'info' menu and scroll down until you find the IRN number.

You will then receive a confirmation email that your Extended Warranty Period has been activated and processed.

Full details, along with a copy of our Warranty Statement can be found by visiting:

www.ionscience.com/instrument-registration

Service

Ion Science Ltd also offers a number of service options for your TIGER that allows you to choose the instrument cover to best suits your requirements.

At Ion Science Ltd we recommend that all of our gas detection instruments be returned for service and factory calibration once every 12 months.

Contact Ion Science Ltd or your local distributor for service options in your area.

Find your local distributor by visiting: www.ionscience.com

Contact Details:

UK Head Office

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The Way, Fowlmere
Cambridge
SG8 7UJ
UK

Tel: +44 (0)1763 207206

Fax: +44 (0) 1763 208814

Email: info@ionscience.com

Web: www.ionscience.com

USA Office

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USA

Tel: +1 802 244 5153

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Email: info@ionscienceusa.com

Web: www.ionscience.com

German Office

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Laubach 30
Metmann-Neandertal
40822
GERMANY

Tel: +49 2104 14480

Fax: +49 2104 144825

Email: info@ism-d.de

Web: www.ism-d.de



Technical specification

Response time:	T90 < 2 second	
Detectable	1 ppb – 10,000 ppm & ppb to 20,000ppm for Specific Gases	
Range:		
Resolution:	+/- 1 ppb	
Accuracy:	+/- 5% displayed reading +/- one digit	
Linearity:	+/- 5% displayed reading +/- one digit	
Battery:	Lithium ion:	24 hours
	Alkaline (Duracell Procell	8.5 hours
	MN1500):	
Data log:	Including date / time:	120,000
Alarm visual:	Flashing Red and Amber LED	
Alarm audible:	95 dBA @ 30 cm	
Flow Rate:	≥ 220 ml/min in Ambient conditions	
Temperature:	Operating:	-20 to 60 °C (-4 to 140 °F)
	Storage:	-25 to 60 °C (-13 to 140 °F)
	Certified to:	-15 to 45 °C (-5 to 140 °F)
Dimensions:	Instrument:	340 x 90 x 60 mm
Weight:	Instrument:	0.720 kg (1.6 lb)
Materials:	Instrument:	Anti-static PC/ABS (Polycarbonate/ Acrylonitrile Butadiene Styrene)
	Rubber Boot:	Anti-static TPE (Thermoplastic Polyolefin Elastomeric)



Manual log

Manual version	Amendment	Issue Date	Instrument Firmware	PC Software
1.0	First issue	15/01/2010	V 0.3.40	V 1.0.0.18
1.4	Updated filter replacement instructions on page 34.	9/4/2010	V 0.3.49	V 1.0.0.26
1.5	Addition of ATEX information and new probe graphics	11/05/2010	V0.0.57	V 1.0.0.30
1.6	Addition of IECEx number on page 4	17/06/2010	V0.0.63	V 1.0.0.31
1.7	Instrument Warranty Information added to page 41 Accessory images added to page 39-40 Images added on pages 33 and 34	21/07/10	V0.0.63	V 1.0.0.31
1.8	Pg 38 – Part Numbers LA4SB600 & LA4SM600 have been deleted and replaced with LA4TM600, LA4TB600 & LA4SM700	30/09/10	V0.0.63	V 1.0.0.31
1.9	Page 21 – New screen shot of PC software. New tick box added for 'Sleep during PC connect' mode. Page 33 – carbon filter adaptor added in instructions. Page 33 – Note added, 'Never calibrate the zero with the span gas connected'	10/10/10	V0.0.74	V 1.0.0.31
2.0	Page 41 – Accessory added, Sensor seal .	12/11/10	V0.0.74	V 1.0.0.33
2.1	Page 37 – Part number 5/OV-02 changed from 5/OV-04	13/01/11	V.0.0.77	V 1.0.0.39
2.2	Battery Charging & Proper use added. Page 3 Field replacement of alkaline battery pack note added. Page 8 Information screens updated to include features screen. Page 16 Firmware upgrade screen updated. Page 25	25/02/11	V.0.0.85	V.1.0.0.42
2.3	Battery Charging note added. Page 30 Two battery packs note added. Page 30 11.7eV lamp information and spec added to page 22 Page 4 & 7 updated to correct Quality Management System. Page 7 Responsibility for use updated and Legal Notice added	03/03/11	V.0.0.85	V.1.0.0.42



Manual log

Manual version	Amendment	Issue Date	Instrument Firmware	PC Software
2.4	Front cover, Issue updated to V2.4 Servicing warnings and Intrinsically safe note added to warnings section on page 3 Page 12, Softkey note added Page 15, Stealth mode added Page 19 & 20, PC Software upgrade Updated Page 23, Lock Softkeys mote added Page 26 & 27, TIGER Firmware upgrades updated	29/03/11	V0.3.93	V1.0.0.45
2.5	Lamp information added on page 25 Page 37, Reference to Carbon Filter Adaptor deleted as this is not used. Page 44, A-861229, Carbon Filter Adaptor deleted.	07/06/11	V0.3.93	V1.0.0.45
2.8	Manual part number added (front cover) Option icon updated - ppm & lamp added (p.14) Unit and lamp icons and text added (p. 15) Entire table checked & updated with icons and text (p. 16) Option icon updated - ppm & lamp added (p.35)	18/10/2012	V0.4.17	V1.0.0.63
2.9	Outer front cover updated. Instrument registration note added to inside front cover.	29/1/2013	V0.4.17	V1.0.0.63
3.0	Page 15 – Removed temperature icon	19/04/2013	V0.4.20	V 1.0.0.70
3.1	SW & FW upgrade SPAN 2 adjusts to 5,000 ppm.	23/07/2013	V0.4.22	V 1.0.0.73
3.2	Accessory clarification 861443/5/OV-04 and A861474. Page 41	13/02/2014	V0.4.22	V 1.0.0.73

Tiger Select

Instrument User Manual V2.5



Register
your instrument
online to receive
your extended
warranty.

Unrivalled Detection.

www.ionscience.com

Register your instrument online for extended warranty

Thank you for purchasing your Ion Science instrument.

The standard warranty of your instrument can be extended to up to five years on PhoCheck Tiger and two years on other Ion Science instruments.

To receive your extended warranty, you must register your instrument online within one month of purchase (terms and conditions apply.)

Visit www.ionscience.com/instrument-registration



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About this manual

This manual describes the function and operation of the Tiger Select instrument. It is a supplement to the standard Tiger user manual (part number: 861265)

Please read and understand both manuals completely before operating the Tiger Select instrument.



Statements

Responsibility of Use

Inadequate performance of the gas detection equipment described in this manual may not necessarily be self-evident and consequently equipment must be regularly inspected and maintained. Ion Science recommends that personnel responsible for equipment use institute a regime of regular checks to ensure it performs within calibration limits, and that a record be maintained which logs calibration check data. The equipment should be used in accordance with this manual, and in compliance with local safety standards.

Legal notice

Whilst every attempt is made to ensure the accuracy of the information contained in this manual, Ion Science accepts no liability for errors or omissions, or any consequences deriving from the use of information contained herein. It is provided "as is" and without any representation, term, condition or warranty of any kind, either express or implied. To the extent permitted by law, Ion Science shall not be liable to any person or entity for any loss or damage which may arise from the use of this manual. We reserve the right at any time and without any notice to remove, amend or vary any of the content which appears herein.

Caution

It is essential that the Tiger Select is always used with a supplied PTFE 0.5 micron filter fitted to the front of the instrument. Without a filter, particles of debris and dust can be drawn into the detector inhibiting the function of the instrument. These filters are consumable and should be changed after every 100 hours of use. The frequency of replacement should be increased for dusty or moisture laden environments. Filters are available from your distributor or at www.ionscience.com.

Quality Assurance

Tiger Select has been manufactured in compliance with ISO9001:2000, which ensures that the equipment supplied to our customers has been designed and assembled reproducibly, from traceable components, and leaves Ion Science calibrated to stated standards.

Disposal

Dispose of Tiger Select, its components and any used batteries in accordance with all local and national safety and environmental requirements. This includes the European WEEE (Waste Electrical and Electronic Equipment) directive. Ion Science Ltd offers a take back service. Please contact us for more information. The Tiger Select field case material is recyclable polypropylene.

Calibration Facility

Ion Science Ltd offers a calibration service including the issue of certification confirming calibration with equipment traceable to national standards. A Tiger Select calibration kit is available from your distributor or service centre or at www.ionscience.com. Ion Science recommends annual return of all instruments for yearly service and calibration.



Introduction

Benzene gas is a carcinogen often associated with petrochemical processing but it is also used as a solvent in the production of drugs, plastics, synthetic rubbers and dyes. Photo ionization detectors (PID) readily detect a wide range of VOC gases of which includes Benzene.

Gases that are cross sensitive to Benzene will result in significant errors in reading which are unacceptable when occupational exposure levels are set around 1ppm.

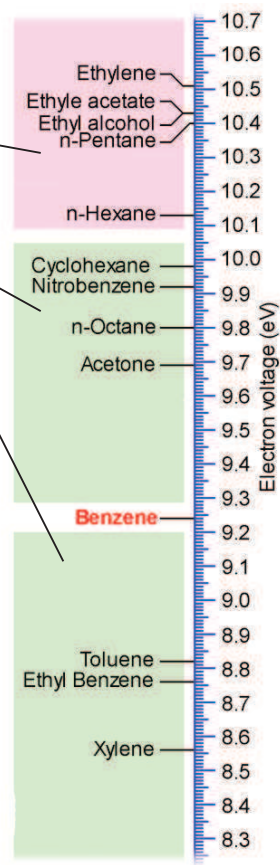
The Tiger Select has been developed to give an accurate and repeatable measurement of Benzene gas specifically to sub ppm levels.

The Tiger Select has two modes of operation; TAC mode which identifies the presence of Total Aromatic Compounds (which include Benzene), and Select mode which then identifies the specific Benzene content. This two stage approach avoids using filter tube unnecessarily; if there are no TAC gases present there is also no Benzene.

The Tiger Select uses a 10.0 eV light source so many of the gases associated with Benzene are ignored.

The remaining gases associated with Benzene are filtered using a Benzene pre-filter tube.

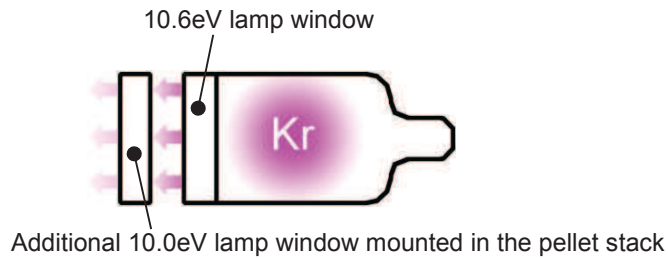
Note: n-Butane, n-Pentane, Ethylene, Propylene, Alcohol and Acetate are not shown on this illustration, however they are also beyond the detection range of the 10.0 eV lamp so are not detected.





Lamp output

The number of gases a PID can detectable directly relates to the Electron Voltage (eV) output of the PID lamp being used, the higher the eV level the more gases can be detected. In the standard PhoCheck Tiger the 10.6eV lamp allows the detection of over 450 gases. The Tiger Select still uses a 10.6 eV lamp however an additional 10.0 eV glass filter is fitted in to the electrode stack which limits the amount of detectable gases down to 115.



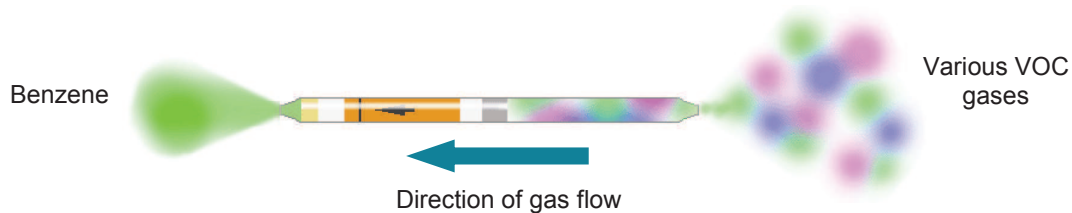
Important

Always recalibrate the Tiger Select after servicing, particularly if the lamp or electrode stack is cleaned or replaced.



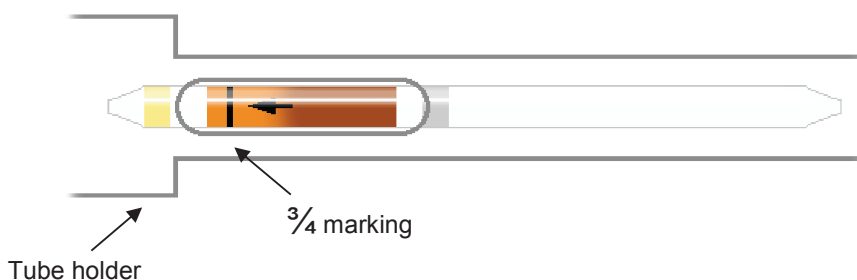
Filter tubes

Benzene Pre filter tubes absorb many VOC gases however the Benzene content passes through. The gas sample must be drawn through the tube to condition it before the absorption level becomes stable. Please see the leaflet supplied with the pack of tubes for maximum absorption levels.



Important

During the Benzene measurement, the Yellow/Orange indicating layer turns brown or green in the presence of other aromatic hydrocarbons and/or benzene hydrocarbons. If this colouring is longer than the $\frac{3}{4}$ marking, the filter capacity of the tube is not sufficient anymore and the Benzene display may not be accurate.

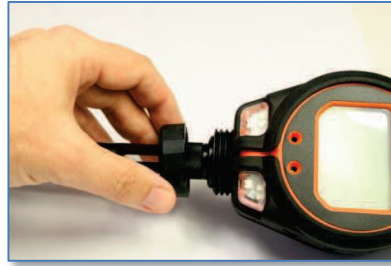




Fitting the tube holder

Always ensure the filter tube is visible while viewing the display screen. If necessary the filter tube assembly should be removed and refitted.

1. Unscrew and remove the Filter Cap.



2. Remove the filter clamp and tube holder together.



3. Place the O'ring on the filter lamp and push the assembly in to the filter housing with the window facing forward. Continual pressure may be required to keep the assembly in place while tightening the filter cap.



The filter disk should be replaced if it appears dirty, or is disturbed from its seating position. The filter disks can be fitted either way round however the orientation should never be reversed once used.





Start up

The Tiger Select will start up in either Standard running mode or TAC mode depending on the mode selected when it was switched off. In Standard running mode the instrument will work as a standard PhoCheck Tiger instrument. (See user manual part number: 861265).

Standard running mode has a default sensitivity of 0.1 ppm Isobutylene equivalent (EQ). If higher sensitivity (ppb) or data logging is required, upgrades can be purchased. Please contact your local distributor for further information.

TAC mode

TAC mode automatically offers higher sensitivity, selects a response and allows data logging functionality.

The Tiger Select can be left in this mode even through a power cycle or battery replacement.

TAC mode can only be used if a 10.0 eV lamp is selected.

The 10.0eV lamp output helps filter out many VOC gases associated with Benzene.

IMPORTANT

The TAC gas used within TAC mode has a STEL set to 1 ppm, this level has been chosen based on the low STEL levels often associated with Benzene vapour. The Tiger Select TAC STEL however is not supported by nationally recognised bodies who publish official levels.

Soft keys available within TAC mode

Single log

Single point data log allows individual readings to be logged in memory, logged data can then be downloaded to Tiger PC for review and analysis.

Multi log

Multiple data logging allows multiple readings to be logged in memory, logged data can then be downloaded to Tiger PC for review and analysis. The frequency of the data log and other log settings must be setup on the TigerPC configuration and sent to the instrument before use.

TAC

Pressing the TAC soft key simply enters and exits TAC mode.

Tube mode

Pressing the tube soft key simply enters tube mode

Please note: A tube calibration must be carried out before tube mode can be used. The following icon will appear until a Tube calibration is carried out. To carry out a tube calibration see page 13. Tube mode is designed to identify the level of Benzene gas after TAC mode has identified a significant background. Unlike the other modes of operation soft keys are unavailable during the Tube mode test.



IMPORTANT: When entering Tube mode the pump will stop until the test cycle begins. This is not a fault condition.

This mode of operation has two parts; an initial single point reading followed by an optional STEL calculation however both tests use the same pre-filter tube.

The initial Benzene test has a test time which varies with temperature. This test time is required to condition the tube which thereafter offers a proportional output relating to the Benzene being sampled.



Start up

A 15 minute STEL can then be carried out using the same tube, The STEL for Benzene will be automatically selected from the gas table. If a Benzene STEL is not specified within the selected gas table a figure can be entered on to the gas table and then sent to the instrument. To allow the table to be edited 'Allow inert/Delete' must be selected from the drop down Menu found in the top of the gas table screen.

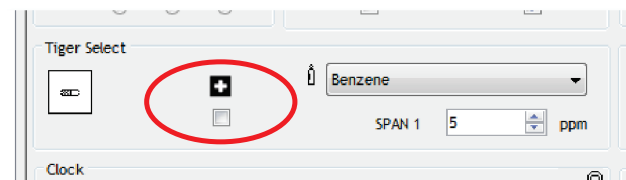
H&S function (STEL calculation)

The second stage of Tube mode is optional; to enable it select the H&S option on the configuration screen of Tiger PC and then sent to the instrument. (See below)

If selected a STEL calculation will automatically start calculating after the initial test.

The H&S icon will flash in the left corner of the screen, if the STEL measurement is required then the ENTER key.

If the H&S stage is not required then press the 'Esc' key, the instrument will offer the opportunity to fit another Benzene pre-filter tube to carry out another test.





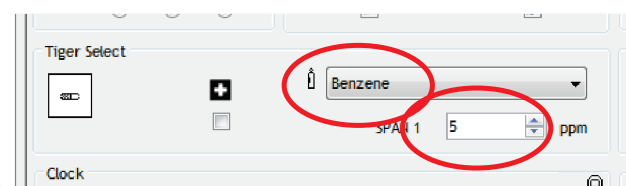
Calibration

Calibration type

Tiger Select has 3 calibration options:-

1. Factory calibration: This calibration is only used in normal running mode so is not used in TAC or Select mode. Factory Calibration is carried out at Ion Science during manufacture. This can be selected by the user but cannot be changed. Factory calibration should be carried out annually by Ion Science Ltd or an authorised service centre only.
2. Custom calibration: This calibration is used in normal running mode and TAC mode. Custom Calibration allows the user to calibrate the Tiger on alternative gases and using alternative concentrations.
3. Select calibration: The Tiger Select has a separate calibration set aside for tube mode. Please note that a tube calibration must be carried out before access to tube mode is allowed. Please see page 13.

The Select calibration settings can be adjusted on the configuration screen in Tiger PC. Benzene gas must be selected when using a Benzene pre filter however the calibration gas concentration can be adjusted.



Frequency of calibration

The frequency at which the Tiger Select is calibrated can vary considerably. Changes in environmental conditions, frequency of use or the gas being detected can all affect the accuracy of the instrument. Ion Science suggests customers carry out weekly calibrations but then extend this time as confidence is gained and any environmental effects identified.

Tiger Select should also be calibrated for the following reasons:-

- * When a new batch of pre-filter tubes are used. Batch numbers can be found on the end of the tube carton.
- * After servicing

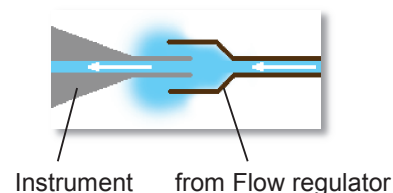


Demand and flow regulators

The Tiger Select can be calibrated using either a flow regulator or a demand regulator.

Demand regulators rely on the instrument pump drawing the sample from the gas bottle. These regulators supply exactly the amount of gas necessary to calibrate so are economical. They also avoid the risk of leaving the gas bottle switched on. Demand regulators however rely on the host instruments pump to draw the sample which causes a slight partial vacuum of between -7 to -10 mbar. For an accurate calibration the entire pneumatic system must be completely sealed.

Flow regulators supply a fixed amount of gas which should exceed what the instrument requires. A little gas is lost and the instrument takes what it needs. The Tiger Select requires 250 cc/min so flow regulators of 300 cc/min (0.3Lr/min) is advised. Being a flood leak the sample has the benefit of being matched to ambient air pressure.





Calibration

Calibration routine

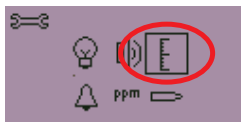
For best results place the Tiger Select instrument and any Benzene pre-filter tubes in the calibration environment. Switch the Tiger Select on and leave it running in the calibration environment for 30 minutes. This ensures the instrument and the tubes acclimatize to the environment and ensure any trace benzene is purged from the instrument after previous testing.

Tiger Select relies on a two point calibration to create its calibration factor. Both Zero and SPAN are set with a single stage. The Zero is set using initial slug of clean gas passing through a pre-filter tube, the span is set later. Please note the accuracy of the calibration will be affected by ambient temperature.

1. Select the settings soft key:



2. Choose the calibration option



3. Choose the Tube calibration



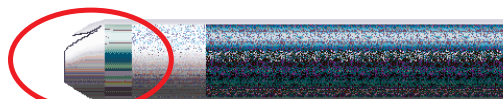
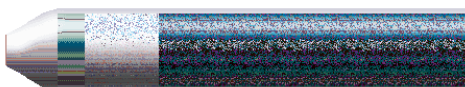
4. Use the up and down keys to adjust the temperature on screen to the ambient.

Use a separate temperature measuring device if necessary.

Note: At this point the pump will stop running



5. Remove both ends of the pre filter tube using the tube opener tool. This is done by inserting the tube in to the tube opener and twisting the tube. A slight angle may be required to cut the glass. Should the tube break up to the shoulder it must not be used as this will damage the seals within tube holder when inserted.



6. Unscrew the cap of the tube holder, insert the tube in to the tube holder cap ensuring the black arrow on the tube is pointing towards the open end (towards the instrument). Screw the tube holder cap and the tube on to the instrument.



- 6a. If using a flow regulator, remove the grub screw from the end of the tube holder cap before starting the calibration, this allows excess gas to escape.

WARNING: failing to allow excess pressure to escape could damage the Tiger Select pump.





Calibration

7. Connect the calibration gas to the Probe by pushing the pipe on to the end of the tube holder.

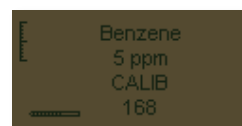
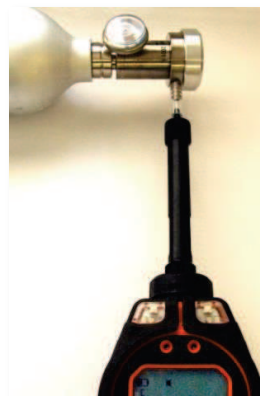
IMPORTANT: For best results the pipe between the calibration gas and the instrument should be as short as practically possible.

8. If using a flow regulator; switch the gas on and then press the ENTER key to start the calibration routine. IMPORTANT: At the end of the test cycle switch off the calibration gas.

8a. If using a demand regulator just press the ENTER key to start the calibration routine.

The timer will count down, at the end of the calibration cycle a tick / check (✓) will appear.

Press the ENTER key to accept the calibration.

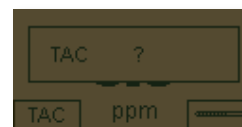




TAC mode routine

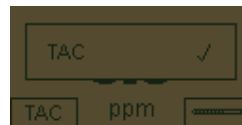
The TAC soft key is used to ENTER and EXIT from TAC mode.

1. To select TAC mode press the TAC soft key then press then press the ENTER key to continue.



2. A tick / check '✓' will appear to confirm the selection

3. Press the Esc key to clear the confirmation



4. The TAC response factor will be displayed temporarily before entering TAC mode operation.



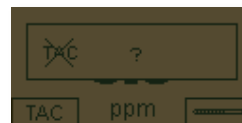
5. TAC mode automatically selects a specific instrument setup, to ensure best results. The TAC response factor, high sensitivity and data logging functions become available.

This mode offers single point data logging, multiple data logging, STEL and Tube mode.

Important

The TAC gas used within TAC mode has a STEL set to 1 ppm, this level has been chosen based the low STEL levels often associated with Benzene gas. The Tiger Selects TAC STEL however is not supported by nationally recognised bodies who publish official levels

6. To exit TAC mode Press the TAC soft key and then ENTER.



7. A tick / check '✓' will appear to confirm the selection, then press the Esc key.




8. The gas repose factor will be displayed temporarily before exiting TAC mode.





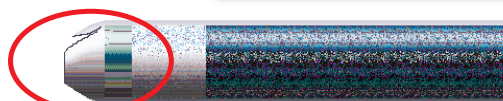
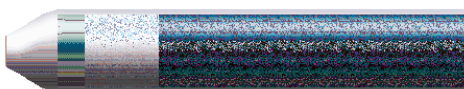
Select mode routine

1. To enter Select mode press the Select soft key () at this point the pump will stop running. A screen will appear to prompt the fitting of a pre-filter tube, this screen also indicates which gas is selected, ensure this is Benzene.



2. Adjust the on screen temperature to the ambient using the Up and Down keys. Preferred temperature units ($^{\circ}\text{C}$ or $^{\circ}\text{F}$) are set on the Configuration screen of TigerPC.

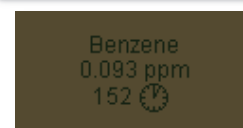
3. Remove both ends of the pre filter tube using the tube opener tool. This is done by inserting the tube in to the tube opener and twisting the tube. A slight angle may be required to cut the glass. Should the tube break up to the shoulder it must not be used as this will damage the seals within tube holder when inserted.



4. Unscrew the cap of the tube holder, insert the tube in to the tube holder cap ensuring the black arrow on the tube is pointing towards the open end (towards the instrument). Screw the tube holder cap and the tube on to the instrument.



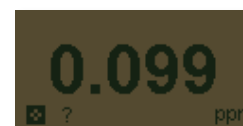
5. Pressing the Enter key to start the test cycle. A count down timer will indicate the remaining test time, and a live Benzene reading is displayed. Please note that this live reading is for indication only. Only the final ready at the end of the test cycle should be used as a reference. This final reading will also be automatically data logged.



WARNING: If the Benzene reading exceeds 200 ppm the reading should be treated with caution.

Note, when using the Tiger Select to measure higher concentrations of Benzene the concentrations of other hydrocarbons may also be high and the Pre-filter's tube capacity should be considered. As the Pre-filters capacity is reached the tube will turn from a bright orange to "greenish brown". If the colour changes beyond the $\frac{3}{4}$ marking the Benzene concentration displayed may not be accurate, see figure 2. If the colour turns past the $\frac{3}{4}$ mark, as long as the benzene reading is below the test limit (e.g., 200 ppm) the result still within environmental compliance and the work activity can continue.

6. A 15 minute STEL can be carried out after the initial reading using the same pre-filter tube. Press the ENTER to continue or press the Esc key to return to the Tube test screen.



If H&S mode does not appear as an option it can be selected on the configuration screen of TigerPC in the Tiger Select section. The STEL threshold is taken from the internal gas table however some authorities have no published STEL level for Benzene so the instrument will not alarm.

7. At the end of the STEL test the instrument will display the final reading which will be data logged. Press the Esc key will return to TAC mode.

Pre-filter tubes must only be used for 1 single reading + 1 once STEL test only.

WARNING: Should the level of Benzene through the filter tube exceed 200 ppm the accuracy of the reading should be approached with caution. Readings above 200 ppm are still displayed however '>200' flashes in the bottom left corner of the screen.

Important:

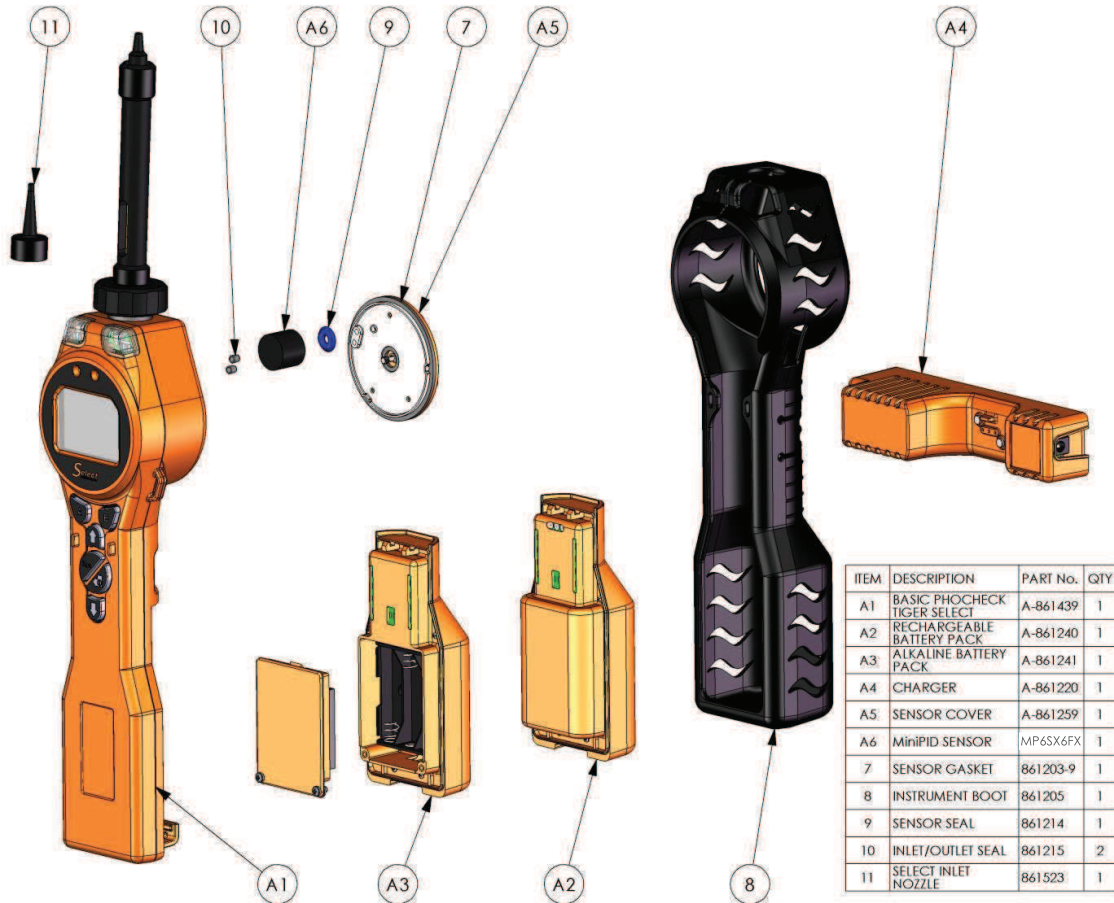
* The working temperature range of the Benzene pre-filter is between 2 to 40 $^{\circ}\text{C}$ (35 $^{\circ}\text{F}$ to 122 $^{\circ}\text{F}$)





Parts list

PID sensor access and batteries

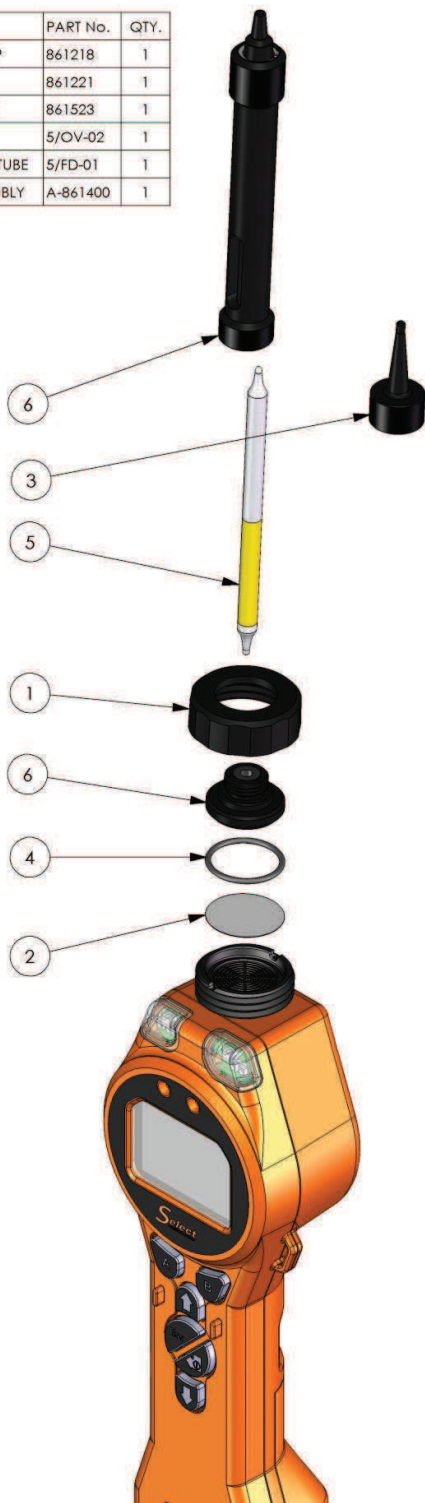




Parts list

Probe assembly

ITEM No.	DESCRIPTION	PART No.	QTY.
1	FILTER HOUSING CAP	861218	1
2	FILTER DISC	861221	1
3	SELECT INLET NOZZLE	861523	1
4	O-RING	5/OV-02	1
5	BENZENE PRE-FILTER TUBE	5/FD-01	1
6	TUBE HOLDER ASSEMBLY	A-861400	1





Contact details

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Fax: +49 2104 144825

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Web: www.ism-d.de



Manual log

Version	Amendment	Date of issue	Instrument firmware	PC software
1.0	First issue	27/02/2011	V0.3.85	V1.0.0.42
1.1	Front cover version. Page 9, Health and Safety mode added. Page 10 Health and Safety mode added.	8/04/2011	V0.3.93	V1.0.0.45
2.0	Completely restructured, also the addition of TAC mode	21/10/11	V0.4.03	V1.0.0.54
2.1	Tube holder changes Page 8, 9	01/03/12	V0.4.04	V1.0.0.58
2.2	Rewritten to include new software and firmware	23/08/12	V0.4.17	V1.0.0.63
2.3	Layout updated	29/01/2013	n/a	n/a
2.4	Benzene limit removed (>200ppm) various pages updated	22/04/2013	V0.4.20	V1.0.0.70
2.5	SW & FW upgrade SPAN 2 adjusts to 5,000 ppm.	23/07/2013	V0.4.22	V 1.0.0.73

Chris Anderson

10/30/2014 03:59 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>
cc	"drundqui@energy.state.ca.us" <drundqui@energy.state.ca.us>, "drundqui@energy.ca.gov" <drundqui@energy.ca.gov>, "pablo.schenone@abeinsaepc.abengoa.com" <pablo.schenone@abeinsaepc.abengoa.com>, "manjunath.shivalingappa@abeinsaepc.abengoa.com"
bcc	
Subject	RE: Mojave Solar project AQ-67-00-00

Hello Steven,

The District has no objection to the PID sampling procedures as submitted for compliance with AQ-67.

Regards

Chris Anderson

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Tuesday, October 28, 2014 7:44 AM

To: Chris Anderson

Cc: drundqui@energy.state.ca.us; drundqui@energy.ca.gov; pablo.schenone@abeinsaepc.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com; efrain.perez@abeinsaepc.abengoa.com; sowjanya.chintalapati@abeinsaepc.abengoa.com; Kathleen.Sullivan@solar.abengoa.com; frances.sanchez@solar.abengoa.com; nicholas.petrovitza@solar.abengoa.com; william.grisolia@solar.abengoa.com

Subject: Mojave Solar project AQ-67-00-00

Good Morning Chris,

Please disregard the previous submittal made for AQ-67 and review the attached. In accordance with condition of certification AQ-67 of the Mojave Solar project, please see attached for the Carbon Adsorption System VOC Monitoring procedure and PID specifications for your review. Please don't hesitate to contact me if you have any questions.

Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA

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Victorville, CA 92392

Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

www.teyma.com



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"Rundquist, Dale@Energy"

11/13/2014 02:51 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>, "canderson@mdaqmd.ca.gov" <canderson@mdaqmd.ca.gov>
cc	"pablo.schenone@abeinsaepc.abengoa.com" <pablo.schenone@abeinsaepc.abengoa.com>, "manjunath.shivalingappa@abeinsaepc.abengoa.com" <manjunath.shivalingappa@abeinsaepc.abengoa.com>, "mercedes.macias@abeinsaepc.abengoa.com"
bcc	
Subject	RE: Mojave Solar project AQ-67-00-00

Hi Steven,

Thank you for keeping us in the loop.

Energy Commission staff finds that Abengoa is in compliance with AQ-67.

Thank you,

Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Tuesday, October 28, 2014 7:44 AM

To: canderson@mdaqmd.ca.gov

Cc: Rundquist, Dale@Energy; Rundquist, Dale@Energy; pablo.schenone@abeinsaepc.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com; efrain.perez@abeinsaepc.abengoa.com; sowjanya.chintalapati@abeinsaepc.abengoa.com; Kathleen.Sullivan@solar.abengoa.com; frances.sanchez@solar.abengoa.com; nicholas.petrovitza@solar.abengoa.com; william.grisolia@solar.abengoa.com

Subject: Mojave Solar project AQ-67-00-00

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Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA


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Victorville, CA 92392

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www.teyma.com

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MONTHLY HAZARDOUS MATERIAL LOG

Month of Delivery: November **Contact Person or Representative:** David Trenado Sevillano

Contact Phone or email: 480-768-7793

Name of Chemical/ Hazardous Material	Storage Type (Drum, Tank, Bin/Tote, etc)	Total Quantity (gal, lbs, etc)	Location where Hazardous Materials are Stored	Time Delivered	Date Delivered
Sulphate Magnesium	Super sack	2000 lb	Alpha WTP	12:00	08/11/14
Sodium Hypochlorite	Mini Bulk	2084 gal	Alpha WTP	9:00	08/07/14
Sodium Hypochlorite	Mini Bulk	1783 gal	Beta WTP	10:30	08/07/14
Sulphate Magnesium	Super sack	20.000 lb	Alpha WTP	11:00	09/02/14
Sulphate Magnesium	Super sack	20.000 lb	Beta WTP	12:00	09/02/14
Soda Ash	Bulk truck	50.220 lb	Alpha WTP	10:00	09/11/14
Soda Ash	Bulk truck	50220 lb	Beta WTP	10:00	09/12/14
Lime	Bulk truck	50220 lb	Beta WTP	10:00	09/12/14
Lime	Bulck truck	50220 lb	Alpha WTP	10:00	09/15/14
Sulphate Magnesium	Super sack	20.000 lb	Alpha WTP	13:00	09/19/14
Sulphate Magnesium	Super sack	20.000 lb	Beta WTP	14:00	09/19/14
Sulphate Magnesium	Super sack	10.000 lb	Alpha WTP	12:00	10/17/14
Sulphate Magnesium	Super sack	10.000 lb	Alpha WTP	13:00	10/17/14
Sulphate Magnesium	Bulck truck	10.000 lb	Alpha WTP	12:00	10/22/14
Sulphate Magnesium	Bulck truck	10.000 lb	Beta WTP	13:00	10/22/14
Sodium Bisulfite	Mini Bulk	500 gal	Alpha WTP	9:00	10/23/14
Polielectrolyte	Tote	275 gal	Alpha WTP	13:00	10/23/14
Sulfuric acid 50%	Mini Bulck	400 gal	Alpha WTP	9:00	11/18/14
Sulfuric acid 50%	Mini Bulck	200 gal	Beta WTP	10:00	11/18/14
Sulfuric acid 50%	Mini Bulck	400 gal	Alpha WTP	9:00	11/28/14
Sulfuric acid 50%	Mini Bulck	400 gal	Beta WTP	10:00	11/28/14
Steamate PAS6074	Tank	20 gal	Chemical Dosing BOP Alpha	4:00 pm	11/12/2014
Steamate PAS6074	Tank	20 gal	Chemical Dosing BOP Beta	4:00 pm	11/12/2014

Thank you for your cooperation!

Please return this form to your Activity Manager, or email to: Manjunath.shivalingappa@abeinsaepc.abengoa.com (Duplicate as necessary.)

For questions please contact Manju Shiv, Environmental Engineer at (480)768-7793

date	order number	Nitrogen Delivered	Volume (SCF)	Time In	Time Out
1/9/2014		ALPHA	611823		
1/9/2014		BETA			
2/18/2014		ALPHA	633600	13:00	14:30
2/21/2014		BETA	576900	9:15	
3/11/2014		ALPHA	326900	9:30	10:45
5/28/2014		ALPHA	544900	11:45	
7/7/2014		BETA	541600	10:15	13:30
7/17/2014		ALPHA	632200	10:15	12:30
8/29/2014		BETA	600000	10:30	12:45
9/4/2014		BETA	422100	21:15	22:45
9/4/2014		ALPHA	227200	22:45	0:15
9/7/2014		ALPHA	640800	22:15	0:00
9/26/2014		ALPHA	301900		
9/26/2014		BETA	265800		
10/8/2013		ALPHA			
10/11/2014	57355834	BETA	613300	20:30	23:00
10/13/2014	57357722	BETA	592400	20:00	21:45
10/15/2014	57386615	BETA	613800	21:30	0:15
10/21/2014	57435362	ALPHA	454000	14:00	15:30
10/25/2014	57503642	BETA	466400	19:30	21:30
10/25/2014	57503643	ALPHA	172400	21:45	22:30
10/29/2014	57531313	ALPHA	453100	11:50	12:50
11/15/2014	57751562	ALPHA	342900		
11/29/2014	57956352	ALPHA	613500	21:10	23:00



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Asote Construction

DATE: 11/14/14

DRIVER-PRINT NAME: HARON

TRUCK#: 121

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CDP
1 10095169	Gen. Build 10. ALPHA	140		
2 10063822	Gen. Build 10. ALPHA	50		
3				
4 K36C	Gen. Build 10. ALPHA	60		
5				
6 K22M	Gen. Build 10. ALPHA	130		
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL:		380		

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	507718.9		
START	507538.9		
TOTAL	380.0		

BILLING BASED ON MASTER METER

X



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abator Construction DATE: 11/7/14

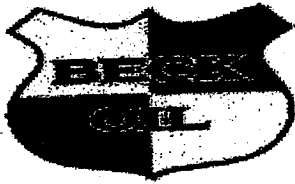
DRIVER-PRINT NAME: HAROW TRUCK#: 121

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CDP
1	K36C	GUARD. GOWSET. TASS	44		
2					
3	K224	Gen. BUINO 10. BETA	97		
4					
5	10095669	Gen. BUINO 10. ALPHA	94		
6	10063822	Gen. BUINO 10. ALPHA	25		
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL:			260		

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	516950.3		
START	516690.6		
TOTAL	259.7		

BILLING BASED ON MASTER METER



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abnol Construction

DATE: 11/11/14

DRIVER-PRINT NAME: Harou

TRUCK#: 121

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CDF
1	10063822	Gov. BUILD 10. ALPHA	25		
2					
3	136c	GUARD. Gov. TATS	92		
4					
5	122M	Gov. BUILD 10. BETA	133		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

TOTAL:

200

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	522435.0		
START	52235.0		
TOTAL	200.0		

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Adener Construction DATE: 11.14.14

DRIVER-PRINT NAME: Scott TRUCK#: 35

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	87
1	K0063822	Genny	58		
2	K36	Genny	36		
3	K224	Genny	33		
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL:			127		

MASTER METER TOTALS			
	RED	GAS	CLR
FINISH	475868		
START	475741		
TOTAL	127		

BILLING BASED ON MASTER METER



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Alonso Const.

DATE: 11/18/14

DRIVER-PRINT NAME: HARON

TRUCK#: 121

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CDL
1	10063822	Gen. Buick 10. Alpha	43		
2					
3	12360	Gen. Buick 10. Beta	91		
4					
5	1224	Gen. Buick 10. Beta	166		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL:			300		

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	537989.2		
START	537689.4		
TOTAL	299.8		

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abener Construction DATE: 11.21.14

DRIVER-PRINT NAME: Scott TRUCK#: 35

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	87
1	1236		40		
2	1224		13		
3	12063822		44		
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL:			97		

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	485157		
START	485080		
TOTAL	97		

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: ABENER CONSTRUCTION

DATE: 11/25/14

DRIVER-PRINT NAME: Hololo

TRUCK#: 133

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CDL
1	10063822	GEN. ALPHA BUILD 10	0 full & off		
2					
3	K224	GEN. BETA BUILD 10	- 50 & off		
4					
5	K36C	GEN. GARD SILLCK	60 ON		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL:			110		

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	2485972.4		
START	2485862.4		
TOTAL	110.0		

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abener Construction DATE: 11 28 14

DRIVER-PRINT NAME: Scott TRUCK#: 35

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	87
1	<u>K36</u>		<u>56</u>		
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL :					

MASTER METER TOTALS			
	RED	GAS	CLR
FINISH	<u>489988</u>		
START	<u>489932</u>		
TOTAL			

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abener Teyman DATE: 12.5.14

DRIVER-PRINT NAME: Scott TRUCK#: 35

UNIT #/LICENSE #		DESCRIPTION	RED	GAS	87
1	K 36 (TAB Guard)	Genny	42		
2	Shack				
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TOTAL :					

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	497439		
START	497395		
TOTAL	42		

BILLING BASED ON MASTER METER

(760) 245-4191
Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

3 ADDRESS

ER TEYMA/HARPER LAKE/TABS
34 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HAPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
		none		000224	222003	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK	105/01		GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	<u>405</u>	\$0.00000	
CRITICAL DESCRIPTION:				GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED					
1,500	BULK	120/01		CARB ULS #2 DIESEL, CLEAR		1,500.0000	<u>548</u>	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE					
2,500	BULK	121/01		CARB ULS #2 DIESEL, DYED RED		2,500.0000	<u>2663</u>	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE					
1			300-N10/15	WETHOSE		1.0000	<u>1</u>	\$0.00000	
			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000	<u>1</u>	\$6.59000	
Taxes									
Amount Due									

FEDERAL EXCISE TAX - DIESEL-.243
STATE EXCISE TAX - GAS/ETHANOL-.36
STATE EXCISE TAX - DIESEL-.11
FEDERAL EXCISE TAX-ETH 10%-.183
CALIF STATE SALES TAX - DIESEL
CAAB 32 ADMIN FEE - DIESEL .002652
FEDERAL OIL SPILL FEE DSL & KERO-.0019
CALIF STATE SALES TAX - LOCAL
FEDERAL LUST TAX - .001
CALIF SALES TAX SAN BERNARDINO
CALIF STATE SALES TAX - GAS
CALIF STATE SALES TAX - COUNTY
CAAB 32 ADMIN FEE - GAS .002276
CALIF STATE SALES TAX
FEDERAL OIL SPILL FEE ETH/GAS-.00171
CALIF LEAD POISON-.001425
CALIF OIL SPILL-DSL, GAS & ETH-.00

Tax Total: _____

B 1000
E 1345



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: ABENOR TARD DATE: 11/26/14

DRIVER-PRINT NAME: HARDON TRUCK#: 133

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	30 COF
1 TANK #5	CLEAR YARD			486
2 TANK #3	RED YARD	450		
3 TANK #1	87 YARD		267	
4 343602	GEN. BETA	37		
5 1196435		45		
6 10173927		163		
7 10130147	GEN. ALPHA	128		
8 10132366		5		
9 4682		52		
10 10155219		70		
11 4293		64		
12 342412		24		
13 TANK #2	RED YARD	454		
14 8024177	FUEL TRUCK TANKS	108		
15 30398R1		200		
16 TANK #1	2ND FILL 87 YARD		138	
17 TANK #4	RED YARD	863		
18 TANK #5	2ND FILL CLEAR			62
19				
20				
TOTAL:		2663	405	548

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	2489746.0	5819.5	2487083.0
START	2487083.0	5414.5	2486535.0
TOTAL	2663.0	405.0	548.0

BILLING BASED ON MASTER METER

Victorville Sales (760) 245-4191
40 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
		none		000224	222179	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	100	\$0.00000	
CRITICAL DESCRIPTION:				GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED					
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR		1,500.0000	300	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE					
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED		2,500.0000	250	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE					
1			300-N10/15	WETHOSE		1.0000		\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000		\$6.59000	

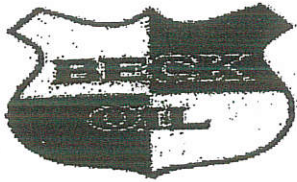
Taxes Amount Due

FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CAAB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - GAS	
CALIF STATE SALES TAX - COUNTY	
CAAB 32 ADMIN FEE - GAS .002276	
CALIF STATE SALES TAX	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total: _____

Alon Lo

11-23-19



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: ABENOR TASS

DATE: 11/28/14

DRIVER-PRINT NAME: Harold

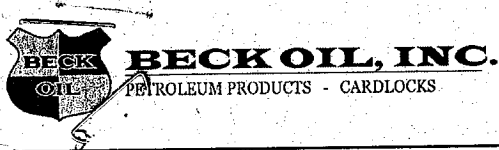
TRUCK#: 331

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	CLF
1 TANK #5	CRUEL YARD			262
2 343602	GEN. BETA	116		
3 PR 1779	GEN. BETA	48		
4 10173927	GEN. BETA	145		
5 1196435	GEN. BETA	80		
6 4293	GEN. ALPHA	90		
7 10155219	GEN. ALPHA	66		
8 10130147	GEN. ALPHA	124		
9 4682	GEN. ALPHA	47		
10 342412	GEN. ALPHA	45		
11 TANK #2	RED YARD	465		
12 TANK #1	87 YARD		78	
13 TANK #3	RED YARD	141		
14 TANK #4	RED YARD	863		
15				128
16 TANK #5	2ND HU CRUEL			
17				
18				
19				
20				
TOTAL:		2231.0	78	390

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4048569.1	1158520.7	4046338.1
START	4046338.1	1158447.5	4045948.1
TOTAL	2231.0	77.9	390.0

BILLING BASED ON MASTER METER



DELIVERY TICKET

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CA

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HAPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.	ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE
	none	000224	220095	JOE EIFFERT	none	

QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000	722	\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR	1,500.0000	8	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED	2,500.0000	2531	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1			300-N10/15	WETHOSE	1.0000		\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE	1.0000		\$6.59000	

Taxes	Amount Due
-------	------------

FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CA AB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - GAS	
CALIF STATE SALES TAX - COUNTY	
CA AB 32 ADMIN FEE - GAS .002276	
CALIF STATE SALES TAX	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total: _____

BECK OIL, INC
WETHOSE SHEET



S 9:45 AM
E 1:15 PM

CUSTOMER: ABENER / ABACUS TRUCK #: 31
DATE: 10.3.14 DRIVER: Rating -

(CIRCLE ONE)

PRODUCT: RED DIESEL CLEAR DIESEL REGULAR GAS

UNIT NUMBER DESCRIPTION GALLONS

Red 1	4682	Alpha Admin building Gen.	49
Red 2	10130147	Alpha South Alley Gen.	180
Red 3	10132366	Alpha South Alley Gen.	8
Red 4	342412	Alpha west DR. Gen.	34
Red 5	343901	Alpha west DR. Gen.	61
Red 6	343602	Beta west DR. Gen Ingersol Ranch	108
Red 7	10272652	Beta Admin. building Gen.	9
Red 8	PR1779	Beta South Alley cat Gen.	157
Red 9	Fire water tank at TABS	Yred	98
Red 10	TABS fuel cell # 2		474
Red 11	TABS fuel cell # 3		328
Red 12	TABS fuel cell # 4		877
Clear 13	TABS fuel cell # 5		90% full
Red 14	TABS fuel truck # 1		131
15			
16			
17			
18			
19			
87 20	TABS fuel cell # 1		226
TOTAL DIESEL GALLONS:			
REGULAR GAS GALLONS:			

Red
2534

MASTER METER: START: FINISH: TOTAL:

BECK OIL INC
16640 D STREET
VICTORVILLE, CA 92395
760) 245-4191

NOTE: BILLING BASED ON MASTER METER

87
S 1151658.5
E 1151884.8
226.3

Clear
0

Red
4000452.9
4002986.5
2533.6

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CA

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HAPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
11/5/14		none		000224	220324	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	477	\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED									
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR		1,500.0000	21	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE									
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED		2,500.0000	1573	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE									
			300-N10/15	WETHOSE		1.0000		\$0.00000	
			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000		\$0.00000	

Taxes	Amount Due
FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CAAB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - GAS	
CALIF STATE SALES TAX - COUNTY	
CAAB 32 ADMIN FEE - GAS .002276	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF STATE SALES TAX	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total: _____



BECK OIL, INC
WETHOSE SHEET



CUSTOMER: ABENER / ABACUS TRUCK #: 31
DATE: 11.5.14 DRIVER: RHINO

(CIRCLE ONE)
PRODUCT: RED DIESEL CLEAR DIESEL REGULAR GAS
UNIT NUMBER DESCRIPTION GALLONS

Red 1	4682 Alpha South Admin Building Gen		39
2	10130147 Alpha South Alley Gen.		118
3	10132366 Alpha South Alley Gen.		11
4	BE9017 Alpha South Bigger crane		5
5	343901 Alpha West DR Gen		41
6	342412 Alpha West DR Gen.		10
7	10252113 Beta North Alley Gen		12
8	343602 Beta West DR. Ingersoll Rand Gen		58
9	PR1779 Beta South Alley Gen.		34
10	BE9042 Beta South DR. Bigger crane		34
11	TABS fuel cell #2		151
12	TABS fuel cell #3		full
13	TABS fuel cell #4		745
14	TABS fuel cell #5		210
15	TABS fuel truck #1		285
16	Dodge Ram Abacus X80 70W Utah Syntex		30
17			
18			
19	TABS fuel truck #1		45
20	TABS yard fuel cell #1		230
TOTAL DIESEL GALLONS:			
REGULAR GAS GALLONS:			

- Red

- Clear

- Red

] 87

MASTER METER: START: FINISH: TOTAL:

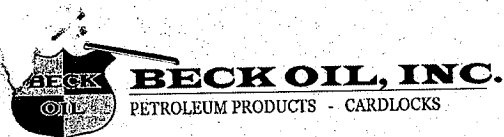
BECK OIL INC
16640 D STREET
VICTORVILLE, CA 92395
760) 245-4191

NOTE: BILLING BASED ON MASTER METER

87
1152084.9
1152359.9
275✓

Clear
4007268.5
4007478.7
210.2✓

Red
4005695.9
4007268.5
1572.6✓



DELIVERY TICKET

Page 1 of 1

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
7/1/11	none		000224	220188	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000	244	\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR	1,500.0000	5	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED	2,500.0000	1716	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1			300-N10/15	WETHOSE	1.0000	1	\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE	1.0000	1	\$6.59000	

Taxes

Amount Due

FEDERAL EXCISE TAX - DIESEL-.243
STATE EXCISE TAX - GAS/ETHANOL-.36
STATE EXCISE TAX - DIESEL-.11
FEDERAL EXCISE TAX-ETH 10%-.183
CALIF STATE SALES TAX - DIESEL
CA AB 32 ADMIN FEE - DIESEL .002652
FEDERAL OIL SPILL FEE DSL & KERO-.0019
CALIF STATE SALES TAX - LOCAL
FEDERAL LUST TAX - .001
CALIF SALES TAX SAN BERNARDINO
CALIF STATE SALES TAX - GAS
CALIF STATE SALES TAX - COUNTY
CA AB 32 ADMIN FEE - GAS .002276
CALIF STATE SALES TAX
FEDERAL OIL SPILL FEE ETH/GAS-.00171
CALIF LEAD POISON-.001425
CALIF OIL SPILL-DSL, GAS & ETH-.00

Tax Total:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

⑤ 7:30 AM
⑥ 11:15 AM

WETHOSE SHEET

CUSTOMER: Abner TABS. DATE: 11.7.14

DRIVER-PRINT NAME: ETHINC TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	Clear
1 4682	Alpha Admin. building Gen.	51		
2 10130147	Alpha South Alley Gen.	96		
3 10132366	Alpha South Alley Gen.	10		
4 343901	Alpha West DR. Gen.	22		
5 342412	Alpha West DR. Gen.	10		
6 10272656	Beta Admin. building Gen.	21		
7 343602	Ingersoll Rand Beta West Gen.	50		
8 PR1779	Beta South Alley Gen.	42		
9 9042BE	Beta South APS Vegas DR. crane	14		
10	TABS yard fire watch tank	110		
11	TABS fuel cell #1		185	
12	TABS fuel cell #2	396		
13	TABS fuel cell #3	full		
14	TABS fuel cell #4	894		
15	TABS fuel cell #5			full
16	Gerardo truck tank (1185551)		59	
17				
18				
19				
20				
TOTAL:		1716	244	0

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4009892.3	1154069.1	
START	4008176.7	1153825.5	
TOTAL	1715.6	243.6	

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

DELIVERY TICKET

Page 1 of 1

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CA

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
		none		000224	220644	JOE EIFFERT	none	RIVER	
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	500	\$0.00000	
CRITICAL DESCRIPTION:				GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED					
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR		1,500.0000	1500	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE					
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED		2,500.0000	2500	\$0.00000	
CRITICAL DESCRIPTION:				DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE					
1			300-N10/15	WETHOSE		1.0000		\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000		\$6.59000	

Taxes

Amount Due

FEDERAL EXCISE TAX - DIESEL-.243
STATE EXCISE TAX - GAS/ETHANOL-.36
STATE EXCISE TAX - DIESEL-.11
FEDERAL EXCISE TAX-ETH 10%-.183
CALIF STATE SALES TAX - DIESEL
CA AB 32 ADMIN FEE - DIESEL .002652
FEDERAL OIL SPILL FEE DSL & KERO-.0019
CALIF STATE SALES TAX - LOCAL
FEDERAL LUST TAX - .001
CALIF SALES TAX SAN BERNARDINO
CALIF STATE SALES TAX - GAS
CALIF STATE SALES TAX - COUNTY
CA AB 32 ADMIN FEE - GAS .002276
CALIF STATE SALES TAX
FEDERAL OIL SPILL FEE ETH/GAS-.00171
CALIF LEAD POISON-.001425
CALIF OIL SPILL-DSL, GAS & ETH-.00

Tax Total:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

WETHOSE SHEET

CUSTOMER: Abner TABS. DATE: 11-10-14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1	41082	Alpha Admin building Gen.	43		
2	10130147	Alpha South Alley Gen.	150		
3	10132366	Alpha South Alley Gen.	23		
4	343901	Alpha west DR. Gen.	40		
5	323412	Alpha west DR. Gen.	22		
6	4293	Alpha South Alley Gen. comm.	190		
7	014	Beta south Alley Gen.	130		
8	10272652	Beta south Admin building Gen.	15		
9	343602	Beta west DR. Ingersol Rand Gen.	77		
10		TABS yard fire watch tank	93		
11		TABS yard fuel truck #1	54		
12		TABS fuel cell #1		259	
13		TABS fuel cell #2	471		
14		TABS fuel cell #3	474		
15		TABS fuel cell #4	727		
16		TABS fuel cell #5			261
17		TABS fuel truck #1		74	
18					
19					
20					
TOTAL:			2509	333	261

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4012660.5	1154401.9	4012921.2
START	4010151.9	1154069.1	4012660.5
TOTAL	2508.6	332.8	260.7

BILLING BASED ON MASTER METER

[Signature]



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

DELIVERY TICKET

Page 1 of 1

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CA

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.	ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE
11-12-14	none	000224	220860	JOE EIFFERT	none	

QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000	737	\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,000	BULK		120/01	CARB ULS #2 DIESEL, CLEAR	1,000.0000	122	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED	2,500.0000	754	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1			300-N10/15	WETHOSE	1.0000	1	\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE	1.0000	1	\$0.00000	

Taxes	Amount Due
FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CA AB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF STATE SALES TAX - GAS	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - COUNTY	
CA AB 32 ADMIN FEE - GAS .002276	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF STATE SALES TAX	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total: _____

Caroline Dominguez

11/12/14



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

(S) 6:30 AM
(E) 11:30 AM

WETHOSE SHEET

CUSTOMER: Abner TABS DATE: 11.12.14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1	4293 Alpha South Alley Gen.	241		
2	4682 Alpha South Admin Building Gen.	44		
3	10130147 Alpha South Alley Gen.	114		
4	10132366 Alpha South Alley Gen.	27		
5	313901 Alpha West Dr. Gen.	60		
6	312412 Alpha West Dr. Gen.	45		
7	10252113 Beta North Alley Gen.	2		
8	041 Beta South Alley Gen.	131		
9	10278652 Beta South Admin building Gen.	23		
10	343602 Beta West Dr. Ingersol Rand Gen.	83		
11	PR1779 Beta South Alley CAT Gen.	103		
12	TABS fire watch fuel cell	63		
13	TABS fuel cell # 1		237	
14	TABS fuel cell # 2	92		
15	TABS fuel cell # 3	480		
16	TABS fuel cell # 4	845		
17	TABS fuel cell # 5			152
18	TABS fuel truck #1	161		
19				
20				
TOTAL:		2514	237	152

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4017124.9	1154638.5	4017276.7
START	4014611.1	1154401.9	4017124.9
TOTAL	2513.8	236.6	151.8

BILLING BASED ON MASTER METER

Victorville Sales (760) 245-4191
1640 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.	ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE
1-11-14	none	000224	221073	JOE EIFFERT	none	RHIN

QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK	105/01		GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000		\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,500	BULK	120/01		CARB ULS #2 DIESEL, CLEAR	1,500.0000		\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK	121/01		CARB ULS #2 DIESEL, DYED RED	2,500.0000		\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1		300-N10/15		WETHOSE	1.0000		\$0.00000	
1		311-N10/15		REGULATORY COMPLIANCE FEE	1.0000		\$6.59000	

Taxes Amount Due

FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CAAB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - GAS	
CALIF STATE SALES TAX - COUNTY	
CAAB 32 ADMIN FEE - GAS .002276	
CALIF STATE SALES TAX	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total: _____



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

5 7:45 AM
E 11:45 AM

WETHOSE SHEET

CUSTOMER: Abner TABS

DATE: 11.14.14

DRIVER-PRINT NAME: RHINO - TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1 4293 Alpha South Alley Gen.		308		
2 4682 Alpha South Admin. Building Gen.		46		
3 10130147 Alpha South alley Gen		96		
4 10132366 Alpha South Alley Gen.		15		
5 TABS fuel truck #1		124		
6 343901 Alpha West Dr. Gen		73		
7 342412 Alpha South West Gen.		31		
8 10272652 Beta South Admin. building Gen.		20		
9 343602 Beta West Dr. Gen.		85		
10 PR1779 Beta South Alley Gen.		70		
11 TABS fire watch tank		47		
12 TABS fuel cell #1			235	
13 TABS fuel cell #2		471		
14 TABS fuel cell #3		342		
15 TABS fuel cell #4		776		
16 TABS fuel cell #5				253
17				
18				
19				
20				
TOTAL:		2504	235	253

MASTER METER TOTALS			
	RED	GAS	CLR
FINISH	4020502.8	1155578.9	4020755.7
START	4017999.0	1155343.6	4020502.8
TOTAL	2503.8	235.3	252.9

BILLING BASED ON MASTER METER

Victorville Sales (760) 245-4191
 40 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
 85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
 42134 HARPER LAKE RD
 HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
 42134 HARPER LAKE ROAD
 HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
11/17/14	none		000224	221166	JOE EIFFERT	none	R. Hinkley	
QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000	312	\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR	1,500.0000	301	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED	2,500.0000	250	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1			300-N10/15	WETHOSE	1.0000	1	\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE	1.0000	1	\$6.59000	

Taxes

Amount Due

FEDERAL EXCISE TAX - DIESEL-.243
 STATE EXCISE TAX - GAS/ETHANOL-.36
 STATE EXCISE TAX - DIESEL-.11
 FEDERAL EXCISE TAX-ETH 10%-.183
 CALIF STATE SALES TAX - DIESEL
 CAAB 32 ADMIN FEE - DIESEL .002652
 FEDERAL OIL SPILL FEE DSL & KERO-.0019
 CALIF STATE SALES TAX - LOCAL
 FEDERAL LUST TAX - .001
 CALIF SALES TAX SAN BERNARDINO
 CALIF STATE SALES TAX - GAS
 CALIF STATE SALES TAX - COUNTY
 CAAB 32 ADMIN FEE - GAS .002276
 CALIF STATE SALES TAX
 FEDERAL OIL SPILL FEE ETH/GAS-.00171
 CALIF LEAD POISON-.001425
 CALIF OIL SPILL-DSL, GAS & ETH-.00

Tax Total:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

(S) 10:30 AM
(E) 2:15 PM

WETHOSE SHEET

CUSTOMER: Abner TABS DATE: 11-17-14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1 4293 Alpha South Alley Gen.		165		
2 10130147 Alpha South Alley Gen.		191		
3 10132366 Alpha South Alley Gen.		23		
4 34390 Alpha West Dr. Gen.		91		
5 342412 Alpha West Dr. Gen.		26		
6 TABS yard fuel truck #1		288		
7 014 Beta South Alley Gen.		164		
8 10272652 Beta South Admin. building Gen.		18		
9 343602 Ingersoll Road Beta West.		77		
10 PR1779 Beta South Alley (Gen cat.)		105		
11 TABS fuel cell #1			295	
12 TABS fuel cell #2		486		
13 TABS fuel cell #3		138		
14 TABS fuel cell #4		700		
15 TABS fuel cell #5				201
16 TABS fuel truck #9		78		
17 Gerard's truck tank			47	
18				
19				
20				
TOTAL:		2550	342	201

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4026258.0	1156020.8	4026459.2
START	4023707.6	1155679.0	4026258.0
TOTAL	2550.4	341.8	201.2

BILLING BASED ON MASTER METER

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191 / (800) 788-7582
16640 D Street, Victorville, CA

Inyokern Sales (760) 377-4373
1109 South Brown Road, Inyokern, CA

Lee Escher Oil (760) 398-2051 / (800) 634-7332
85-119 Leoco Lane, Coachella, CA

BILLING ADDRESS

SHIPPED TO

Abner TAB 5

Hinkley

CA

Credit Terms:

DELIVERY DATE		CUSTOMER P.O.	ACCOUNT #	D.T. OR INVOICE	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
GROSS QTY. ORDERED		SIZE	KIND	CODE	DESCRIPTION	NET GAL./LB./EA. DELIVERED	UNIT PRICE	AMOUNT
		GASOLINE, 91 OCTANE W/ 5.7% ETHANOL CRITICAL DESCRIPTION: GASOLINE, 3 - UN-1203, PG II		100				
		GASOLINE, 89 OCTANE W/ 5.7% ETHANOL CRITICAL DESCRIPTION: GASOLINE, 3 - UN-1203, PG II		101				
		GASOLINE, 87 OCTANE W/ 5.7% ETHANOL CRITICAL DESCRIPTION: GASOLINE, 3 - UN-1203, PG II		102				
3	32 R	CARB #2 DIESEL, CLEAR CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III		120		54.54		
		CARB #2 DIESEL, DYED RED - NON TAXABLE USE ONLY CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III		121		18		
		PUMPING/LABOR		305				
		SURCHARGE/WETHOSE		300				
		DRUM CLEANING		310				
		HANDLING FEE		311				

PRODUCT	Inches Before	Inches After	Water Y/N
---------	------------------	-----------------	--------------

DATE	TIME	TIME

RECEIPT

CASH	
CHECK	
OTHER	
TOTAL	

DRUMS DELIVERED	DRUMS RETURNED	DRUM TOTAL	SUBTOTAL
			DRUM CHARGE
EACH DRUM CHARGE HEREIN WHEN PAID WILL BE HELD BY SELLER AS A DEPOSIT, WHICH SELLER MAY MINGLE WITH HIS OWN FUNDS TO SECURE RETURN OF THE DRUM AND WILL BE FORFEITED TO SELLER IF THE DRUM IS NOT RETURNED IN UNDAMAGED CONDITION WITHIN 90 DAYS AFTER THE DATE HEREON AND WILL BE CREDITED TO THE BUYER IF THE DRUM IS RETURNED.			TAXES
			TOTAL
			DUE DATE

EACH DRUM CHARGE HEREIN WHEN PAID WILL BE HELD BY SELLER AS A DEPOSIT, WHICH SELLER MAY MINGLE WITH HIS OWN FUNDS TO SECURE RETURN OF THE DRUM AND WILL BE FORFEITED TO SELLER IF THE DRUM IS NOT RETURNED IN UNDAMAGED CONDITION WITHIN 90 DAYS AFTER THE DATE HEREON AND WILL BE CREDITED TO THE BUYER IF THE DRUM IS RETURNED.

CALIFORNIA DIESEL FUEL MAXIMUM 15PPM SULFUR

Interest of 1 1/2% of the balance due (18% per annum) shall be added to invoices for any amounts not paid by due dates or pursuant to the terms and conditions as set forth in the contract or purchase agreement with customer which agreement or contract is incorporated herein by this reference. If any action is brought to enforce the terms of this invoice or to collect amounts due and owing, Beck Oil, Inc. shall be entitled to recovery and collection of reasonable attorney fees and costs associated therewith.

HAZARDOUS MATERIAL EMERGENCY RESPONSE 1-800-633-8253

RECEIVED BY: _____ PRINT NAME: _____ DATE/TIME: _____



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

S 2:15 PM
E 2:35 PM

WETHOSE SHEET

CUSTOMER: Abner TABS. DATE: 11-17-14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1	Fire Watch tank TABS yard.	18		54
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL:		18		54

MASTER METER TOTALS

	RED	GAS	CLR
FINISH			4026530.5
START			4026459.1
TOTAL			

BILLING BASED ON MASTER METER



BECK OIL, INC.
PETROLEUM PRODUCTS - CARDLOCKS

DELIVERY TICKET

Victorville Sales (760) 245-4191
1640 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HAPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE	CUSTOMER P.O.	ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE
11-10-14	none	000224	221324	JOE EIFFERT	none	

QTY ORD	SIZE	KIND	CODE	DESCRIPTION	SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL	500.0000		\$0.00000	
CRITICAL DESCRIPTION: GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED								
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR	1,500.0000	571	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE								
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED	2,500.0000	2641	\$0.00000	
CRITICAL DESCRIPTION: DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE								
1			300-N10/15	WETHOSE	1.0000	1	\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE	1.0000	1	\$6.59000	

Taxes Amount Due

FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CA AB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - GAS	
CALIF STATE SALES TAX - COUNTY	
CA AB 32 ADMIN FEE - GAS .002276	
CALIF STATE SALES TAX	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF OIL SPILL-DSL, GAS & ETH-.00	

Tax Total:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

(S) 7:15 AM
(E) 12:00 PM

WETHOSE SHEET

CUSTOMER: Abner TABS DATE: 11.19.19

DRIVER-PRINT NAME: RHINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1 BE9025	Alpha North Biggie crane.	7		
2 4293	Alpha South Alley Gen.	138		
3 10130147	Alpha South Alley Gen.	82		
4 10132366	Alpha South Alley Gen.	Full		
5 343901	Alpha west Gen.	57		
6 342412	Alpha west Gen.	43		
7 014	Beta South Alley Gen.	53		
8 1196435	Beta South Alley Gen.	143		
9 10173927	Beta South Alley Gen.	66		
10 10272652	Beta South Admin building	29		
11 543602	Beta West Dr. Gen.	89		
12 PR1779	Beta South Alley (cat Gen.)	84		
13	TABS fire water tank	7		
14	TABS fuel cell # 1		197	
15	TABS fuel cell # 2	487		
16	TABS fuel cell # 3	482		
17	TABS fuel cell # 4	874		
18	TABS fuel cell # 5			511
19				
20				
TOTAL:		2641	197	511

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4031122.6	1156388.3	4031633.4
START	4028482.1	1156190.9	4031122.6
TOTAL	2640.5	197.4	510.8

BILLING BASED ON MASTER METER



Victorville Sales (760) 245-4191 / (800) 788-7582
6640 D Street, Victorville, CA

Inyokern Sales (760) 377-4373
1109 South Brown Road, Inyokern, CA

REMIT TO: 16640 D Street, Victorville, CA 92395

Lee Escher Oil (760) 398-2051 / (800) 634-7332
85-119 Leoco Lane, Coachella, CA

BILLING ADDRESS

(S) 12:00 pm
(E) 12:15 pm

SHIPPED TO

Abner TABS

Hinkley CA

Credit Terms:[illegible]

PRODUCT	Inches Before	Inches After	Water Y/N

RECEIPT

CASH	
CHECK	
OTHER	
TOTAL	

DRUMS DELIVERED	DRUMS RETURNED	DRUM TOTAL	SUBTOTAL
			DRUM CHARGE
<p>EACH DRUM CHARGE HEREIN WHEN PAID WILL BE HELD BY SELLER AS A DEPOSIT, WHICH SELLER MAY MINGLE WITH HIS OWN FUNDS TO SECURE RETURN OF THE DRUM AND WILL BE FORFEITED TO SELLER IF THE DRUM IS NOT RETURNED IN UNDAMAGED CONDITION WITHIN 90 DAYS AFTER THE DATE HEREON AND WILL BE CREDITED TO THE BUYER IF THE DRUM IS RETURNED.</p> <p>CALIFORNIA DIESEL FUEL MAXIMUM 15PPM SULFUR</p>			TAXES
			TOTAL
			DUE DATE

EACH DRUM CHARGE HEREIN WHEN PAID WILL BE HELD BY SELLER AS A DEPOSIT, WHICH SELLER MAY MINGLE WITH HIS OWN FUNDS TO SECURE RETURN OF THE DRUM AND WILL BE FORFEITED TO SELLER IF THE DRUM IS NOT RETURNED IN UNDAMAGED CONDITION WITHIN 90 DAYS AFTER THE DATE HEREON AND WILL BE CREDITED TO THE BUYER IF THE DRUM IS RETURNED.

**CALIFORNIA DIESEL FUEL
MAXIMUM 15PPM SULFUR**

of 1 1/2% of the balance due (18% per annum) shall be added to invoices for any amounts not paid by due dates or pursuant to the terms and conditions as set forth in the contract or purchase agreement. Customer hereby agreement or contract is incorporated herein by this reference. If any action is brought to enforce the terms of this invoice or to collect amounts due and owing, Beck Oil, Inc. shall be entitled to recovery and collection of reasonable attorney fees and costs associated therewith.

HAZARDOUS MATERIAL EMERGENCY RESPONSE 1-800-633-8253

RECEIVED BY:

PRINT NAME: _____

DATE/TIME:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

S 12:00 pm
E 12:15 pm

WETHOSE SHEET

CUSTOMER: Abner TABS DATE: 11.19.14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1	TABS fuel truck # 2			243
2	TABS fuel truck # 1			173
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL :				416

MASTER METER TOTALS		
	RED	GAS
FINISH		CLR
START		4032049.1
TOTAL		4031633.3
		415.8

BILLING BASED ON MASTER METER

Corville Sales (760) 245-4191
40 D Street, Victorville, CA

REMIT TO: 16640 D Street, Victorville, CA 92395
Coachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS
ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS
GENERAL PARTNERSHIP
42134 HAPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
		none		000224	221431	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500		BULK	105/01	GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	500	\$0.00000	
CRITICAL DESCRIPTION:		GASOLINE 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED							
1,000		BULK	120/01	CARB ULS #2 DIESEL, CLEAR		1,000.0000	592	\$0.00000	
CRITICAL DESCRIPTION:		DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE							
2,500		BULK	121/01	CARB ULS #2 DIESEL, DYED RED		2,500.0000	2076	\$0.00000	
CRITICAL DESCRIPTION:		DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE							
1			312-N10/15	FUEL SURCHARGE		1.0000	1	\$0.00000	
			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000	1	\$0.00000	

Taxes	Amount Due
FEDERAL EXCISE TAX - DIESEL-.243	
STATE EXCISE TAX - GAS/ETHANOL-.36	
STATE EXCISE TAX - DIESEL-.11	
FEDERAL EXCISE TAX-ETH 10%-.183	
CALIF STATE SALES TAX - DIESEL	
CAAB 32 ADMIN FEE - DIESEL .002652	
FEDERAL OIL SPILL FEE DSL & KERO-.0019	
CALIF STATE SALES TAX - LOCAL	
FEDERAL LUST TAX - .001	
CALIF STATE SALES TAX - GAS	
CALIF SALES TAX SAN BERNARDINO	
CALIF STATE SALES TAX - COUNTY	
CAAB 32 ADMIN FEE - GAS .002276	
FEDERAL OIL SPILL FEE ETH/GAS-.00171	
CALIF LEAD POISON-.001425	
CALIF STATE SALES TAX	
CALIF OIL SPILL-DSL, GAS & ETH-.00	
Tax Total:	



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

(S) 7:45 AM
(E) 2:15 PM

WETHOSE SHEET

CUSTOMER: Abner TABS DATE: 11-21-14

DRIVER-PRINT NAME: RHINO TRUCK#: 31

	UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1	4293	Alpha South Alley	56		
2	TABS fuel truck #1		143	58	
3	Gerardi's truck back	TANK		26	
4	10155219	Alpha South	17		
5	10130147	Alpha South Alley	132		
6	10132366	Alpha South Alley	52		
7	343901	Alpha West DR.	49		
8	342412	Alpha West DR.	42		
9	1196435	Beta South Alley	64		
10	10173927	Beta South Alley	144		
11	014	Beta South Alley	full		
12	TABS fuel truck #1		203		
13	10272652	Beta South Admin. building	3		
14	343602	Beta West DR.	59		
15	PR1779	Beta South alley cat Gen.	71		
16	BE9042	Beta South Alley	29		
17	TABS fire watch tank.		4		
18	TABS fuel cell #1			313	
19	TABS fuel cell #2		472		
20	TABS fuel cell #3		500		
	TABS fuel cell #4	TOTAL:	636		
	TABS fuel cell #5				380

MASTER METER TOTALS

	RED	GAS	CLR
FINISH	4035504.7	1157654.7	4036097.1
START	4032829.0	1157118.7	4035504.7
TOTAL	2675.7		

BILLING BASED ON MASTER METER

TABS fuel truck #1
TABS fuel cell #1

139

212

2676
Red

452
87

592
Clear



DELIVERY TICKET

Page 1 of 1

REMIT TO: 16640 D Street, Victorville, CA 92395

Victorville Sales (760) 245-4191
16640 D Street, Victorville, CACoachella (760) 398-2051/ (800) 634-7332
85-119 Leoco Lane, Coachella, CA

SHIPPING ADDRESS

ABENER TEYMA/HARPER LAKE/TABS
42134 HARPER LAKE RD
HINKLEY, CA 92347

BILLING ADDRESS

GENERAL PARTNERSHIP
42134 HARPER LAKE ROAD
HINKLEY, CA 92347

Credit Terms: 15 DAYS

DELIVERY DATE		CUSTOMER P.O.		ACCOUNT #	ORDER NUMBER	SALESMAN	TRUCK #	DRIVER'S SIGNATURE	
		none		000224	221641	JOE EIFFERT	none		
QTY ORD	SIZE	KIND	CODE	DESCRIPTION		SHIPPED QTY	DELIVERED	UNIT PRICE	AMOUNT
500	BULK		105/01	GASOLINE, 87 OCTANE W/10% ETHANOL		500.0000	391	\$0.00000	
CRITICAL DESCRIPTION:		GASOLINE, 3, UN 1203, PG II MEETS STATE/FED RVP REQUIREMENTS, DETERGENT ADDITIZED							
1,500	BULK		120/01	CARB ULS #2 DIESEL, CLEAR		1,500.0000	897	\$0.00000	
CRITICAL DESCRIPTION:		DIESEL FUEL, 3, NA 1993, PG III CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR TAXABLE FOR ON-ROAD USE							
2,500	BULK		121/01	CARB ULS #2 DIESEL, DYED RED		2,500.0000	269	\$0.00000	
CRITICAL DESCRIPTION:		DIESEL FUEL, 3, NA 1993, PG III DYED CARB ULTRA LOW SULFUR DIESEL, MAX 15 PPM SULFUR DYED DIESEL FUEL, NONTAXABLE USE ONLY, PENALTY FOR TAXABLE USE							
1			300-N10/15	WETHOSE		1.0000	1	\$0.00000	
1			311-N10/15	REGULATORY COMPLIANCE FEE		1.0000	1	\$6.59000	

Taxes

Amount Due

FEDERAL EXCISE TAX - DIESEL-.243
STATE EXCISE TAX - GAS/ETHANOL-.36
STATE EXCISE TAX - DIESEL-.11
FEDERAL EXCISE TAX-ETH 10%-.183
CALIF STATE SALES TAX - DIESEL
CAAB 32 ADMIN FEE - DIESEL .002652
FEDERAL OIL SPILL FEE DSL & KERO-.0019
CALIF STATE SALES TAX - LOCAL
FEDERAL LUST TAX - .001
CALIF SALES TAX SAN BERNARDINO
CALIF STATE SALES TAX - GAS
CALIF STATE SALES TAX - COUNTY
CAAB 32 ADMIN FEE - GAS .002276
CALIF STATE SALES TAX
FEDERAL OIL SPILL FEE ETH/GAS-.00171
CALIF LEAD POISON-.001425
CALIF OIL SPILL-DSL, GAS & ETH-.00

Tax Total:



BECK OIL, INC.

PETROLEUM PRODUCTS - CARDLOCKS

⑤ 8:00 AM
⑥ 1:15 PM

WETHOSE SHEET

CUSTOMER: Adner TABS DATE: 11.24.14

DRIVER-PRINT NAME: RTINO TRUCK#: 31

UNIT #/LICENSE #	DESCRIPTION	RED	GAS	clear
1 10155219 Alpha South Alley		102		
2 4293 Alpha South Alley		49		
3 10130147 Alpha South Alley		145		
4 10132366 Alpha South Alley		13		
5 343901 Alpha West DR.		34		
6 342412 Alpha West		13		
7 10173927 Beta South Alley		149		
8 119645 Beta South Alley		48		
9 10272652 Beta South Admin. building		1		
10 343602 Beta West		121		
11 TABS yard fire watch tank		4		
12 PR1779 Beta south Alley		121		
13 TABS fuel cell #1			183	
14 TABS fuel truck #1		172		
15 TABS fuel truck #2		196		
16 TABS fuel cell #2		475		
17 TABS fuel cell #3		477		
18 TABS fuel cell #4		570		
19 TABS fuel cell #5				496
20 TABS fuel cell #4		3		363
TOTAL:		2690		859

TABS fuel cell #1

213
MASTER METER TOTALS 396

	RED	GAS	CLR
FINISH	4039463.0	1158051.0	4040321.5
START	4036773.0	1157654.7	4039463.0
TOTAL	2690	396.3	858.5

BILLING BASED ON MASTER METER

Report Number	Date of Incident	Spill Location	Incident Time	Contractor Responsible	Product	Quantity	Soil Amt Removed	Soil Removed To
1	3.3.14	beta/row/128J/3N	3.15pm	Proimtu	Therminol VP1	1/8 Gal.	1 shovel	Barrels /containment
2	3.4.14	beta/row123J/3N	12.15pm	Proimtu	Therminol VP1	1/8 Gal.	1 shovel	Barrels /containment
3	3.11.14	Beta/102I/4N	11.50am	Proimtu	Therminol VP1	1/16 Gal	half shovel	Barrels /containment
4	3.11.14	AE / row110d/3N	3:20pm	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
5	3.11.14	AE / row 110 B / 1N	3:15pm	Proimtu	Therminol VP1	1/8 Gal.	3 shovels	Barrels /containment
6	3.11.14	AE / row 109 H / 3N	4:00pm	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
7	3.12.14	AE / row 109 H / 3N	3:00pm	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
8	3.12.14	AE / row 112 H/ 1N	3:15pm	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
9	3.13.14	AE/ row114H / 1N	11:00am	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
10	3.17.14	AE / row 128H /3N	11:00am	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
11	3.17.14	AE / row 128H/2N	11:00am	Proimtu	Therminol VP1	1/8 Gal.	1 shovel	Barrels /containment
12	3.19.14	AE/ row 144F /4S	1:15pm	Proimtu	Therminol VP1	1/8 Gal.	2 Shovels	Barrels /containment
13	3.20.14	AE / row 148G /1N	10:44am	Proimtu	Therminol VP1	1 Pint	1 1/2 Shovels	Barrels /containment
14	3.21.14	AE/row150H/5S	10:50am	Proimtu	Therminol VP1	1/8 Gal.	1 Shovel	Barrels /containment
15	3.21.14	Beta/row70J/2N	4:35pm	Proimtu	Therminol VP1	1/8 Gal.	1 Shovel	Barrels /containment
16	3.22.14	AE/row160EF	10:46am	Proimtu	Therminol VP1	1 Pint	2 Shovels	Barrels /containment
17	3.22.14	AE/row 159G /valve1	10:20am	Proimtu	Therminol VP1	1/2 Pint	1/2 Shovel	Barrels /containment
18	3.24.14	AE/row 164G / HP1ma	10.00am	Proimtu	Therminol VP1	1/2 Pint	2.5 shovels	Barrels /containment
19	3.24.14	AE/ row 168G/3N	3.00pm	Proimtu	Therminol VP1	1/2 Pint	1.5 shovels	Barrels /containment
20	3.24.14	Beta/ row 63J/1N	843pm	Proimtu	Therminol VP1	1/4 pint	1/2 shovel	Barrels /containment
21	3.27.14	AE/ row 184H/S4	1005am	Proimtu	Therminol VP1	pint	1 shovel	Barrels /containment
22	3.28.14	AE/row 192F/main line	1035am	Proimtu	Therminol VP1	quart	3 shovels	Barrels /containment
23	3.28.14	AE/row 195H/4N	215pm	Proimtu	Therminol VP1	1/2 pint	1/2 shovel	Barrels /containment
24	3.31.14	BE/row4G/main line	2.50 pm	Proimtu	Therminol VP1	1/2 quart	3 shovels	Barrels /containment
25	4.1.14	BE/row53E/1S	4.30 pm	Proimtu	Therminol VP1	1 pint	2 shovels	Barrels /containment
26	4.1.14	alpha unloading area	3.15 pm	Proimtu	Therminol VP1	1.5 gal	10 shovels	Barrels /containment
27	4.1.14	AW/row 61C/ML	2.30 pm	Proimtu	Therminol VP1	1 quart	4 shovels	Barrels /containment
28	4.1.14	AW/row64D/3 S	2.05 pm	Proimtu	Therminol VP1	1/2 pint	1 shovel	Barrels /containment
29	4.1.14	BE/ row 54E/1N	4.32 pm	Proimtu	Therminol VP1	1 quart	4 shovels	Barrels /containment
30	4.2.14	BE/row60E/2N	1.00 pm	Proimtu	Therminol VP1	1/2 quart	2.5 shovels	Barrels /containment
31	4.2.14	AW/60C / 5N	12.30 pm	Proimtu	Therminol VP1	1/2 quart	2.5 sholvls	Barrels /containment
32	4.2.14	AW/59C/3N	11.20am	Proimtu	Therminol VP1	1/2 pint	1.5 shovels	Barrels /containment
33	4.3.14	AW/52D/2S	1030 am	Proimtu	Therminol VP1	1/4 pint	1/4 shovel	Barrels /containment
34	4.4.14	AW/37D/1N	1.00 pm	Proimtu	Therminol VP1	1 pint	1 shovel	Barrels /containment
35	4.4.14	BE/76E/3S	2.05 pm	Proimtu	Therminol VP1	3/4 pint	1 shovel	Barrels /containment
36	4.7.14	BE/row 122G/3N	2.15 pm	Proimtu	Therminol VP1	1 1/2 pint	3 shovels	Barrels /containment
37	4.7.14	BE/row 123 F /4 N	2.15 pm	Proimtu	Therminol VP1	1/2 pint	1 1/2 shovel	Barrels /containment

38	4.8.14	AW / row 25 B / 1 S	10.10 am	Proimtu	Therminol VP1	1/2 quart	5 shovels	Barrels /containment
39	4.8.14	BE/ row 118 h / 3 S	11.05 am	Proimtu	Therminol VP1	1/4 pint	1/2 shovel	Barrels /containment
40	4.8.14	BE/ 115 G/ 1S	2.55 pm	Proimtu	Therminol VP1	1/2 pint	2 shovels	Barrels /containment
41	4.9.14	BE/row 109 H / 3N	11.05 am	Proimtu	Therminol VP1	1/2 pint	1 1/2 shovels	Barrels /containment
42	4.9.14	BE/row 105 E/4S	3.06 pm	Proimtu	Therminol VP1	5 drops	1/4 shovel	Barrels /containment
43	4.11.14	BE /row 93f / 4N	9.05am	Proimtu	Therminol VP1	1/8 pint	1 shovel	Barrels /containment
44	4.11.14	BE/row 3 main header	9.30 am	Proimtu	Therminol VP1	3/4 quart	5 shavoel	Barrels /containment
45	4.15.14	AW/row 16e/4N	9.45 am	Proimtu	Therminol VP1	1/8 pint	1/4 shovel	Barrels /containment
46	4.15.14	Alpha overflow	10.00 am	Proimtu	Therminol VP1	1.5 gallon	8 shovels	Barrels /containment
47	4.16.14	BE/row 106D / 5S	12.00pm	Proimtu	Therminol VP1	1 pint	1 shovel	Barrels /containment
48	4.17.14	BE/ row 106 C /5 N	9.30 am	Proimtu	Therminol VP1	1/16 pint	1 shovel	Barrels /containment
49	4.17.14	BE / row 99C/5S	3.30 pm	Proimtu	Therminol VP1	1/16 pint	1 shovel	Barrels /containment
50	4.23.14	BE / row 72A /5N	8.47am	Proimtu	Therminol VP1	1ounce	3 pints	Barrels /containment
51	4.23.14	BE / row 73 C / 5N	8.50 am	Proimtu	Therminol VP1	1 ounce	3 pints	Barrels /containment
52	4.23.14	BE / row 68A /5 N	12.20 pm	Proimtu	Therminol VP1	2 ounces	1 quart	Barrels /containment
53	4.24.14	BE / row 63 a / 5N	9.43 am	Proimtu	Therminol VP1	1/2 pint	1.5 quarts	Barrels /containment
54	4.24.14	BE / row 88E / 5N	11.16 am	Proimtu	Therminol VP1	1/2 Pint	1.75 quarts	Barrels /containment
55	4.25.14	AW / row 83 E / 1N	0830 am	Proimtu	Therminol VP1	1 ounce	1 quart	Barrels /containment
56	4.25.14	Alpha overflow	0900 am	Proimtu	Therminol VP1	1/2 pint	1 quart	Barrels /containment
57	4.28.14	BE / row 45 D /2 N	11.03am	Proimtu	Therminol VP1	5 drops	3 pints	Barrels /containment
58	5.1.14	alpha overflow	11.15am	Proimtu	Therminol VP1	1 pint	1/2 quart	Barrels /containment
59	5.8.14	AE / row 126 efg	12.45 pm	AEPCcommissioning	Therminol VP1	8 gallons	3 barrels	Barrels /containment
60	5.12.14	Beta/row128 abcd	1130am	AEPCcommissioning	Therminol VP1	10 gallons	4 barrels	Barrels /containment
61	5.14.14	Beta overflow	11.00 am	AEPCcommissioning	Therminol VP1	1.5 gallons	12 gallons	Barrels /containment
62	5.14.14	Beta row 101 abcd	11.00 am	AEPCcommissioning	Therminol VP1	3.5gallons	1 barrel	Barrels /containment
63	5.19.14	alpha/ west of WTP	10.00 am	DMI	Gasoline	1/2 cup	1 gallon	Third party manifest
64	5.20.14	TAB / fuel area	8.00 am	Abacus	diesel	2 gallons	20 gallons	Third party manifest
65	5.29.14	Beta/row 64 d	10.20am	AEPCcommissioning	Therminol VP1	28 gallons	Containment	Barrels /containment
66	6.5.14	Alpha BOP	1140am	wood group/gsi	lube oil	5 galons	2 gallons	Third party manifest
67	6.11.14	alpha east/rack 2	9.15 am	AEPC commissioning	Therminol VP1	1/2 gallon	10 gallons	Barrels /containment
68	6.12.14	Beta SE corner of STG	9.40 am	AEPC commissioning	Therminol VP1	1 pint	2 1/2 gallons	Barrels /containment
69	6.20.14	AE row 27 B htf main	7.30 am	AEPC commissioning	Therminol VP1	2 gallons	45 gallons	Barrels /containment
70	6.23.14	APB / bldg 34	9.15 am	AEPC commissioning	Battery elctrolyte	1 gallons	15 gallons	Barrels /containment
71	6.24.14	Brand Office	845 am	United Rentals	Diesel # 2	1 1/2 gallons	5 gallons	Third party manifest
72	6.25.14	APB / bldg 34	5.50 am	AEPC commissioning	Battery elctrolyte	1/2 gallon	5 gallons	Third party manifest
73	7.10.14	AE row 110 D3N	10.15 am	AEPC commissioning	Therminol VP1	1 ounce	1 quart	Barrels /containment
74	7.15.14	P1 HTF heaser Alpha	820 am	AEPC commissioning	Therminol VP1	1/2 quart	1 gallon	Barrels /containment
75	7.25.14	Beta PB HTF Pumps	1.30 am	AEPC commissioning	Therminol VP1	15 gallons	40 barrels	Barrels /containment
76	8.9.14	Alpha main header P3	11.45 am	AEPC commissioning	Therminol VP1	1/2 gallon	25 gallons	Barrels /containment
77	8.13.14	Beta lube oil area	750 am	Wood Group	Lube oil	4 gallons	0	Third party manifest

78	9.1.14	Alpha bldg 22 gen.	545 pm	Good speed refuel	#2 diesel	2.5 gallons	15 gallons	Third party manifest
79	9.1.14	Beta rack 1/AWP	545 pm	Abacus	Hyd oil	1 gallon	15 Gallons	Third party manifest
80	9.2.14	Alpha PB	800	Good speed refuel	#2 diesel	2.5	25 Gallons	Third party manifest
81	9.3.14	Beta row 70 LK	1145 am	AEPC commissioning	Therminol VP1	1/2 pint	2.5 gallons	Barrels /containment
82	9.5.14	AE/row 115 EFGH	10.00 am	AEPC commissioning	Therminol VP1	1/2 pint	2 quarts	Barrels /containment
83	9.6.14	AE/exp vessels ne	135 pm	AEPC commissioning	Therminol VP1	8 gallons	6 barrels	Barrels /containment
84	7.1414	APB/ P4 bypass	0930 am	AEPC commissioning	Therminol VP1	8 gallons	2 barrels	Barrels /containment
85	7.1514	APB/ P3 HTF header	0815am	AEPC commissioning	Therminol VP1	1/2 Gallon	2 1/2 gallons	Barrels /containment
86	9.12.14	APB /Bldg 22	0800 am	Good speed refuel	#2 diesel	5 gallons	2 55 gallon barrels	Third party manifest
87	9.12.14	APB/WS bldg 26	0800 am	Good speed refuel	#2 diesel	3 gallons	1 1/2 barrels	Third party manifest
88	9.12.14	APB/SWYD	0800 am	Good speed refuel	#2 diesel	2.5 gallons	1 55 gallon barrel	Third party manifest
89	9.30.14	Alpha laydown south	11:52 AM	AEPC / Abacus	Battery Acid	5 gallons	40 gallons	Third party manifest
90	10.7.14	AE/row 196 H 3 N	2.20 pm	AEPC commissioning	Therminol VP1	1 pint	5 gallons	Barrels /containment
91	10.8.14	Beta WTP east side	930 am	Abacus	#2 diesel	1/2 gallon	32 gallons	Third party manifest
92	10.8.14	Beta WTP North side	9.35 am	Abacus	#2 diesel	1 1/2 gallons	30 gallons	Third party manifest
93	10.10.14	Alpha PB / SE corner EV	140pm	AEPC commissioning	Therminol VP1	1 1/4 gallons	15 gallons	Barrels /containment
94	10.10.14	Beta west side bldg 26	2.00 pm	Good speed refueling	# 2 diesel	5 gallons	55 gallons	Third party manifest
95	10.13.14	Beta S. /fitters fab area	10.45 am	Abacus	Gasoline	3 gallons	30 gallons	Third party manifest
96	10.13.14	BOP W. main road gen	10.45 am	Abacus	# 2 diesel	1 gallon	25 gallons	Third party manifest
97	10.19.14	BE ,row 46E north	5.27 pm	AEPC commissioning	Therminol VP1	1 pint	one gallon	Barrels /containment
98	10.27.14	BE row 58 I / J 1South	10.45 am	AEPC commissioning	Therminol VP1	1 pint	1/2 gallon	Barrels /containment
99	10.27.14	BE 74 E 2-3 South	4.30 pm	AEPC commissioning	Therminol VP1	1 pint	1/2 gallon	Barrels /containment
100	10.28.14	BW row 34 H 2 South	10.35 am	AEPC commissioning	Therminol VP1	1 pint	1/2 gallon	Barrels /containment
101	11.2.14	BE row 78 I /1 north	9.00am	AEPC commissioning	Therminol VP1	1 pint	10 gallons	Barrels /containment
102	11.2.14	AW row 78 E / 4 north	9.30 am	AEPC commissioning	Therminol VP1	1 pint	2 1/2 gallons	Barrels /containment
103	11.7.14	AW west of ASLLC yard	2.50 pm	United Rentals	# 2 diesel	2 gallons	55 gallons	Third party manifest
104	11.9.14	AW row 34 C / N3	2.45 pm	AEPC commissioning	Therminol VP1	1 Gallon	55 Gallons	Barrels /containment
105	11.18.14	AW / ASLLC yard	10.30 am	ASLLC	HYD fluid	2.5 gallons	110 gallons	Third party manifest
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#101

Environmental Spill/Release Report beta east solar field

Section I. General Information

Date of Incident:	11/2/14	Date Reported:	11/2/14	Incident Time:	9:00 am
Employee(s) Involved:	Commissioning in the field				
Contracting Company:	Commissioning in the field				

Section II. Incident Description

Name of the Material Spilled/Released:	Therminol VP-I			
Components in Material(s): Include CAS #'s when relevant.	%	ESH Chem	CERCLA Chem	RQlbs
Diphenyl Ether	73.5			
Biphenyl	26.5			
What was the time duration of the spill/release?				
What was the quantity of the material spilled or released?	1 quart Pint <input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Liters <input type="checkbox"/> Pounds			
What were the weather conditions at the time of the spill/release (wind direction, cloud cover, precipitation, temp, etc.)?	sunny			
What was the spill released to?				
<input type="checkbox"/> Air	<input type="checkbox"/> Irrigation Canals	<input type="checkbox"/> Storm Water		
<input type="checkbox"/> Chemical Sewer	<input checked="" type="checkbox"/> Land	<input type="checkbox"/> Other:		
Is external agency required to be notified?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Did the spill/release exceed an air or NPDES permit and/or leave the site? If yes, please explain below.		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Commissioning was checking the line on row 78 I,J and they found a leak at 78 I 1 north. They called me and I sent Trent to clean up the leak and stake it.				
Provide a description of what happened (time line), corrective measures taken, and preventive measures:				
HTF 1 quart Pint Dirt removed :10 gallons Barreled and taken to secondary containment Location: row 78 I 1 north Estimated cost of cleanup: TBD				

Environmental Spill/Release Report beta east solar field

Section III. Form Completion

This Environmental Spill/Release Report was prepared by:

Print Name:	Company:	Job Title:	Date:
Terry Baker	Abeinsa EPC	H&S field supervisor	11/2/14
Sign Name (handwritten or electronic signature is acceptable):	Terry Baker		

Section IV. Notifications-

Forward all Completed Documentation to one or all of the following:

*Required	Larry Davis OH&S Manager	Larry.Davis@abeinsaepc.abengoa.com	480.370.7063
	Terry Baker OH&S Site Supervisor	Terry.Baker@abeinsaepc.abengoa.com	480.236.2954
	Manjunath Shivalingappa	Manjunath.shivalingappa@abeinsaepc.abengoa.com	480.768.7793

*Required Environmental Spill/Release Reports.

Section V. Abeinsa EPC Internal

Is a PRR/IRP required?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If so, initiate the process and provide PRR/IRP number:	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

#102

Environmental Spill/Release Report alpha west solar field

Section I. General Information

Date of Incident:	11/2/14	Date Reported:	11/2/14	Incident Time:	9:30 am
Employee(s) Involved:	Commissioning in the field				
Contracting Company:	Commissioning in the field				

Section II. Incident Description

Name of the Material Spilled/Released:	Therminol VP-I			
Components in Material(s): Include CAS #'s when relevant.	%	ESH Chem	CERCLA Chem	RQlbs
Diphenyl Ether	73.5			
Biphenyl	26.5			
What was the time duration of the spill/release?				
What was the quantity of the material spilled or released?	1 pint	<input type="checkbox"/> Gallons <input type="checkbox"/> Liters <input type="checkbox"/> Pounds		
What were the weather conditions at the time of the spill/release (wind direction, cloud cover, precipitation, temp, etc.)?	sunny			
What was the spill released to?				
<input type="checkbox"/> Air	<input type="checkbox"/> Irrigation Canals	<input type="checkbox"/> Storm Water		
<input type="checkbox"/> Chemical Sewer	<input checked="" type="checkbox"/> Land	<input type="checkbox"/> Other:		
Is external agency required to be notified?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Did the spill/release exceed an air or NPDES permit and/or leave the site? If yes, please explain below.		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	
Commissioning was checking the line on row 78 E 4 north they found a leak. They called Trent and the crew to clean up the leak and stake it.				
Provide a description of what happened (time line), corrective measures taken, and preventive measures:				
HTF 1 pint Dirt removed : 2. ½ gallons Barreled and taken to secondary containment Location: row 78 E 4 north Estimated cost of cleanup: TBD				

Section III. Form Completion

Environmental Spill/Release Report alpha west solar field

This Environmental Spill/Release Report was prepared by:

Print Name:	Company:	Job Title:	Date:
Terry Baker	Abeinsa EPC	H&S field supervisor	11/2/14
Sign Name (handwritten or electronic signature is acceptable):	Terry Baker		

Section IV. Notifications-

Forward all Completed Documentation to one or all of the following:

*Required	Larry Davis OH&S Manager	Larry.Davis@abeinsaepc.abengoa.com	480.370.7063
	Terry Baker OH&S Site Supervisor	Terry.Baker@abeinsaepc.abengoa.com	480.236.2954
	Manjunath Shivalingappa	Manjunath.shivalingappa@abeinsaepc.abengoa.com	480.768.7793

*Required Environmental Spill/Release Reports.

Section V. Abeinsa EPC Internal

Is a PRR/IRP required?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If so, initiate the process and provide PRR/IRP number:	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

Environmental Spill/Release Report alpha west solar field

Section I. General Information

Date of Incident:	11/7/14	Date Reported:	11/7/14	Incident Time:	2:50 pm
Employee(s) Involved:	United Rental				
Contracting Company:	United Rental				

Section II. Incident Description

Name of the Material Spilled/Released:	# 2 Diesel fuel			
Components in Material(s): Include CAS #'s when relevant.	%	ESH Chem	CERCLA Chem	RQlbs
What was the time duration of the spill/release?				
What was the quantity of the material spilled or released?	2	<input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Liters <input type="checkbox"/> Pounds		
What were the weather conditions at the time of the spill/release (wind direction, cloud cover, precipitation, temp, etc.)?	sunny			
What was the spill released to?				
<input type="checkbox"/> Air	<input type="checkbox"/> Irrigation Canals	<input type="checkbox"/> Storm Water		
<input type="checkbox"/> Chemical Sewer	<input checked="" type="checkbox"/> Land	<input type="checkbox"/> Other:		
Is external agency required to be notified?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Did the spill/release exceed an air or NPDES permit and/or leave the site? If yes, please explain below.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
United Rental was picking up a generator that was call off rent. They were loading it to a flatbed truck when the generator lost 1 gallon to the ground. Abacus supervision was in the area to manage the loading of the equipment. The site cleanup team were then called in to mitigate the spill.				
Provide a description of what happened (time line), corrective measures taken, and preventive measures:				
#2 diesel spilled – 2 gallons Soil removed 55 gallons Barreled soil taken to secondary containment for third party remediation Location : Abenoga solar yard in alpha west				
Estimated cost of cleanup:	TBD			

Environmental Spill/Release Report

alpha west solar field

Section III. Form Completion

This Environmental Spill/Release Report was prepared by:

Print Name:	Company:	Job Title:	Date:
Terry Baker	Abeinsa EPC	H&S field supervisor	11/7/14
Sign Name (handwritten or electronic signature is acceptable):	Terry Baker		

Section IV. Notifications-

Forward all Completed Documentation to one or all of the following:

*Required	Larry Davis OH&S Manager	Larry.Davis@abeinsaepc.abengoa.com	480.370.7063
	Terry Baker OH&S Site Supervisor	Terry.Baker@abeinsaepc.abengoa.com	480.236.2954
	Manjunath Shivalingappa	Manjunath.shivalingappa@abeinsaepc.abengoa.com	480.768.7793

*Required Environmental Spill/Release Reports.

Section V. Abeinsa EPC Internal

Is a PRR/IRP required?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If so, initiate the process and provide PRR/IRP number:	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

#104

Report Number:

#104

Environmental Spill/Release Report

Alpha West

Section I. General Information

Date of Incident:	11.09.14	Date Reported:	11.9.14	Incident Time:	2.45 pm
Employee(s) Involved:	AEPC commissioning				
Contracting Company:	AEPC commissioning				

Section II. Incident Description

Name of the Material Spilled/Released:					
Components in Material(s): Include CAS #'s when relevant.	%	ESH Chem	CERCLA Chem	RQlbs	
Diphenyl Ether	73.5				
Biphenyl	26.5				
What was the time duration of the spill/release?					
What was the quantity of the material spilled or released?		1	<input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Liters <input type="checkbox"/> Pounds		
What were the weather conditions at the time of the spill/release (wind direction, cloud cover, precipitation, temp, etc.)?					
What was the spill released to?					
<input type="checkbox"/> Air	<input type="checkbox"/> Irrigation Canals		<input type="checkbox"/> Storm Water		
<input type="checkbox"/> Chemical Sewer	<input checked="" type="checkbox"/> Land		<input type="checkbox"/> Other:		
Is external agency required to be notified?			<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/> No
Did the spill/release exceed an air or NPDES permit and/or leave the site? If yes, please explain below.			<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/> No
Commissioning staff found a leak in the Alpha west field while doing their daily inspections. Aprox. 1 gallon of HTF was found on the ground prior to completing repairs to this leaking area.					
Provide a description of what happened (time line), corrective measures taken, and preventive measures:					
HTF 1 gallon Soil removed – 55 gallons Area staked for bio inspection ,barrels taken to secondary containment near the TAB. Alpha West row 34 C / N3					
Estimated cost of cleanup:		TBD			

Environmental Spill/Release Report

Alpha West

Section III. Form Completion

This Environmental Spill/Release Report was prepared by:

Print Name:	Company:	Job Title:	Date:
Larry Davis	AEPC	Safety Manager	11.10.14
Sign Name (handwritten or electronic signature is acceptable):	Larry Davis		

Section IV. Notifications-

Forward all Completed Documentation to one or all of the following:

*Required	Larry Davis OH&S Manager	Larry.Davis@abeinsaepc.abengoa.com	480.370.7063
	Terry Baker OH&S Site Supervisor	Terry.Baker@abeinsaepc.abengoa.com	480.236.2954
	Manjunath Shivalingappa	Manjunath.shivalingappa@abeinsaepc.abengoa.com	480.768.7793

*Required Environmental Spill/Release Reports.

Section V. Abeinsa EPC Internal

Is a PRR/IRP required?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If so, initiate the process and provide PRR/IRP number:	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

Environmental Spill/Release Report

alpha west solar field

Section I. General Information

Date of Incident:	11/18/14	Date Reported:	11/18/14	Incident Time:	10:30 am
Employee(s) Involved:	Abengoa solar				
Contracting Company:	Abengoa solar				

Section II. Incident Description

Name of the Material Spilled/Released:	Transmission fluid			
Components in Material(s): Include CAS #'s when relevant.	%	ESH Chem	CERCLA Chem	RQlbs
What was the time duration of the spill/release?				
What was the quantity of the material spilled or released?	2 1/2 gal	<input checked="" type="checkbox"/> Gallons <input type="checkbox"/> Liters <input type="checkbox"/> Pounds		
What were the weather conditions at the time of the spill/release (wind direction, cloud cover, precipitation, temp, etc.)?	sunny			
What was the spill released to?				
<input type="checkbox"/> Air	<input type="checkbox"/> Irrigation Canals	<input type="checkbox"/> Storm Water		
<input type="checkbox"/> Chemical Sewer	<input checked="" type="checkbox"/> Land	<input type="checkbox"/> Other:		
Is external agency required to be notified?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
Did the spill/release exceed an air or NPDES permit and/or leave the site? If yes, please explain below.	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
AEPC safety called me to the Alpha west yard to inspect an unreported spill . Upon discovery noticed the spill had been generated by parked equipment in the yard (crane). The spill was aprox 2 1/2 gallons of hyd fluid. Clean up team was then called to remove the contaminated soil.				
Provide a description of what happened (time line), corrective measures taken, and preventive measures:				
Transmission fluid - 2 1/2 gal Soil Removed - 110 gallons Area staked for bio inspection / Soil taken to the secondary containment by the TAB for third party remediation.				
Location : Abenoga solar yard in alpha west				
Estimated cost of cleanup:	TBD			

Environmental Spill/Release Report alpha west solar field

Section III. Form Completion

This Environmental Spill/Release Report was prepared by:

Print Name:	Company:	Job Title:	Date:
Terry Baker	Abeinsa EPC	H&S field supervisor	11/18/14
Sign Name (handwritten or electronic signature is acceptable):	Terry Baker		

Section IV. Notifications-

Forward all Completed Documentation to one or all of the following:

*Required	Larry Davis OH&S Manager	Larry.Davis@abeinsaepc.abengoa.com	480.370.7063
	Terry Baker OH&S Site Supervisor	Terry.Baker@abeinsaepc.abengoa.com	480.236.2954
	Manjunath Shivalingappa	Manjunath.shivalingappa@abeinsaepc.abengoa.com	480.768.7793

*Required Environmental Spill/Release Reports.

Section V. Abeinsa EPC Internal

Is a PRR/IRP required?	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No
If so, initiate the process and provide PRR/IRP number:	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>	No

ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: October 27, 2014
Subject: Mojave Solar Project
Condition Number: WASTE-10
Reference: HTF Contaminated Soil Storage 30 Day Storage Extension Request to CUPA
To: Mr. Dale Rundquist, CPM
California Energy Commission

WE ARE SENDING YOU

- ☒ Attached ☐ Under separate cover via _____ the following items:
- ☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐


COPIES	DATE	NO.	DESCRIPTION
1	10/27/14	1	Cover Letter to CEC
1	10/27/14	1	Letter to CUPA to Request 30 Day Storage Extension

THESE ARE TRANSMITTED as checked below:

- | | |
|--|---|
| <input checked="" type="checkbox"/> For Approval | <input type="checkbox"/> Approved as submitted |
| <input type="checkbox"/> For your use | <input type="checkbox"/> Approved as noted |
| <input type="checkbox"/> As requested | <input type="checkbox"/> Returned for corrections |
| <input type="checkbox"/> For review | <input type="checkbox"/> For review and comment |

REMARKS

COPY TO: File SIGNED BY: _____



Steven Pochmara
ABEINSA EPC

ABENER TEYMA MOJAVE

13911 Park Ave, Suite 208
Victorville, CA 92392
Phone: 480-287-1419

Subject: Mojave Solar Project (09-AFC-5C)
Condition No.: WASTE-10
Description: HTF Contaminated Soil Storage 30 Day Storage Extension Request to CUPA
Submittal No.: WASTE10-08-00

October 27, 2014

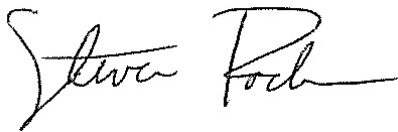
Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
drundqui@energy.state.ca.us

Dear Mr. Rundquist,

Please see the attached letter to CUPA requesting a 30 day storage extension of the 12 barrels of HTF contaminated soil from May of this year. The extension is required as DTSC has not approved the use of the LTU's to date.

Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,



Steven Pochmara
ABEINSA EPC
13911 Park Ave, Suite 208
Victorville, CA 92392
Cell: (480) 287-1419

Abener Teyma Mojave General Partnership
42134 Harper Lake Rd.
Hinkley, CA 92347

Via mail

October 27, 2014

San Bernardino CUPA
Attn: Mark Bechel
620 South "E" Street
San Bernardino, CA 92415-0153

RE: Non-RCRA Waste Storage Extension Request

Dear Mr. Bechel:

Please find the attachment for the application for the Non-RCRA waste storage extension. We are currently working with the California DTSC on submitting the waste characterization report for HTF (Therminol VP1) Contaminated Soil.

The project has a Bio Remediation Unit on-site which is approved By the California Energy Commission (CEC). The HTF contaminated soil shall be treated on-site if the waste characterization report will be accepted by the DTSC. We are expecting to hear back within the next 15 days. Hence, submitting this request for a 30 day extension for the storage on-site for the soil nearing the 180 day limit.

Please feel free to contact the undersigned at (480) 768-7793 if you have any questions or require additional information.

Sincerely,

Manjunath Shivalingappa
Environmental Engineer
Abeinsa EPC, LLC
(480) 768-7793
Manjunath.shivalingappa@abeinsaepc.abengoa.com

Attachments:

1. Non-RCRA Waste Storage Extension Application

Non-RCRA Waste Storage Extension Application

Generator Name: Mojave Solar LLC

EPA ID #: CAL000378642

Site Address: 42134 Harper Lake Rd, Hinkley, California 92347

Mailing Address: 42134 Harper Lake Rd, Hinkley, California 92347

Name of Applicant: Manjunath Shivalingappa

Title: Environmental Engineer

Telephone Number: (602) 282- 4103 (Office); (480) 768-7793 (Cell)

Signature of Applicant:



Date 10/27/2014

A. Description of Waste:

Type: HTF Contaminated Soil. Waste characterization for the contaminated soil is in process.

U.S DOT Description: Non-RCRA Hazardous Waste Solid

Components: Diphenyl Ether, Biphenyl and soil

Waste Code: 352

Quantity: 12, 55 gallon metal drums

B. Accumulation Start Date: May 01, 2014

C. Date of 180-Day Storage Limit: October 27, 2014

D. Number of Additional Days Requested: 30 Days

E. Reason For Storage Extension:


We are currently working with the California DTSC on submitting the waste characterization report for HTF (Therminol VP1) Contaminated Soil.

The project has a Bio Remediation Unit on-site which is approved By the California Energy Commission (CEC). The HTF contaminated soil shall be treated on-site if the waste characterization report will be accepted by the DTSC. We are expecting to hear back within the next 15 days. Hence, submitting this request for a 30 day extension for the storage on-site for the soil nearing the 180 day limit. Thank you.

"Rundquist, Dale@Energy"

11/20/2014 01:18 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>, "Dennis, Christopher@Energy" <Christopher.Dennis@energy.ca.gov>
cc	"pablo.schenone@abeinsaepc.abengoa.com" <pablo.schenone@abeinsaepc.abengoa.com>, "ngallo@abeinsaepc.abengoa.com" <ngallo@abeinsaepc.abengoa.com>, "mercedes.macias@abeinsaepc.abengoa.com" <mercedes.macias@abeinsaepc.abengoa.com>, "vernon.leeming@abeinsaepc.abengoa.com"
bcc	
Subject	RE: WASTE-10-08-00

History:  This memo has been replied

Hi Steven,

Staff agrees with the 30-day extension request to leave HTF on site.

Thank you,

Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Monday, October 27, 2014 11:07 AM

To: Rundquist, Dale@Energy; Rundquist, Dale@Energy; Dennis, Christopher@Energy

Cc: pablo.schenone@abeinsaepc.abengoa.com; ngallo@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com; vernon.leeming@abeinsaepc.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; larry.davis@abeinsaepc.abengoa.com; lbruno@abeinsaepc.abengoa.com; jose.castro@abeinsaepc.abengoa.com; Kathleen.Sullivan@solar.abengoa.com; frances.sanchez@solar.abengoa.com; nicholas.petrovitza@solar.abengoa.com; william.grisolia@solar.abengoa.com; larry.davis@abeinsaepc.abengoa.com

Subject: WASTE-10-08-00

Good Morning Dale,

Please see attached for a copy of the request for a 30 day storage extension to CUPA for the 12 barrels of HTF contaminated soil that occurred in May of this year. This request was necessary due to the fact that DTSC has yet to approve the waste characterization of the HTF contaminated soil (and thus permission to use the LTU's) but we are anticipating approval shortly. Please let me know if you have any questions.

Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA

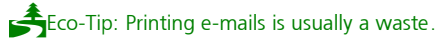
13911 Park Avenue, Suite 208

Victorville, CA 92392

Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

www.teyma.com



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ABENGOA

Steven Pochmara

11/20/2014 02:10 PM

Send To	"Rundquist, Dale@Energy" <Dale.Rundquist@energy.ca.gov>
cc	Vernon Leeming/AbeinsaEPC/Abengoa@Abengoa, Manjunath Shivalingappa/AbeinsaEPC/Abengoa@Abengoa
bcc	
Subject	RE: WASTE-10-08-00

Dale,

Thanks for the staff approval for the 30-day extension to leave the HTF soil on site. Please be aware that this request was for the time period of October 27, 2014 through November 27, 2014. At this time, we are concerned because of the lengthy review by DTSC to use the LTU's and would like to further request permission to store the contaminated soil on site until DTSC provides a solution. Please let me know if this is possible.

Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA

13911 Park Avenue, Suite 208

Victorville, CA 92392

Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

www.teyma.com



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"Rundquist, Dale@Energy"

Hi Steven, Staff agrees wit...

11/20/2014 01:18:43 PM

"Rundquist, Dale@Energy"

11/20/2014 01:18 PM

Send To: "Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>, "Dennis, Christopher@Energy" <Christopher.Dennis@energy.ca.gov>

"pablo.schenone@abeinsaepc.abengoa.com" <pablo.schenone@abeinsaepc.abengoa.com>,
"ngallo@abeinsaepc.abengoa.com" <ngallo@abeinsaepc.abengoa.com>,
"mercedes.macias@abeinsaepc.abengoa.com" <mercedes.macias@abeinsaepc.abengoa.com>,
"vernon.leeming@abeinsaepc.abengoa.com" <vernon.leeming@abeinsaepc.abengoa.com>,
"manjunath.shivalingappa@abeinsaepc.abengoa.com"
<manjunath.shivalingappa@abeinsaepc.abengoa.com>, "larry.davis@abeinsaepc.abengoa.com"
<larry.davis@abeinsaepc.abengoa.com>, "lbruno@abeinsaepc.abengoa.com"
<lbruno@abeinsaepc.abengoa.com>, "jose.castro@abeinsaepc.abengoa.com"
<jose.castro@abeinsaepc.abengoa.com>, "Kathleen.Sullivan@solar.abengoa.com"
<Kathleen.Sullivan@solar.abengoa.com>, "frances.sanchez@solar.abengoa.com"
<frances.sanchez@solar.abengoa.com>, "nicholas.potrovitza@solar.abengoa.com"
<nicholas.potrovitza@solar.abengoa.com>, "william.grisolia@solar.abengoa.com"
<william.grisolia@solar.abengoa.com>, "larry.davis@abeinsaepc.abengoa.com"
<larry.davis@abeinsaepc.abengoa.com>

Subject: RE: WASTE-10-08-00

Hi Steven,
Staff agrees with the 30-day extension request to leave HTF on site.
Thank you,
Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Monday, October 27, 2014 11:07 AM

To: Rundquist, Dale@Energy; Rundquist, Dale@Energy; Dennis, Christopher@Energy

Cc: pablo.schenone@abeinsaepc.abengoa.com; ngallo@abeinsaepc.abengoa.com;
mercedes.macias@abeinsaepc.abengoa.com; vernon.leeming@abeinsaepc.abengoa.com;
manjunath.shivalingappa@abeinsaepc.abengoa.com; larry.davis@abeinsaepc.abengoa.com;
lbruno@abeinsaepc.abengoa.com; jose.castro@abeinsaepc.abengoa.com;
Kathleen.Sullivan@solar.abengoa.com; frances.sanchez@solar.abengoa.com;
nicholas.potrovitza@solar.abengoa.com; william.grisolia@solar.abengoa.com;
larry.davis@abeinsaepc.abengoa.com

Subject: WASTE-10-08-00

Good Morning Dale,
Please see attached for a copy of the request for a 30 day storage extension to CUPA for the 12 barrels of HTF contaminated soil that occurred in May of this year. This request was necessary due to the fact that DTSC has yet to approve the waste characterization of the HTF contaminated soil (and thus permission to use the LTU's) but we are anticipating approval shortly. Please let me know if you have any questions.

Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA
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Victorville, CA 92392
Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

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"Rundquist, Dale@Energy"

11/20/2014 03:50 PM

Send To	"Steven.Pochmara@abengoa.com" <Steven.Pochmara@abengoa.com>
cc	"vernon.leeming@abeinsaepc.abengoa.com" <vernon.leeming@abeinsaepc.abengoa.com>, "manjunath.shivalingappa@abengoa.com" <manjunath.shivalingappa@abengoa.com>, "Townsend-Hough, Ellie@Energy" <Ellie.Townsend-Hough@energy.ca.gov>, "Dennis, Christopher@Energy"
bcc	
Subject	RE: WASTE-10-08-00

History:



This memo has been replied and forwarded

Hi Steven,

Staff approves your request to store the contaminated soil on site until DTSC provides a solution .

Thank you,

Dale R.

From: Steven.Pochmara@abengoa.com [mailto:Steven.Pochmara@abengoa.com]

Sent: Thursday, November 20, 2014 2:11 PM

To: Rundquist, Dale@Energy

Cc: vernon.leeming@abeinsaepc.abengoa.com; manjunath.shivalingappa@abengoa.com

Subject: RE: WASTE-10-08-00

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Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA

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Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

www.teyma.com



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"Rundquist, Dale@Energy"

11/20/2014 01:18 PM

Send
To: "Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>, "Dennis, Christopher@Energy" <Christopher.Dennis@energy.ca.gov>
"pablo.schenone@abeinsaepc.abengoa.com" <pablo.schenone@abeinsaepc.abengoa.com>, "ngallo@abeinsaepc.abengoa.com" <ngallo@abeinsaepc.abengoa.com>, "mercedes.macias@abeinsaepc.abengoa.com" <mercedes.macias@abeinsaepc.abengoa.com>, "vernon.leeming@abeinsaepc.abengoa.com" <vernon.leeming@abeinsaepc.abengoa.com>, "manjunath.shivalingappa@abeinsaepc.abengoa.com" <manjunath.shivalingappa@abeinsaepc.abengoa.com>, "larry.davis@abeinsaepc.abengoa.com" <larry.davis@abeinsaepc.abengoa.com>, "lbruno@abeinsaepc.abengoa.com" <lbruno@abeinsaepc.abengoa.com>, "jose.castro@abeinsaepc.abengoa.com" <jose.castro@abeinsaepc.abengoa.com>, "Kathleen.Sullivan@solar.abengoa.com" <Kathleen.Sullivan@solar.abengoa.com>, "frances.sanchez@solar.abengoa.com" <frances.sanchez@solar.abengoa.com>, "nicholas.petrovitza@solar.abengoa.com" <nicholas.petrovitza@solar.abengoa.com>, "william.grisolia@solar.abengoa.com" <william.grisolia@solar.abengoa.com>, "larry.davis@abeinsaepc.abengoa.com" <larry.davis@abeinsaepc.abengoa.com>
cc:
Subje RE: WASTE-10-08-00
ct:

Hi Steven,
Staff agrees with the 30-day extension request to leave HTF on site.
Thank you,
Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [<mailto:Steven.Pochmara@abeinsaepc.abengoa.com>]

Sent: Monday, October 27, 2014 11:07 AM

To: Rundquist, Dale@Energy; Rundquist, Dale@Energy; Dennis, Christopher@Energy

Cc: pablo.schenone@abeinsaepc.abengoa.com; ngallo@abeinsaepc.abengoa.com; mercedes.macias@abeinsaepc.abengoa.com; vernon.leeming@abeinsaepc.abengoa.com; manjunath.shivalingappa@abeinsaepc.abengoa.com; larry.davis@abeinsaepc.abengoa.com; lbruno@abeinsaepc.abengoa.com; jose.castro@abeinsaepc.abengoa.com; Kathleen.Sullivan@solar.abengoa.com; frances.sanchez@solar.abengoa.com; nicholas.petrovitza@solar.abengoa.com; william.grisolia@solar.abengoa.com; larry.davis@abeinsaepc.abengoa.com

Subject: WASTE-10-08-00

Good Morning Dale,
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Regards,

Steven Pochmara - Permit Manager

ABENGOA

Abeinsa

Teyma - Phoenix - Arizona - USA
13911 Park Avenue, Suite 208
Victorville, CA 92392

Phone: +13142751312 Cell: +14802871419 Fax: +16022659360

Steven.Pochmara@teyma.abengoa.com

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ABENER TEYMA MOJAVE

Letter of Transmittal

Date: November 17, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: **Waste-11**
Description: **Results of Filter Cake Testing**
Submittal No.: WASTE11-01-00
To: Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
DRundquist@energy.state.ca.us

WE ARE SENDING YOU

☒ Attached

Document	Title	REV
Cover Letter	WASTE11-01-00 Cover Letter	NA
Analytical Results-FilterCake_Alpha Nov2014	Results of Filter Cake Testing for the Alpha WTP	NA

THESE ARE TRANSMITTED as checked below:

☒ For Approval

COPY TO: File SIGNED BY:


Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

ABENER TEYMA MOJAVE

Cover Letter

Date:	November 17, 2014
Subject:	Mojave Solar Project (09-AFC-5C)
Condition Number:	Waste-11
Description:	Results of Filter Cake Testing for the Alpha WTP
Submittal No.:	WASTE11-01-00

Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
DRundquist@energy.state.ca.us

Dear Mr. Rundquist,

In compliance with WASTE-11 we are submitting the Results of the Filter Cake Testing for the Alpha Water Treatment Plant, for your records. We are including the Compliance language below for your convenience:

WASTE-11

The project owner shall ensure that the cooling tower basin sludge is tested pursuant to Title 22, California Code of Regulations, and section 66262.10 and report the findings to the CPM. The handling, testing, and disposal methods for sludge shall be identified in the Operation Waste Management Plan required in Condition of Certification WASTE-9.

Verification:

The project owner shall report the results of filter cake testing to the CPM within 30 days of sampling. If two consecutive tests show that the sludge is non-hazardous, the project owner may apply to the CPM to discontinue testing. The test results and method and location of sludge disposal shall also be reported in the Annual Compliance Report required in Condition of Certification WASTE-9.

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer
ABEINSA EPC



Associated Laboratories

806 N. Batavia - Orange, CA 92868
Tel (714)771-6900 Fax (714)538-1209
www.associatedlabs.com
Info@associatedlabs.com



Client: Univar USA (Inc.)
Address: 2600 Garfield Ave.
Commerce, CA 90040

Attn: Chem-Care / Chris Walker

Comments: Chemcare

LC50 > 750 mg/L = Non Hazardous

Lab Request: 348469
Report Date: 11/14/2014
Date Received: 11/05/2014
Client ID: 9987

This laboratory request covers the following listed samples which were analyzed for the parameters indicated on the attached Analytical Result Report. All analyses were conducted using the appropriate methods. Methods accredited by NELAC are indicated on the report. This cover letter is an integral part of the final report.

<u>Sample #</u>	<u>Client Sample ID</u>
-----------------	-------------------------

348469-001	Bucket
348469-002	Bins

Thank you for the opportunity to be of service to your company. Please feel free to call if there are any questions regarding this report or if we can be of further service.

ASSOCIATED LABORATORIES by,

Nina Prasad
President

NOTE: Unless notified in writing, all samples will be discarded by appropriate disposal protocol 45 days from date reported.

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TESTING & CONSULTING
Chemical
Microbiological
Environmental

Matrix: Solid	Client: Univar USA (Inc.)	Collector: Associated Labs
Sampled: 11/03/2014 12:00	Site:	
Sample #: <u>348469-001</u>	Client Sample #: Bucket	Sample Type:

Analyte	Result	DF	RDL	Units	Analyzed	By	Notes
Method: CDFG P&M 1988		Prep Method: Method		QCBatchID:			
LC50	>750	1		mg/L	11/06/14	quang	
Method: EPA 6010B <i>NELAC</i>		Prep Method: EPA 3050B		QCBatchID: QC1150701			
Antimony	ND	1	3	mg/Kg	11/07/14	keddy	
Arsenic	5.44	1	1	mg/Kg	11/07/14	keddy	
Barium	13.0	1	1	mg/Kg	11/07/14	keddy	
Beryllium	ND	1	0.5	mg/Kg	11/07/14	keddy	
Cadmium	ND	1	0.5	mg/Kg	11/07/14	keddy	
Chromium	6.95	1	1	mg/Kg	11/07/14	keddy	
Cobalt	ND	1	0.5	mg/Kg	11/07/14	keddy	
Copper	4.05	1	1	mg/Kg	11/07/14	keddy	
Lead	0.8	1	0.5	mg/Kg	11/07/14	keddy	
Molybdenum	2.01	1	1	mg/Kg	11/07/14	keddy	
Nickel	3.32	1	1.5	mg/Kg	11/07/14	keddy	
Selenium	ND	1	1	mg/Kg	11/07/14	keddy	
Silver	ND	1	0.5	mg/Kg	11/07/14	keddy	
Thallium	1.26	1	1	mg/Kg	11/07/14	keddy	
Vanadium	4.20	1	0.5	mg/Kg	11/07/14	keddy	
Zinc	17.9	1	5	mg/Kg	11/07/14	keddy	
Method: EPA 7471A <i>NELAC</i>		Prep Method: EPA 7471A		QCBatchID: QC1150710			
Mercury	ND	1	0.14	mg/Kg	11/10/14	wyu	



Matrix: Solid	Client: Univar USA (Inc.)	Collector: Associated Labs
Sampled: 11/05/2014 09:00	Site:	
Sample #: 348469-002	Client Sample #: Bins	Sample Type:

Analyte	Result	DF	RDL	Units	Analyzed	By	Notes
Method: CDFG P&M 1988		Prep Method: Method		QCBatchID:			
LC50	>750	1		mg/L	11/06/14	quang	
Method: EPA 6010B <i>NELAC</i>		Prep Method: EPA 3050B		QCBatchID: QC1150701			
Antimony	ND	1	3	mg/Kg	11/07/14	keddy	
Arsenic	4.44	1	1	mg/Kg	11/07/14	keddy	
Barium	9.65	1	1	mg/Kg	11/07/14	keddy	
Beryllium	ND	1	0.5	mg/Kg	11/07/14	keddy	
Cadmium	ND	1	0.5	mg/Kg	11/07/14	keddy	
Chromium	5.25	1	1	mg/Kg	11/07/14	keddy	
Cobalt	ND	1	0.5	mg/Kg	11/07/14	keddy	
Copper	3.05	1	1	mg/Kg	11/07/14	keddy	
Lead	1.0	1	0.5	mg/Kg	11/07/14	keddy	
Molybdenum	1.47	1	1	mg/Kg	11/07/14	keddy	
Nickel	2.45	1	1.5	mg/Kg	11/07/14	keddy	
Selenium	ND	1	1	mg/Kg	11/07/14	keddy	
Silver	ND	1	0.5	mg/Kg	11/07/14	keddy	
Thallium	ND	1	1	mg/Kg	11/07/14	keddy	
Vanadium	2.97	1	0.5	mg/Kg	11/07/14	keddy	
Zinc	ND	1	5	mg/Kg	11/07/14	keddy	
Method: EPA 7471A <i>NELAC</i>		Prep Method: EPA 7471A		QCBatchID: QC1150710			
Mercury	ND	1	0.14	mg/Kg	11/10/14	wyu	



QCBatchID: QC1150701	Analyst: MAlam	Method: EPA 6010B
Matrix: Solid	Analyzed: 11/06/2014	Instrument: AAICP (group)

Blank Summary						
Analyte	Blank Result	Units		RDL	Notes	
QC1150701MB1						
Antimony	ND	mg/Kg		3		
Arsenic	ND	mg/Kg		1		
Barium	ND	mg/Kg		1		
Beryllium	ND	mg/Kg		0.5		
Cadmium	ND	mg/Kg		0.5		
Chromium	ND	mg/Kg		1		
Cobalt	ND	mg/Kg		0.5		
Copper	ND	mg/Kg		1		
Lead	ND	mg/Kg		0.5		
Molybdenum	ND	mg/Kg		1		
Nickel	ND	mg/Kg		1.5		
Selenium	ND	mg/Kg		1		
Silver	ND	mg/Kg		0.5		
Thallium	ND	mg/Kg		1		
Vanadium	ND	mg/Kg		0.5		
Zinc	ND	mg/Kg		5		

Lab Control Spike/ Lab Control Spike Duplicate Summary											
Analyte	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD		%Rec	RPD	
QC1150701LCS1											
Antimony	200		193		mg/Kg	97			80-120		
Arsenic	200		210		mg/Kg	105			80-120		
Barium	200		212		mg/Kg	106			80-120		
Beryllium	200		194		mg/Kg	97			80-120		
Cadmium	200		209		mg/Kg	105			80-120		
Chromium	200		207		mg/Kg	104			80-120		
Cobalt	200		211		mg/Kg	106			80-120		
Copper	200		208		mg/Kg	104			80-120		
Lead	200		220		mg/Kg	110			80-120		
Molybdenum	200		204		mg/Kg	102			80-120		
Nickel	200		209		mg/Kg	105			80-120		
Selenium	200		191		mg/Kg	96			80-120		
Silver	100		92.3		mg/Kg	92			80-120		
Thallium	200		207		mg/Kg	104			80-120		
Vanadium	200		218		mg/Kg	109			80-120		
Zinc	200		201		mg/Kg	101			80-120		

Matrix Spike/Matrix Spike Duplicate Summary												
Analyte	Sample	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
	Amount	MS	MSD	MS	MSD		MS	MSD		%Rec	RPD	
QC1150701MS1, QC1150701MSD1											Source: 348543-001	
Antimony	10.8	100	100	111	112	mg/Kg	100	101	0.9	75-125	25	
Arsenic	0.5	100	100	123	123	mg/Kg	123	123	0.0	75-125	25	
Barium	0.4	100	100	122	116	mg/Kg	122	116	5.0	75-125	25	
Beryllium	ND	100	100	119	109	mg/Kg	119	109	8.8	75-125	25	
Cadmium	ND	100	100	123	115	mg/Kg	123	115	6.7	75-125	25	
Chromium	0.7	100	100	121	114	mg/Kg	120	113	6.0	75-125	25	
Cobalt	ND	100	100	123	116	mg/Kg	123	116	5.9	75-125	25	
Copper	4.99	100	100	127	124	mg/Kg	122	119	2.4	75-125	25	



QCBatchID: QC1150701	Analyst: MAlam	Method: EPA 6010B
Matrix: Solid	Analyzed: 11/06/2014	Instrument: AAICP (group)

Analyte	Sample	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
	Amount	MS	MSD	MS	MSD		MS	MSD		%Rec	RPD	
QC1150701MS1, QC1150701MSD1											Source: 348543-001	
Lead	1.17	100	100	124	124	mg/Kg	123	123	0.0	75-125	25	
Molybdenum	0.2	100	100	111	113	mg/Kg	111	113	1.8	75-125	25	
Nickel	0.6	100	100	124	116	mg/Kg	123	115	6.7	75-125	25	
Selenium	ND	100	100	112	113	mg/Kg	112	113	0.9	75-125	25	
Silver	ND	50	50	54.9	51.8	mg/Kg	110	104	5.8	75-125	25	
Thallium	ND	100	100	123	124	mg/Kg	123	124	0.8	75-125	25	
Vanadium	ND	100	100	124	118	mg/Kg	124	118	5.0	75-125	25	
Zinc	7.32	100	100	126	117	mg/Kg	119	110	7.4	75-125	25	

QCBatchID: QC1150710	Analyst: MAlam	Method: EPA 7471A
Matrix: Solid	Analyzed: 11/06/2014	Instrument: AAICP-HG1

Blank Summary						
Analyte	Blank Result	Units		RDL	Notes	
QC1150710MB1						
Mercury	ND	mg/Kg		0.14		

Lab Control Spike/ Lab Control Spike Duplicate Summary											
Analyte	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
	LCS	LCSD	LCS	LCSD		LCS	LCSD		%Rec	RPD	
QC1150710LCS1											
Mercury	0.83		0.90		mg/Kg	108			80-120		

Matrix Spike/Matrix Spike Duplicate Summary												
Analyte	Sample Amount	Spike Amount		Spike Result		Units	Recoveries		RPD	Limits		Notes
		MS	MSD	MS	MSD		MS	MSD		%Rec	RPD	
QC1150710MS1, QC1150710MSD1												Source: 348403-001
Mercury	ND	0.83	0.83	0.84	0.89	mg/Kg	101	107	5.8	75-125	20	



Data Qualifiers and Definitions

Qualifiers

B	Analyte was present in an associated method blank. Associated sample data was reported with qualifier.
B1	Analyte was present in an sample and associated method blank greater than MDL but less than DRL. Associated sample data was reported with qualifier.
BQ1	No valid test replicates. Result may be greater. Best result was reported with qualifier. Sample toxicity possible.
BQ2	No valid test replicates.
BQ3	Minimum DO is less than 1.0 mg/L. Result may be greater and reported with qualifier.
C	Laboratory Contamination.
D	The sample duplicate RPD was not within control limits, the sample data was reported without further clarification.
DW	Sample result is calculated on a dry weigh basis
J	Reported value is estimated
L	The laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) was out of control limits. Associated sample data was reported with qualifier.
M	The matrix spike (MS) or matrix spike duplicate (MSD) was not within control limits due to matrix interference. The associated LCS and/or LCSD was within control limits and the sample data was reported without further clarification.
NC	The analyte concentration in the sample exceeded the spike level by a factor of four or greater, spike recovery and limits do not apply.
P	Sample was received without proper preservation according to EPA guidelines.
Q1	Analyte Calibration Verification exceeds criteria and the result was reported with qualifier.
Q2	Analyte calibration was not verified and the result was estimated and reported with qualifier.
Q3	Analyte initial calibration was not available or exceeds criteria. The result was estimated and reported with qualifier.
Q4	Analyte result out of calibration range and was reported with qualifier
S	The surrogate recovery was out of control limits due to matrix interference. The associated method blank surrogate recovery was within control limits and the sample data was reported without further clarification.
T	Sample was extracted/analyzed past the holding time.
T2	Sample was analyzed ASAP but received and analyzed past the 15 minute holding time.
TIC	Tentatively Identified Compounds

Definitions

DF	Dilution Factor
MDL	Method Detection Limit
ND	Analyte was not detected or was less than the detection limit.
RDL	Reporting Detection Limit





SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: UNNGV

Project: _____

Date Received: 11/5/14

Sampler's Signature Present: Yes No

Sample temperature: _____

Sample(s) received in cooler: Yes

No (Skip Section 2)

Shipping Information: _____

Section 2

Was the cooler packed with: X Ice _____ Ice Packs _____ Bubble Wrap _____ Styrofoam

_____ Paper _____ None _____ Other _____

Cooler Temperature: 2°C (Acceptance range is 0 to 6 Deg. C. or arrival on ice;

For Microbiology sample ≤ 10 Deg. C or arrival on ice)

Section 3

	YES	NO	N/A
Was a COC received?	<u>✓</u>		
Were IDs present?	<u>✓</u>		
Were sampling dates & times present?	<u>✓</u>		
Was a signature present?	<u>✓</u>		
Were tests clearly indicated?	<u>✓</u>		
Were custody seals present?		<u>✓</u>	
If Yes – were they intact?			<u>✓</u>
Were all samples sealed in plastic bags?	<u>✓</u>		
Did all samples arrive intact? If no, indicate below.	<u>✓</u>		
Did all bottle labels agree with COC? (ID, dates and times)	<u>✓</u>		
Were correct containers used for the tests required?	<u>✓</u>		
Was a sufficient amount of sample sent for tests indicated?	<u>✓</u>		
Was there headspace in VOA vials?			<u>✓</u>
Were the containers labeled with correct preservatives?			<u>✓</u>
Was total residual chlorine measured (Fish Bioassay samples only)? *	<u>✓</u>		<u>✓</u>

*If the answer is no, please inform Fish Bioassay Dept. immediately.

Section 4

Explanations/Comments

Section 5

Was Project Manager notified of discrepancies: Y / N N/A

Project Manager's response: _____

Completed By: [Signature] Date: 11/5/14



Chain of Custody Record

Lab Job No. 24182169
 Page ____ of ____

CUSTOMER INFORMATION				PROJECT INFORMATION			
COMPANY: <u>Univian</u>		PROJECT NAME:		REQUIRED TURN AROUND TIME:		Standard: _____	
SEND REPORT TO:		NUMBER:		72 Hours: _____		48 Hours: _____	
EMAIL:		ADDRESS:		24 Hours: _____			
ADDRESS: <u>12134 Harper Lake Rd</u>		PO #:					
PHONE: <u>Hinkley, CA</u>		FAX:					
		SAMPLED BY: <u>Sam R</u>					
<div style="float: right; border: 1px solid black; padding: 5px; transform: rotate(-15deg);"> ANALYSIS REQUEST Cam 17 Fish Bio-Assay </div>							
Sample ID	Date	Time	Matrix	Container Number/Size	Pres.	Test Instructions & Comments	
1	<u>Bucket</u>	<u>11/3/14</u>	<u>1200 S</u>	<u>1 Liter</u>	<u>X</u>		
2					<u>X</u>		
3	<u>bins</u>	<u>11/5/14</u>	<u>0900 S</u>	<u>1 liter</u>	<u>X</u>		
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Total No. of Samples: _____ Method of Shipment: _____ Preservative: 1 = Ice 2 = HCl 3 = HNO₃ 4 = H₂SO₄ 5 = NaOH 6 = Other

Relinquished by		Received By:		1. Relinquished by		2. Received By:		3. Relinquished by		4. Received By:	
Signature:	<u>[Signature]</u>	Signature:	<u>[Signature]</u>	Signature:	<u>[Signature]</u>	Signature:	<u>[Signature]</u>	Signature:	<u>[Signature]</u>	Signature:	<u>[Signature]</u>
Printed Name:	<u>WILL TREMBLO</u>	Printed Name:	<u>Sam R</u>	Printed Name:	<u>Sam R</u>	Printed Name:	<u>Sam R</u>	Printed Name:	<u>Sam R</u>	Printed Name:	<u>Sam R</u>
Date:	<u>11/05/14</u>	Date:	<u>11/5/14</u>	Date:	<u>11/5/14</u>	Date:	<u>11/5/14</u>	Date:	<u>11/5/14</u>	Date:	<u>11/5/14</u>
Time:	<u>11:30</u>	Time:	<u>11:30</u>	Time:	<u>11:30</u>	Time:	<u>11:30</u>	Time:	<u>11:30</u>	Time:	<u>11:30</u>

Chris Ota

From: Chris Walker [Chris.Walker@univarusa.com]
Sent: Monday, November 03, 2014 2:00 PM
To: Chris Ota
Subject: RE: Sample Request
Attachments: image001.jpg

Follow Up Flag: Follow up
Flag Status: Flagged

Just inform him to be prepared to collect two samples.
Abengoa may pull some filter cake today and place into their own clean bucket.
On Wednesday your technician will pull from the bins under the press which will contain the latest process filter cake.

Each sample can then be run separately for CAM 17 and then Fish Bio-Assay.
The goal being to prove CA Non-Hazardous.

Chris Walker
ChemCare Account Manager
Univar – San Diego
M: 619-259-3780
F: 323-837-7022
chris.walker@univarusa.com

CHEMCARE
Part of the Univar Network

From: Chris Ota [mailto:cota@associatedlabs.com]
Sent: Monday, November 03, 2014 12:54 PM
To: Chris Walker
Subject: RE: Sample Request
Importance: High

Hi Chris,

My driver has informed me that he will be arriving about 11am. I will provide him with the contact information for the workers on-site. If there is anything else let me know.

Thanks,

Christopher C. Ota

Project Manager
Associated Laboratories
of Montrose Environmental Group
806 North Batavia ST.
Orange, CA 92868
cota@montrose-env.com
714-771-9906 (O) 714-920-5723 (C)

Chris Ota

From: Chris Walker [Chris.Walker@univarusa.com]
Sent: Friday, October 31, 2014 1:20 PM
To: Chris Ota
Subject: Sample Request
Attachments: image001.jpg

Follow Up Flag: Follow up
Flag Status: Flagged

Chris,

This site is the Abengoa Solar Plant (Alpha plant) commonly known as Mojave Solar.

Your Technician will exit Harper Lake Road (North-Right) off of I-58 Westbound from Barstow.

It's a dirt road for six miles. He'll come to a paved road (stop sign) and continue straight for 150 yards and enter at the first entrance on his right. If he goes past the cooling towers he's gone too far).

A guard will greet him looking for a badge. The badge will not be necessary. The Technician needs to ask for one the names listed below to meet him.

Ideally, He should call Manju when he exits I-58, thus giving him a chance to meet him at the guard gate.

Address:
42134 Harper Lake Road
Hinkley, CA 92347

Contact: David Trenado or **Manju Shivalingappa**
Phone: 661-300-1721 or **480-768-7793** (Manju speaks English clearly)

As soon as possible is best. This will be one of two samples for Alpha...Beta Plant will require same testing within few weeks.

Thanks and let me know what day next week.

Chris Walker
ChemCare Account Manager
Univar – San Diego
M: 619-259-3780
F: 323-837-7022
chris.walker@univarusa.com

CHEMCARE
Part of the Univar Network

ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: November 7, 2014
Subject: 09-AFC-05 (Mojave Solar Plant)
Condition Number: **WORKERSAFETY-1**
Reference: Mojave Lightning Mitigation Plan
To: Dale Rundquist, CPM
California Energy Commission

WE ARE SENDING YOU

☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐

COPIES	DATE	NO.	DESCRIPTION
1	11/07/14	1	Cover Letter
1	11/07/14	1	Lightning Mitigation Plan
1	11/07/14	1	Lightning Facts Presentation
1	11/07/14	1	Emergency Egress Routes and Muster Points

THESE ARE TRANSMITTED as checked below:

☒ For Approval ☐ Approved as submitted
☐ For your use ☐ Approved as noted
☐ As requested ☐ Returned for corrections
☐ For review ☐ For review and comment

REMARKS _____

COPY TO: File SIGNED BY: _____



Steven Pochmara
TEYMA USA INC.

ABENER TEYMA MOJAVE

14522 South Outer Forty Road
Chesterfield, MO 63017

Phone: 314-275-1100
Fax: 314-275-2408

Subject: 09-AFC-5C (Mojave Solar Plant)

Condition Number: WORKER SAFETY-1

Description: Lightning Mitigation Plan

Submittal Number: WKSF1-03-00

November 07, 2014

Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
JDouglas@energy.state.ca.us

Dear Mr. Rundquist,

Attached please find a copy of the Mojave Solar Lightning Mitigation plan for your review and approval. Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,



Steven Pochmara

TEYMA USA INC.

14522 South Outer Forty Road
Chesterfield, MO 63017
Office: (314) 275-1353
Cell: (480) 287-1419

[Lightning Mitigation Plan]

Title: Lightning Mitigation Plan
Process: Implementation Requirements
Sub process: Establish an OH&S Emergency Management Process

Document:	6007-PEM-ATM-79-00-0002
Revision:	00
Date:	11/07/2014

Prepared by:	
Bruce Asaro – Health and Safety	Electronic Signature
Manjunath Shivalingappa– Environmental Engineer	Electronic Signature

Concurred by:	
Larry Davis– Health and Safety Manager	Electronic Signature
Steve Pochmara – Permitting Manager	Electronic Signature
Efrain Perez – Quality Manager	

Approved by:	
Nicolás Gallo Massa – Project Sub-Director	Electronic Signature
Pablo Enrique Schenone Laborde – Project Director	Electronic Signature

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If for any exceptional reasons due to specificities of project (e.g.: confidential project information, legal or regulatory requirements of local level and/or contractual requirements of the client), there was the need to modify these requirements, the changes must be documented in the quality, environment and prevention of occupational risks of the project plan, prior authorization by the Department of Central Services Management Systems

The original of this document is electronically signed and filed in the document manager Abeinsa EPC.

ABEINSA EPC	Document:		6007-PEM-ATM-79-00-0002	
	Revision:	00	Date:	11/07/14
	Page: 2 of 13			

Revisions Control Sheet

Rev.	Date	Cause for Revision	Prepared By	Concurred By	Approved By
00	11/07/14	Document created	BA-MS	LD-SP-EP	NGM-PESL

Changes from the original content to the next revision will be identified by underlines for quick identification of changes.

ABEINSA EPC	Document:		6007-PEM-ATM-79-00-0002	
	Revision:	00	Date:	11/07/14
	Page: 3 of 13			

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1.0 Objectives

To develop a project specific Emergency Response Plan for the Abeinsa EPC Mojave Solar Site and provide site personnel the immediate actions, requirements, points of contact and any follow up actions in the event of, but not limited to the following:

- ☐ Evacuation
- ☐ Personnel Injury or Illness

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- ☐ Security Threat
- ☐ Fire
- ☐ Severe Weather
- ☐ Earthquake
- ☐ Hazardous Chemical Spills

These procedures shall be adhered to and used in conjunction with the Mojave Solar Project Health and Safety Plan to ensure the protection of personnel, equipment and material.

2.0 Definitions

Assembly Areas and Muster Points

Assembly areas are evacuation locations designated for site personnel, visitors and contractors as a safeguard during an emergency. Muster points are located at the assembly areas for the Incident Commander (IC) to facilitate emergency action, evacuation and response. Emergency Response Team Members report to the Muster Point for direction from the IC.

ERPP

Emergency Response and Preparedness Program.

Emergency Response Coordinator (ERC)

An Area (Alpha or Beta) designated trained and qualified person that is responsible for the overall development, training, implementation and management of the site's emergency response program. The ERC may assume the role of Facility Emergency Coordinator (FEC) or Incident Commander (IC) during an emergency or drill.

Facility Emergency Coordinator (FEC)

A trained and qualified person responsible for the overall site wide development, training, implementation and management of the emergency response program and is the person-in-charge over all emergency situations. The FEC will be the point person for coordinating with the responding outside emergency services and the Incident Commander (IC).

Incident Commander (IC)

Trained and qualified person responsible for the management of an onsite emergency situation, evacuation and/or drill; stationed at one of the three preselected site muster points.

Safety Data Sheet (MSDS)

A document required for all hazardous chemicals that explains the characteristics of a chemical, the hazards that it possess and how to contain those hazards and emergency responses. The document also explains the use and storage of said chemical.

Shelter-in-place

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A shelter designated by the Facility Emergency Coordinator or Incident Commander to provide protection from hazardous elements and or weather conditions. The shelter will be selected based on emergency conditions and the need for protection (i.e. flood, fire, chemical spill, etc.). Practices may include closing windows and doors, and moving occupants away from perimeter windows and doors to a safer interior location and or relocating.

Landing Area

Location designated and reserved for air support and rescue/medi-evac.

3.0 Purpose and Scope of Application

This section applies to all personnel performing work on the Abeinsa EPC construction sites or inside any subsidiary facilities.

The history for response times from the medical team to this site is approximately 20 to 30 minutes. However, on-site medical services are provided. Note, construction or commissioning phases will require additional resources. Rescue services for hi-angle rescue, confined space and excavations may require external resources.

The response of all site personnel to an emergency situation should be serious and immediate. An individual should not endanger themselves or co-workers by indecision, delay, or an attempt to save property or equipment. Individuals should be familiar with emergency procedures applicable to their normal working areas so that proper and prompt action can be taken in each emergency situation. If visiting another site area, follow the emergency procedures for that area by following the example of local personnel and asking for guidance.

4.0 Applicable Documentation

- ☐ ISO 9001:2008, Quality Management Systems-requirements
- ☐ ISO 14001: 2004, Environmental Management System-requirements
- ☐ OHSAS 18001:2007, Occupational Health and Safety and Assessment System
- ☐ POG-SCMA-72-02 Annex 5A, Health, Safety and Environmental
- ☐ Cal/OSHA Title 8 California Code of Regulations (T8CCR)
- ☐ OSHA 29 CFR 1926 – Standard for Construction Industry

5.0 Emergency Phone Numbers

For many emergencies, the first appropriate action to be taken is to summon competent assistance.

5.1 Agency Phone Numbers

Emergency (police, fire, and ambulance), call 911
 Hospital (760) 256-1761
 Police (non-emergency) (760) 256-4838
 Fire Department (non-emergency) (760) 253-7704
 Poison Control Center: 800-222-1222

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Hazardous Waste, Chemical Spills Fire department: (760) 253-7704. If no answer call 911. If a chemical spill reaches or may reach navigable waterways, call (760) 241-6583 Lahontan Regional Water Quality Control Board.

5.2 Site Emergency Contacts

Reference the current Emergency Phone List posted in the control rooms and SHE Boards.

Once help has arrived, assist them according to your knowledge and training or as directed.

Attention:

In the event of any emergency requiring the notification of emergency response agencies, Site management or on-call supervision shall be notified only after the emergency service has been notified and is on the way.

6.0 Responsibilities

The duties and responsibilities of specific individuals or groups are further outlined below.

6.1 All Abeinsa EPC Personnel

- ☐ Read, understand, and comply with the requirements set forth in this plan.
- ☐ Report emergencies as specified in their specific section within this plan.
- ☐ Participate in and complete all required training.
- ☐ Participate in all emergency response drills.

6.2 Abeinsa EPC H&S Department

ABEINSA EPC H&S Site Orientation will include an explanation of the site emergency response and preparedness plan and procedures. The main site emergency contacts are posted in the OS&H offices and on the SHE Boards.

The H&S Manager, or designee, shall furnish information regarding site-related emergency and evacuation measures. The following items are the responsibility of the H&S Department:

1. Develop and maintain all elements of the ERPP.
2. Develop and coordinate all training required by the ERPP.
3. Ensure the ERPP meets or exceeds all regulatory requirements.
4. Ensure the ERPP remains current.
5. Develop and coordinate emergency response drills.

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6. Act as the liaison, along with ABEINSA EPC Project Management, with Community Emergency Response Organizations (i.e. Fire Dept., Police Dept., etc.).
7. Serve as the Facility Emergency Coordinator, Emergency Response Coordinator or Incident Commander(s) in emergency situations.
8. Provide an overview of the information contained in this plan to all project personnel via site orientation.

6.3 Emergency Response Coordinators

Initially the Emergency Response Coordinator (ERC) for **Alpha** is the OS&H Manager (or designee) who will set up the incident command post and place responsibilities within the team. The ERC is responsible for coordination of response activities, including contacting outside agencies, notification of management, and containment of hazard (if safely possible) and initiation of personnel evacuation. The construction director will assume this role upon arrival and receive a proper briefing prior to the arrival of emergency services. The ERC may report to an outside Emergency Agency's Response Coordinator if an agency takes over (i.e. the Fire Department).

Initially the Emergency Response Coordinator (ERC) for **Beta** is OS&H Supervisor (or designee), who will set up the incident command post and place responsibilities within the team. The ERC is responsible for coordination of response activities, including contacting outside agencies, notification of management, and containment of hazard (if safely possible) and initiation of personnel evacuation. The construction sub-director will assume this role upon arrival and receive a proper briefing prior to the arrival of emergency services. The ERC may report to an outside Emergency Agency's Response Coordinator if an agency takes over (i.e. the Fire Department).

6.4 Managers and Supervisors

All Managers and Supervisors are required to assist personnel in the event of an emergency as well as perform various other duties with regard to this Emergency Response and Preparedness Program. Managers and Supervisors will complete pre-assigned emergency response duties and lead all immediate search efforts and report emergency issues to the H&S Manager and Incident Commander

6.5 Subcontractors

Each subcontractor shall obtain a copy of the ABEINSA EPC Mojave environmental, health and safety requirements applicable to their work.

The subcontractor will be responsible for ensuring each employee receives and comprehends the information in this plan prior to beginning work on site.

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The subcontractor shall keep records indicating who has been given the information.

In the event there is a change of personnel in the subcontractor's work force, the subcontractor is responsible for providing any new employees with this information and maintaining all necessary records.

7.0 Procedures

7.1 Evacuations

When an evacuation is deemed necessary, there shall be no hesitation in requiring personnel to immediately vacate the area affected. Emergency exits and other means of egress from all areas have been identified and posted. An emergency phone list is provided in the OS&H offices and on SHE Boards.

Assembly areas and Muster Points are pre-determined and shown on posted maps. Once out of the affected area, workers will not be allowed to return until the emergency (or Evacuation Drill) is formally declared over by the Emergency Response Coordinator.

Localized area evacuations will be identified by the location affected.

The following Local Area Evacuation Identification(s) will be communicated when only a limited area or multiple areas are required to evacuate:

:

Alpha Offices, Alpha Power Block (APB), Alpha West, Alpha East, Alpha Mojavito, TAB, Beta West, Beta Offices, Beta Power Block (BPB), Beta East (West of BPB), Beta East (East of BPB).

If an Evacuation is required, per an announcement by the Construction Director, H&S Manager or Emergency Response Coordinator:

1. The Emergency Response Coordinator will sound the evacuation alarm with verbal, phones, electronic devices, radio alerts and /or (5) three second blast from air horns, to notify all affected personnel to evacuate to the appropriate Assembly Area. For the annual evacuation drill, an announcement: "This is an Evacuation Drill" will precede each blast and all other communications.
2. Managers and Supervisors will instruct all employees in the area affected to move to the nearest Assembly Area in an orderly manner. Appointed evacuation team leaders will ensure shut down of HVAC/air handling systems, external generators, etc. and that windows and doors are closed. Everyone in the affected area is to evacuate. Report to the Emergency Response Coordinator or Incident Commander that: "All affected multiplex office trailers, bathrooms, outhouses and lunch rooms are clear of personnel."

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3. Security will curtail non-emergency vehicle traffic into the affected area and account for all delivery vehicles leaving. An unobstructed entry into the site will be maintained by Security for emergency vehicle access. Security will meet emergency responders at the intersection of Harper Lake and Lockhart and provide an escort to the affected area.
4. Managers and Supervisors will inform and account for their assigned Sub Contractors and their employees to ensure that all have left the work areas affected and proceeded to the assigned assembly area. Each subcontractor must assign a point person who will be responsible for acting as their warden.
5. Each Assembly Area Emergency Response Coordinator and/or Incident Commander shall account for all personnel. If a person is missing from the roster, it will be up to the Emergency Response Coordinator and/or Incident Commander to decide next steps.
6. In the absence of designated ERC or IC; managers and remaining supervisors or emergency response team leaders will fill in for any missing ERT personnel and cover the evacuation duties accordingly.
7. If needed H&S and emergency response search teams will provide area "sweeps" in order to assist in accounting for all personnel. Areas will only be searched if it is determined to be safe. If the decision is made to initiate a search, emergency response search teams will be assigned to "sweep" designated areas in all affected site locations where Abeinsa EPC employees and subcontractors are presently known to be working, (office trailers, conference rooms, restrooms, electrical/electronic rooms and lunch rooms, etc.). Each search team will be assigned a leader, who will record and supply the names of all team members and search area to the Emergency Response Coordinator and/or IC. The search team leader is responsible for assuring that his/her team members complete their "sweep" safely and do not stray from their specific assigned search area and report directly back to the ERC/IC muster point.
8. The Activity Managers shall report any issues encountered to the Emergency Response Coordinator or Incident Commander. Possible issues include:
 - ☐ Any person who did not evacuate to the Assembly Area;
 - ☐ Any person who became injured and was unable to evacuate; and
 - ☐ Any disabled person who was unable to evacuate.
 - ☐ Location and type of problem and/or damage.
9. Managers, supervisors and ERT members shall remain at the Muster Point to assist in completing a head count for the Emergency Response Coordinator or Incident Commander. Security will use current sign-in sheets and the card scanning system for ABEINSA EPC Mojave employees and Subcontractors to account for all employees to ensure that they have left their work areas and evacuated to the assigned assembly area.

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10. Everyone is to remain at the Assembly Area until notice is given by the Site Emergency Coordinator or his designee as to the disposition of the evacuation, and whether to return to the building/work site or not.

The all clear process will include communication via verbal, phone, electronic devices, radio and/or three (3) - 3 second blasts from an air horn.

Note - If a person refuses to evacuate in an emergency, Abeinsa EPC personnel should not argue with the person, but merely inform him that you will be reporting his failure to comply to the Incident Commander and to his/her Supervisor.

7.2 Personal Injury or Illness

Report - all injuries to the Health and Safety Supervisor or the Health and Safety Technician immediately upon discovery.

Evaluate - the area surrounding the injured employee for unsafe conditions. Quickly assess the extent of the injury and inform the IC and site EMT if any assistance is required.

Site EMT – (813) 618-0790

If the injury or illness is deemed serious, call 911 for assistance. Be sure to give them your:

- ☐ Name
- ☐ Exact Location: **Mojave Solar Project: 42134 Harper Lake Road, Hinkley CA 92347**
- ☐ Nature of the Emergency (include as much detail about the ill person as known)
- ☐ Remain on the line until 911 has all the necessary information.
- ☐ Assist Security in maintaining a clear pathway for Project EMT Medic and outside Emergency Medical Service personnel.
- ☐ Air rescue landing coordinates are:
 - o Lat 35d 00'41.12771 N
 - o Long 117d 18'23.24321 W

If the injury is minor and offsite medical attention is warranted, transport the employee to designated hospital. In the event of electrical shock, ensure the circuit is de-energized before touching victim. Administer emergency first aid only if safe to do so, using the below guidelines:

- ☐ If the victim is conscious, ensure you have permission to help.
- ☐ If victim has stopped breathing, perform CPR and use the AED if necessary.
- ☐ Stop bleeding by applying pressure directly to wound.

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- ☐ Single use, disposable gloves such as surgical or examination gloves shall be used for procedures involving contact with patient's bodily fluids.
- ☐ Do not attempt to move victim unless there is an imminent danger.
- ☐ Keep victim warm to help reduce the potential of shock until ambulance arrives.
- ☐ Send any available individual to meet ambulance at the front gate and direct them to accident scene.

7.3 Fires

Ensure personnel have been trained and drilled in the proper procedure to follow in a fire emergency; to react swiftly and safely to minimize the dangers to themselves and their fellow employees. Initiate the following steps:

Report - Fires discovered on site shall be immediately reported to the Emergency Response Coordinator.

Evaluate - If the fire is small enough so as not to endanger personnel, determine the appropriate fire extinguisher and attempt to extinguish the fire.

If the fire is beyond the person's capability to safely extinguish, the Emergency Response Coordinator shall be notified:

Initiate - The Emergency Response Coordinator will then, sound the alarm with electronic device radio alerts and/or (5) three second blast with air horns, to notify all personnel of the problem. Alert the Fire Department via (760) 253-7704. If there is no answer then use 911.

The Emergency Response Coordinator will direct Security to meet emergency responders at the intersection of Harper Lake and Lockhart and provide an escort to the affected area. An available ERT member will also be directed to meet the Fire Department and Security at the gate to direct and escort them to the fire scene and the water tanks. The entrance gates shall be kept unobstructed to allow emergency vehicle access. If the condition warrants, the Facility Emergency Coordinator and/or IC shall evacuate all unnecessary personnel from the affected area and if necessary, initiate an evacuation.

7.4 Severe Weather

Warnings of electrical storms, high winds, flooding, and freezing that have the potential to impact the safety of a community are typically distributed by the local government emergency organization via radio and television stations. In the event any employee becomes aware of a severe weather warning, the Facility Emergency Coordinator and Health and Safety Supervisor must be notified.

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Report - Announce to on site personnel the severe weather condition, and determine if the office trailers provide shelter or if Evacuation of site personnel is necessary or if it is safe for everyone to be sent home for the remainder of the shift. The Facility Emergency Coordinator will also determine what other precautions will be taken to ensure the safety of personnel and reduce property loss.

Evaluate - During the severe weather occurrence, all on site personnel shall assess the safety of their work location immediately. The following examples of this assessment:

- High winds – have the potential to dislodge and lift heavy objects and reduce visibility.
- Flooding – areas inundated with flowing water should not be crossed.
- Lightning – stay clear of power lines, metal fences, and other conductive structures. During Lightning activity close to the Site, all crane and high lift activity shall be stopped.
- Freezing – outside floor areas, ladders, and walkways may be slippery from ice.

Initiate – It may become necessary to seek shelter, evacuate the site, administer first aid, call in emergency assistance, initiate a Site shutdown and send everyone home or modify Site operations. The Facility Emergency Coordinator and/or IC will announce changes to site work activities as conditions warrant. Do not restart equipment that tripped offline until the specific cause of the trip is known and addressed.


8.0 Public Relations

A central spokesperson shall ensure that only informed and consistent information is made public regarding the activities. Additional details should follow to be clear on this communication.

8.1 Media Inquiry Procedure

All inquiries or requests for interviews from the news media (broadcast or print) shall be referred directly to the ABEINSA EPC Mojave Site Construction Director and immediately communicated to ASI's Site Manager – Nicolas Potrovitza. ABEINSA EPC Mojave or subcontractor personnel receiving calls from reporters, regardless of the nature of their inquiry, should respond with the following statement:

"I appreciate your interest and would like to get you the information you need. All public information is handled from our home office. Please leave me your telephone number and I can have someone get back with you as soon as possible."

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ABEINSA EPC Mojave or subcontractor personnel receiving media inquiries shall notify the ABEINSA EPC Mojave Site Construction Director immediately. ABEINSA EPC Mojave or subcontractor personnel should not provide a “no comment” statement, nor should they ask the reporter if they can make an “off the record” statement. “No comment” is normally interpreted as an admission of guilt, and all statements ABEINSA EPC Mojave personnel make to the media are considered authorized information.

9.0 Communication of Emergencies

1. A combination of radio devices, cell phones, and/or air horns will be used to alert personnel on the project of an emergency situation until the Fire Protection and alarm system is in place. At that moment this plan will be updated in order to include the new situation.
2. Once notified, the emergency team will perform a call down to the Activity Manager’s and respective subcontractor groups.
3. ERT members will proceed to designated locations to disseminate appropriate communication up to and including initial and final area “sweeps” to ensure all personnel have been notified to the emergency.
4. ERC, IC and ERT members will collaborate and provide clear direction including the **“all clear”** by verbal, phone, radio, and/or with 3 - 3 second blasts of the air horn.
5. Use of air horns for bird control or non-emergency isolated communication will be short 1 second blast, preceded by verbal notification in the area of use and prior notice through phone, electronic device and/or radio to the S&H department and all other affected departments.

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Lightning Safety

ABENGOA

ABEINSA EPC



**When  Thunder
Roars,
Go Indoors!**

STOP all activities.

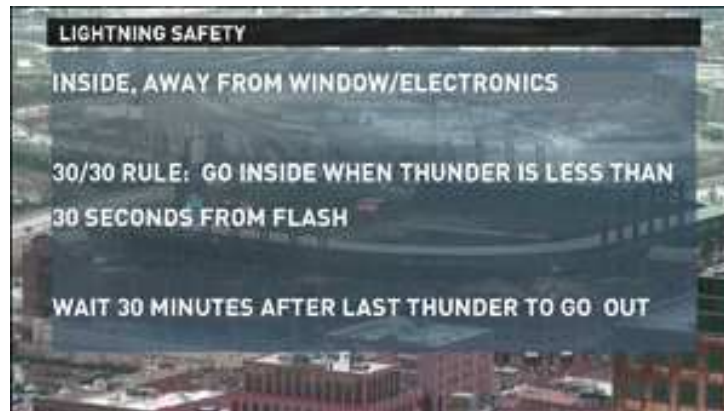
**Seek shelter in a substantial building
or hard-topped vehicle.**

**Wait 30 minutes after storm to
resume activities.**



www.lightningsafety.noaa.gov



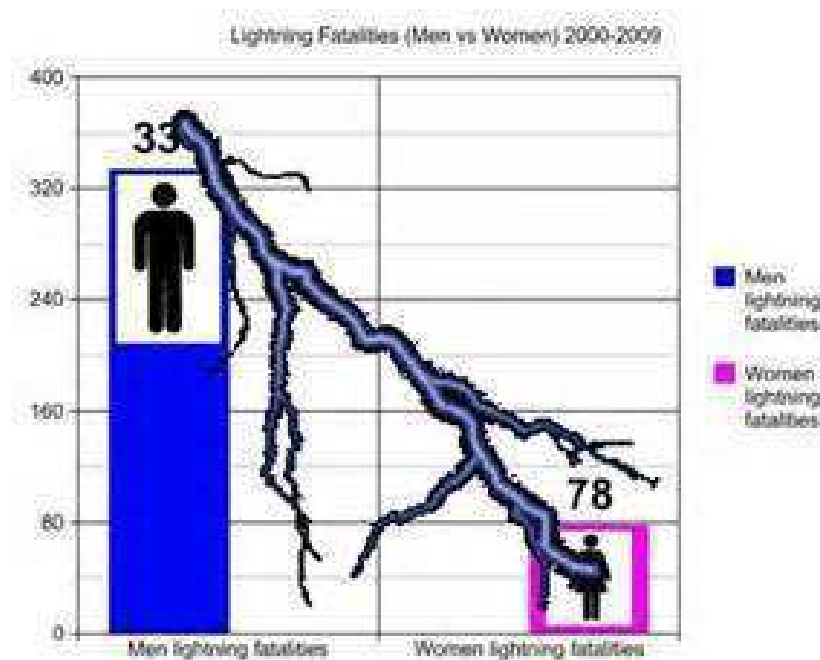


- THE TEMPERATURE OF LIGHTNING RANGES FROM 15,000° TO 60,000° (SURFACE OF SUN: 9,000°)
- LIGHTNING MOVES AROUND 62,000 MPH (1/3 THE SPEED OF LIGHT) & IS UP TO 1" WIDE
- SOUND OF THUNDER TRAVELS 1 MILE/5 SECONDS
- RANKS THIRD FOR WEATHER-RELATED DEATHS
LIFETIME ODDS OF BEING STRUCK: 1 IN 6,250

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Potential Effects of Exposure



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[Lightning Mitigation Plan]

Title: Lightning Mitigation Plan
Process: Emergency Egress Routes and Muster Points
Sub process: Establish an OH&S Emergency Management Process

Document:	6007-PEM-ATM-79-00-0002 Appendix 02
Revision:	00
Date:	11/07/2014

Prepared by:	
Bruce Asaro – Health and Safety	Electronic Signature
Manjunath Shivalingappa– Environmental Engineer	Electronic Signature

Concurred by:	
Larry Davis– Health and Safety Manager	Electronic Signature
Steve Pochmara – Permitting Manager	Electronic Signature
Efrain Perez – Quality Manager	Electronic Signature

Approved by:	
Nicolás Gallo Massa – Project Sub-Director	Electronic Signature
Pablo Enrique Schenone Laborde – Project Director	Electronic Signature

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The original of this document is electronically signed and filed in the document manager Abeinsa EPC.

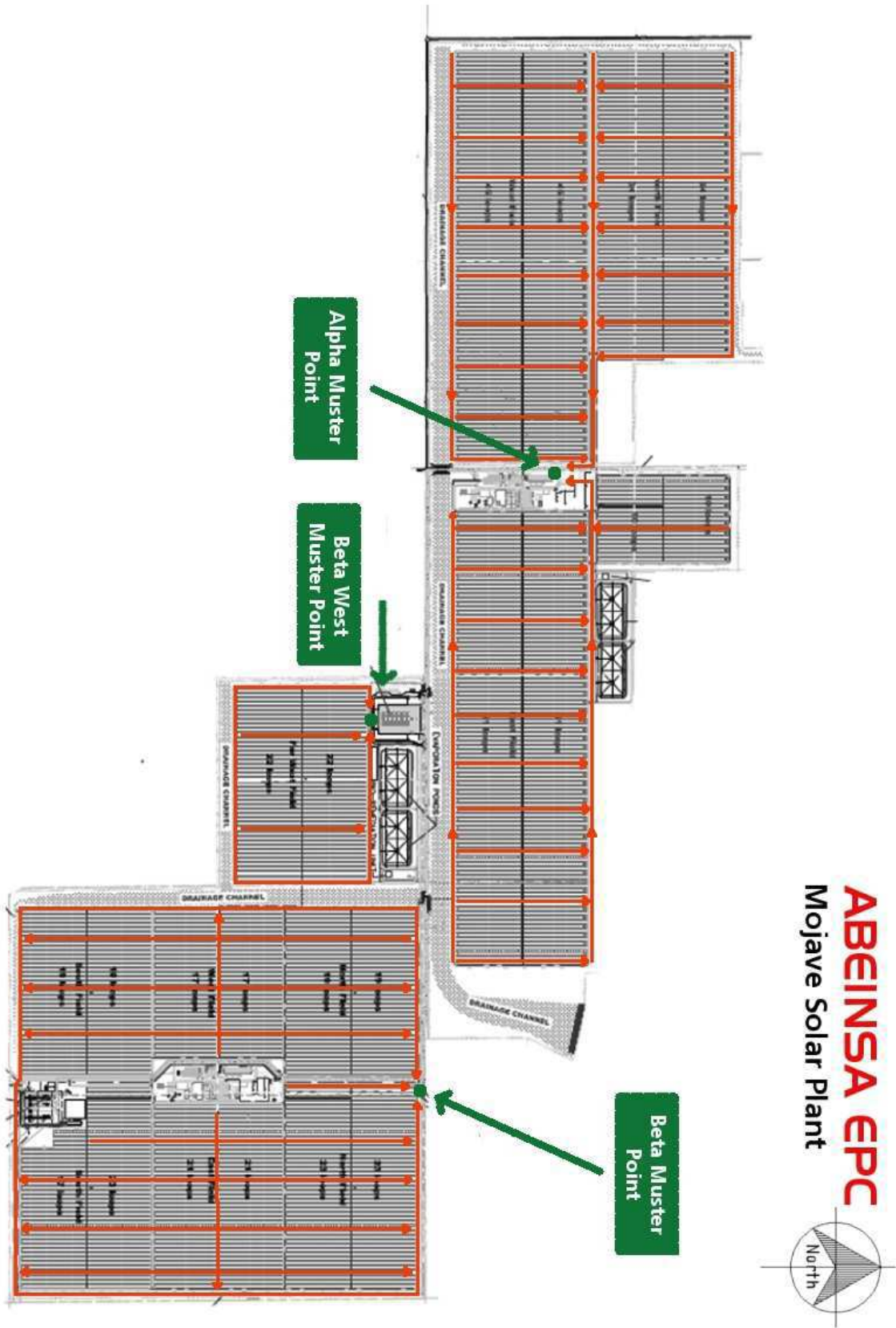
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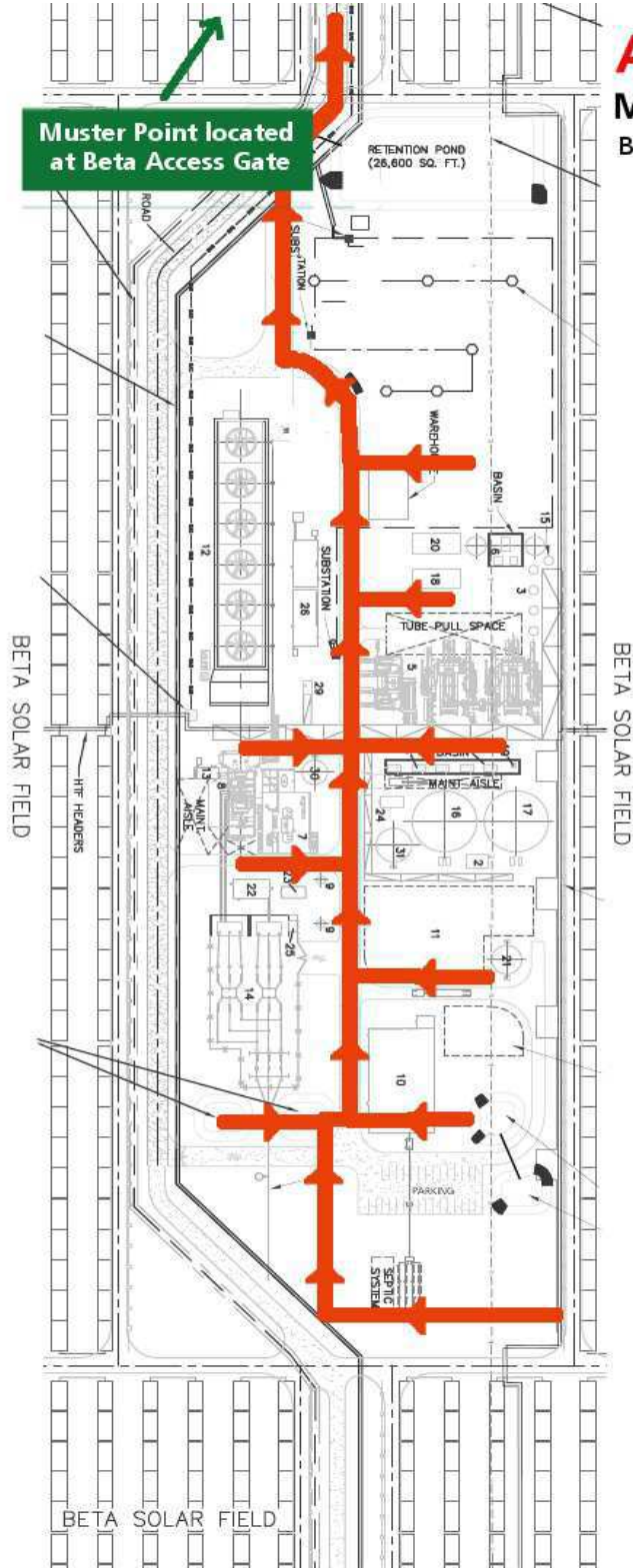
Revisions Control Sheet

Rev.	Date	Cause for Revision	Prepared By	Concurred By	Approved By
00	11/07/14	Document created	BA-MS	LD-SP-EP	NGM-PESL

Changes from the original content to the next revision will be identified by underlines for quick identification of changes.

<div> <div>ABEINSA EPC</div> </div>	Document:		6007-PEM-ATM-79-00-0002	
	Appendix 02			
	Revision:	00	Date:	11/07/14
Page: 3 of 5				

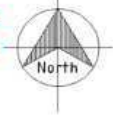




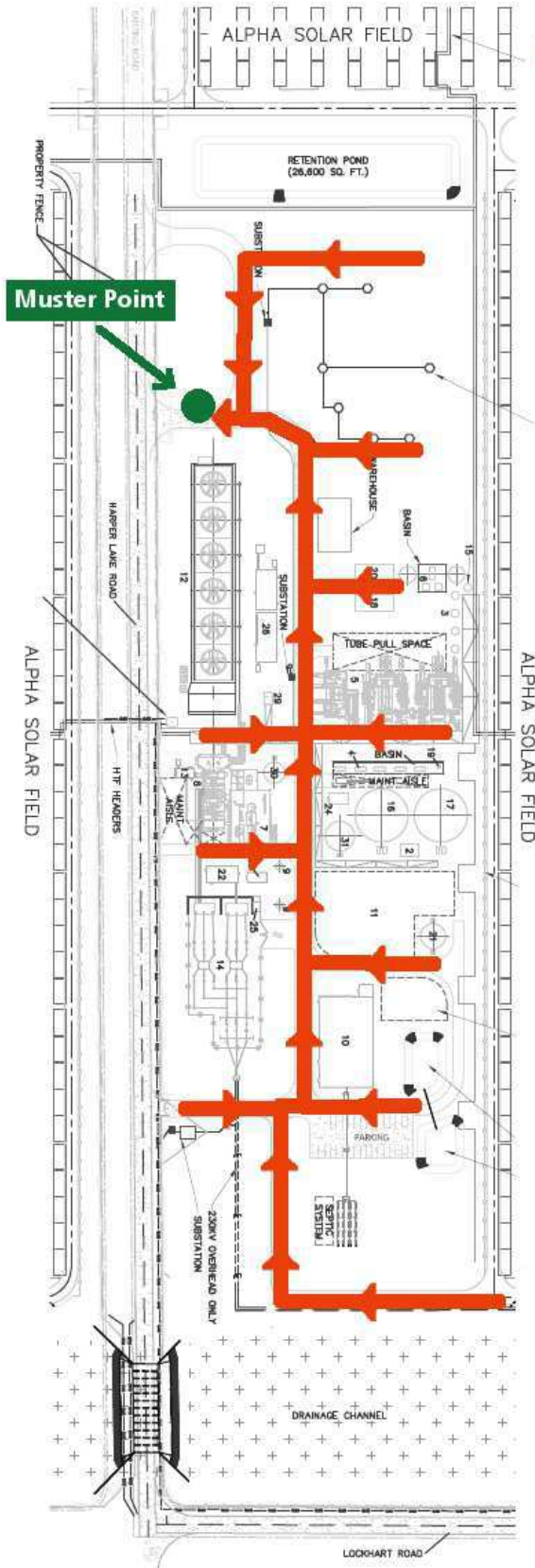
ABEINSA EPC

Mojave Solar Plant

Beta Power Block



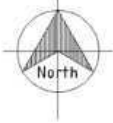
**Muster Point located
at Beta Access Gate**



ABEINSA EPC

Mojave Solar Plant

Alpha Power Block



ABENER TEYMA MOJAVE

LETTER OF TRANSMITTAL

Date: November 13, 2014
Subject: 09-AFC-05 (Mojave Solar Plant)
Condition Number: **WORKERSAFETY-1**
Reference: Mojave Lightning Mitigation Plan
To: Dale Rundquist, CPM
California Energy Commission

WE ARE SENDING YOU

☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop Drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐

COPIES	DATE	NO.	DESCRIPTION
1	11/13/14	1	Cover Letter
1	11/13/14	1	Lightning Mitigation Plan, Rev 1
1	11/07/14	1	Lightning Facts Presentation as part of Lightning Awareness Training
1	11/07/14	1	Emergency Egress Routes and Muster Points

THESE ARE TRANSMITTED as checked below:

☒ For Approval ☐ Approved as submitted
☐ For your use ☐ Approved as noted
☐ As requested ☐ Returned for corrections
☐ For review ☐ For review and comment

REMARKS _____

COPY TO: File SIGNED BY: _____



Steven Pochmara
TEYMA USA INC.

ABENER TEYMA MOJAVE

14522 South Outer Forty Road
Chesterfield, MO 63017

Phone: 314-275-1100
Fax: 314-275-2408

Subject: 09-AFC-5C (Mojave Solar Plant)

Condition Number: WORKER SAFETY-1

Description: Lightning Mitigation Plan

Submittal Number: WKSF1-03-01

November 13, 2014

Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
JDouglas@energy.state.ca.us

Dear Mr. Rundquist,

Attached please find a copy of the Mojave Solar Lightning Mitigation plan, revision 1 for your review and approval. Should you have any questions or need any additional information, please do not hesitate to contact me.

Sincerely,



Steven Pochmara

TEYMA USA INC.

14522 South Outer Forty Road
Chesterfield, MO 63017
Office: (314) 275-1353
Cell: (480) 287-1419

[Lightning Mitigation Plan]

Title: Lightning Mitigation Plan
Process: Implementation Requirements
Sub process: Establish an OH&S Emergency Management Process

Document:	6007-PEM-ATM-79-00-0002
Revision:	01
Date:	11/13/2014

Prepared by:	
Bruce Asaro – Health and Safety	Electronic Signature
Manjunath Shivalingappa– Environmental Engineer	Electronic Signature

Concurred by:	
Larry Davis– Health and Safety Manager	Electronic Signature
Steve Pochmara – Permitting Manager	Electronic Signature
Efrain Perez – Quality Manager	

Approved by:	
Nicolás Gallo Massa – Project Sub-Director	Electronic Signature
Pablo Enrique Schenone Laborde – Project Director	Electronic Signature

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The original of this document is electronically signed and filed in the document manager Abeinsa EPC.

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	Revision:	01	Date:	11/13/14
	Page: 2 of 14			

Revisions Control Sheet

Rev.	Date	Cause for Revision	Prepared By	Concurred By	Approved By
01	11/13/14	Document created	BA-MS	LD-SP-EP	NGM-PESL

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1.0 Objectives

To develop a project specific Emergency Response Plan for the Abeinsa EPC Mojave Solar Site and provide site personnel the immediate actions, requirements, points of contact and any follow up actions in the event of, but not limited to the following:

- ☐ Evacuation
- ☐ Security Threat

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- ☐ Fire
- ☐ Severe Weather

These procedures shall be adhered to and used in conjunction with the Mojave Solar Project Health and Safety Plan to ensure the protection of personnel, equipment and material.

2.0 Definitions

Assembly Areas and Muster Points

Assembly areas are evacuation locations designated for site personnel, visitors and contractors as a safeguard during an emergency. Muster points are located at the assembly areas for the Incident Commander (IC) to facilitate emergency action, evacuation and response. Emergency Response Team Members report to the Muster Point for direction from the IC.

ERPP

Emergency Response and Preparedness Program.

Emergency Response Coordinator (ERC)–Stephen Dean for Alpha & Bruce Asaro for Beta
An Area (Alpha or Beta) designated trained and qualified person that is responsible for the overall development, training, implementation and management of the site's emergency response program. The ERC works in conjunction with the FEC to ensure the lightning and severe weather watch is in place at all times. Additionally, the ERC is designated to listen to weather reports and will notify the FEC and all on site personnel when an oncoming storm is approaching. The ERC may assume the role of Facility Emergency Coordinator (FEC) or Incident Commander (IC) during an emergency or drill.

Facility Emergency Coordinator (FEC)- Larry Davis or Designee

A trained and qualified person responsible for the overall site wide development, training, implementation and management of the emergency response program and is the person-in-charge over all emergency situations. The FEC is the responsible person in charge of the lightning and severe weather watch. The FEC will be the point person for coordinating with the responding outside emergency services and the Incident Commander (IC).

Incident Commander (IC)

Trained and qualified person responsible for the management of an onsite emergency situation, evacuation and/or drill; stationed at one of the three preselected site muster points.

Safety Data Sheet (MSDS)

A document required for all hazardous chemicals that explains the characteristics of a chemical, the hazards that it possess and how to contain those hazards and emergency responses. The document also explains the use and storage of said chemical.

Shelter-in-place

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A shelter designated by the Facility Emergency Coordinator or Incident Commander to provide protection from hazardous elements and or weather conditions. The shelter will be selected based on emergency conditions and the need for protection (i.e. flood, fire, chemical spill, etc.). Practices may include closing windows and doors, and moving occupants away from perimeter windows and doors to a safer interior location and or relocating.

Landing Area

Location designated and reserved for air support and rescue/medi-evac.

3.0 Purpose and Scope of Application

This section applies to all personnel performing work on the Abeinsa EPC construction sites or inside any subsidiary facilities.

The history for response times from the medical team to this site is approximately 20 to 30 minutes. However, on-site medical services are provided. Note, construction or commissioning phases will require additional resources. Rescue services for hi-angle rescue, confined space and excavations may require external resources.

The response of all site personnel to an emergency situation should be serious and immediate. An individual should not endanger themselves or co-workers by indecision, delay, or an attempt to save property or equipment. Individuals should be familiar with emergency procedures applicable to their normal working areas so that proper and prompt action can be taken in each emergency situation. If visiting another site area, follow the emergency procedures for that area by following the example of local personnel and asking for guidance.

4.0 Applicable Documentation

- ☐ ISO 9001:2008, Quality Management Systems-requirements
- ☐ ISO 14001: 2004, Environmental Management System-requirements
- ☐ OHSAS 18001:2007, Occupational Health and Safety and Assessment System
- ☐ POG-SCMA-72-02 Annex 5A, Health, Safety and Environmental
- ☐ Cal/OSHA Title 8 California Code of Regulations (T8CCR)
- ☐ OSHA 29 CFR 1926 – Standard for Construction Industry

5.0 Emergency Phone Numbers

For many emergencies, the first appropriate action to be taken is to summon competent assistance.

5.1 Agency Phone Numbers

Emergency (police, fire, and ambulance), call 911
Hospital (760) 256-1761
Police (non-emergency) (760) 256-4838
Fire Department (non-emergency) (760) 253-7704
Poison Control Center: 800-222-1222

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Hazardous Waste, Chemical Spills Fire department: (760) 253-7704. If no answer call 911. If a chemical spill reaches or may reach navigable waterways, call (760) 241-6583 Lahontan Regional Water Quality Control Board.

5.2 Site Emergency Contacts

Reference the current Emergency Phone List posted in the control rooms and SHE Boards.

Once help has arrived, assist them according to your knowledge and training or as directed.

Attention:

In the event of any emergency requiring the notification of emergency response agencies, Site management or on-call supervision shall be notified only after the emergency service has been notified and is on the way.

6.0 Responsibilities

The duties and responsibilities of specific individuals or groups are further outlined below.

6.1 All Abeinsa EPC Personnel

- ☐ Read, understand, and comply with the requirements set forth in this plan.
- ☐ Report emergencies as specified in their specific section within this plan.
- ☐ Participate in and complete all required training.
- ☐ Participate in all emergency response drills.

6.2 Abeinsa EPC H&S Department

ABEINSA EPC H&S Site Orientation will include an explanation of the site emergency response and preparedness plan and procedures. The main site emergency contacts are posted in the OS&H offices and on the SHE Boards.

The H&S Manager, Larry Davis, or designee, shall furnish information regarding site-related emergency and evacuation measures. The following items are the responsibility of the H&S Department:

1. Develop and maintain all elements of the ERPP.
2. Develop and coordinate all training required by the ERPP.
3. Ensure the ERPP meets or exceeds all regulatory requirements.
4. Ensure the ERPP remains current.
5. Develop and coordinate emergency response drills.

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6. Act as the liaison, along with ABEINSA EPC Project Management, with Community Emergency Response Organizations (i.e. Fire Dept., Police Dept., etc.).
7. Serve as the Facility Emergency Coordinator, Emergency Response Coordinator or Incident Commander(s) in emergency situations.
8. Provide an overview of the information contained in this plan to all project personnel via site orientation.

6.3 Emergency Response Coordinators

Initially the Emergency Response Coordinator (ERC) for **Alpha** is Stephen Dean (or designee). He will set up the incident command post and place responsibilities within the team. The ERC works in conjunction with the FEC to ensure the lightning and severe weather watch is in place at all times. Additionally, the ERC is designated to listen to weather reports and will notify the FEC and all on site personnel when an oncoming storm is approaching. The ERC is responsible for coordination of response activities, including contacting outside agencies, notification of management, and containment of hazard (if safely possible) and initiation of personnel evacuation. The construction director will assume this role upon arrival and receive a proper briefing prior to the arrival of emergency services. The ERC may report to an outside Emergency Agency's Response Coordinator if an agency takes over (i.e. the Fire Department).

Initially the Emergency Response Coordinator (ERC) for **Beta** is Bruce Asaro (or designee). He will set up the incident command post and place responsibilities within the team. The ERC works in conjunction with the FEC to ensure the lightning and severe weather watch is in place at all times. Additionally, the ERC is designated to listen to weather reports and will notify the FEC and all on site personnel when an oncoming storm is approaching. The ERC is responsible for coordination of response activities, including contacting outside agencies, notification of management, and containment of hazard (if safely possible) and initiation of personnel evacuation. The construction sub-director will assume this role upon arrival and receive a proper briefing prior to the arrival of emergency services. The ERC may report to an outside Emergency Agency's Response Coordinator if an agency takes over (i.e. the Fire Department).

6.4 Managers and Supervisors

All Managers and Supervisors are required to assist personnel in the event of an emergency as well as perform various other duties with regard to this Emergency Response and Preparedness Program. Managers and Supervisors will complete pre-assigned emergency response duties and lead all immediate search efforts and report emergency issues to the H&S Manager and Incident Commander

6.5 Subcontractors

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Each subcontractor shall obtain a copy of the ABEINSA EPC Mojave environmental, health and safety requirements applicable to their work.

The subcontractor will be responsible for ensuring each employee receives and comprehends the information in this plan prior to beginning work on site. The subcontractor shall keep records indicating who has been given the information.

In the event there is a change of personnel in the subcontractor's work force, the subcontractor is responsible for providing any new employees with this information and maintaining all necessary records.

7.0 Procedures

7.1 Evacuations

When an evacuation is deemed necessary, there shall be no hesitation in requiring personnel to immediately vacate the area affected. Emergency exits and other means of egress from all areas have been identified and posted. An emergency phone list is provided in the OS&H offices and on SHE Boards.

Assembly areas and Muster Points are pre-determined and shown on posted maps. Once out of the affected area, workers will not be allowed to return until the emergency (or Evacuation Drill) is formally declared over by the Emergency Response Coordinator.

Localized area evacuations will be identified by the location affected.

The following Local Area Evacuation Identification(s) will be communicated when only a limited area or multiple areas are required to evacuate:

:

Alpha Offices, Alpha Power Block (APB), Alpha West, Alpha East, Alpha Mojavito, TAB, Beta West, Beta Offices, Beta Power Block (BPB), Beta East (West of BPB), Beta East (East of BPB).

If an Evacuation is required, per an announcement by the Construction Director, H&S Manager or Emergency Response Coordinator:

1. The Emergency Response Coordinator will sound the evacuation alarm with verbal, phones, electronic devices, radio alerts and /or (5) three second blast from air horns, to notify all affected personnel to evacuate to the appropriate Assembly Area. For the annual evacuation drill, an announcement: "This is an Evacuation Drill" will precede each blast and all other communications.
2. Managers and Supervisors will instruct all employees in the area affected to move to the nearest Assembly Area in an orderly manner. Appointed evacuation team leaders will ensure shut down of HVAC/air handling systems, external generators, etc. and that windows and doors are closed.

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Everyone in the affected area is to evacuate. Report to the Emergency Response Coordinator or Incident Commander that: "All affected multiplex office trailers, bathrooms, outhouses and lunch rooms are clear of personnel."

3. Security will curtail non-emergency vehicle traffic into the affected area and account for all delivery vehicles leaving. An unobstructed entry into the site will be maintained by Security for emergency vehicle access. Security will meet emergency responders at the intersection of Harper Lake and Lockhart and provide an escort to the affected area.
4. Managers and Supervisors will inform and account for their assigned Sub Contractors and their employees to ensure that all have left the work areas affected and proceeded to the assigned assembly area. Each subcontractor must assign a point person who will be responsible for acting as their warden.
5. Each Assembly Area Emergency Response Coordinator and/or Incident Commander shall account for all personnel. If a person is missing from the roster, it will be up to the Emergency Response Coordinator and/or Incident Commander to decide next steps.
6. In the absence of designated ERC or IC; managers and remaining supervisors or emergency response team leaders will fill in for any missing ERT personnel and cover the evacuation duties accordingly.
7. If needed H&S and emergency response search teams will provide area "sweeps" in order to assist in accounting for all personnel. Areas will only be searched if it is determined to be safe. If the decision is made to initiate a search, emergency response search teams will be assigned to "sweep" designated areas in all affected site locations where Abeinsa EPC employees and subcontractors are presently known to be working, (office trailers, conference rooms, restrooms, electrical/electronic rooms and lunch rooms, etc.). Each search team will be assigned a leader, who will record and supply the names of all team members and search area to the Emergency Response Coordinator and/or IC. The search team leader is responsible for assuring that his/her team members complete their "sweep" safely and do not stray from their specific assigned search area and report directly back to the ERC/IC muster point.
8. The Activity Managers shall report any issues encountered to the Emergency Response Coordinator or Incident Commander. Possible issues include:
 - ☐ Any person who did not evacuate to the Assembly Area;
 - ☐ Any person who became injured and was unable to evacuate; and
 - ☐ Any disabled person who was unable to evacuate.
 - ☐ Location and type of problem and/or damage.

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9. Managers, supervisors and ERT members shall remain at the Muster Point to assist in completing a head count for the Emergency Response Coordinator or Incident Commander. Security will use current sign-in sheets and the card scanning system for ABEINSA EPC Mojave employees and Subcontractors to account for all employees to ensure that they have left their work areas and evacuated to the assigned assembly area.

10. Everyone is to remain at the Assembly Area until notice is given by the Site Emergency Coordinator or his designee as to the disposition of the evacuation, and whether to return to the building/work site or not.

The all clear process will include communication via verbal, phone, electronic devices, radio and/or three (3) - 3 second blasts from an air horn.

Note - If a person refuses to evacuate in an emergency, Abeinsa EPC personnel should not argue with the person, but merely inform him that you will be reporting his failure to comply to the Incident Commander and to his/her Supervisor.

7.2 Personal Injury or Illness

Report - all injuries to the Health and Safety Supervisor or the Health and Safety Technician immediately upon discovery.

Evaluate - the area surrounding the injured employee for unsafe conditions. Quickly assess the extent of the injury and inform the IC and site EMT if any assistance is required.

Site EMT – (813) 618-0790

If the injury or illness is deemed serious, call 911 for assistance. Be sure to give them your:

- ☐ Name
- ☐ Exact Location: **Mojave Solar Project: 42134 Harper Lake Road, Hinkley CA 92347**
- ☐ Nature of the Emergency (include as much detail about the ill person as known)
- ☐ Remain on the line until 911 has all the necessary information.
- ☐ Assist Security in maintaining a clear pathway for Project EMT Medic and outside Emergency Medical Service personnel.
- ☐ Air rescue landing coordinates are:
 - o Lat 35d 00'41.12771 N
 - o Long 117d 18'23.24321 W

If the injury is minor and offsite medical attention is warranted, transport the employee to designated hospital. In the event of electrical shock, ensure the

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circuit is de-energized before touching victim. Administer emergency first aid only if safe to do so, using the below guidelines:

- ☐ If the victim is conscious, ensure you have permission to help.
- ☐ If victim has stopped breathing, perform CPR and use the AED if necessary.
- ☐ Stop bleeding by applying pressure directly to wound.
- ☐ Single use, disposable gloves such as surgical or examination gloves shall be used for procedures involving contact with patient's bodily fluids.
- ☐ Do not attempt to move victim unless there is an imminent danger.
- ☐ Keep victim warm to help reduce the potential of shock until ambulance arrives.
- ☐ Send any available individual to meet ambulance at the front gate and direct them to accident scene.

7.3 Fires

Ensure personnel have been trained and drilled in the proper procedure to follow in a fire emergency; to react swiftly and safely to minimize the dangers to themselves and their fellow employees. Initiate the following steps:

Report - Fires discovered on site shall be immediately reported to the Emergency Response Coordinator.

Evaluate - If the fire is small enough so as not to endanger personnel, determine the appropriate fire extinguisher and attempt to extinguish the fire.

If the fire is beyond the person's capability to safely extinguish, the Emergency Response Coordinator shall be notified:

Initiate - The Emergency Response Coordinator will then, sound the alarm with electronic device radio alerts and/or (5) three second blast with air horns, to notify all personnel of the problem. Alert the Fire Department via (760) 253-7704. If there is no answer then use 911.

The Emergency Response Coordinator will direct Security to meet emergency responders at the intersection of Harper Lake and Lockhart and provide an escort to the affected area. An available ERT member will also be directed to meet the Fire Department and Security at the gate to direct and escort them to the fire scene and the water tanks. The entrance gates shall be kept unobstructed to allow emergency vehicle access. If the condition warrants, the Facility Emergency Coordinator and/or IC shall evacuate all unnecessary personnel from the affected area and if necessary, initiate an evacuation.

7.4 Severe Weather

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Warnings of electrical storms, high winds, flooding, and freezing that have the potential to impact the safety of a community are typically distributed by the local government emergency organization via radio and television stations. In the event any employee becomes aware of a severe weather warning, the Facility Emergency Coordinator and Health and Safety Supervisor must be notified. The ERC works in conjunction with the FEC to ensure the lightning and severe weather watch is in place at all times. Additionally, the ERC is designated to listen to weather reports and will notify the FEC and all on site personnel when an oncoming storm is approaching.

Report - Announce to on site personnel the severe weather condition, and determine if the office trailers provide shelter or if Evacuation of site personnel is necessary or if it is safe for everyone to be sent home for the remainder of the shift. The Facility Emergency Coordinator will also determine what other precautions will be taken to ensure the safety of personnel and reduce property loss.

Evaluate - During the severe weather occurrence, all on site personnel shall assess the safety of their work location immediately. The following examples of this assessment:

- High winds – have the potential to dislodge and lift heavy objects and reduce visibility.
- Flooding – areas inundated with flowing water should not be crossed.
- Lightning – stay clear of power lines, metal fences, and other conductive structures. During Lightning activity close to the Site, all crane and high lift activity shall be stopped.
- Freezing – outside floor areas, ladders, and walkways may be slippery from ice.

Initiate – It may become necessary to seek shelter, evacuate the site, administer first aid, call in emergency assistance, initiate a Site shutdown and send everyone home or modify Site operations. The Facility Emergency Coordinator and/or IC will announce changes to site work activities as conditions warrant. Do not restart equipment that tripped offline until the specific cause of the trip is known and addressed.

Worker Training – Attached power point presentation on lightning safety is given as part of overall safety training for new workers at the daily safety training sessions.

As part of the lightning safety training, all site workers need to be Aware that they **Must** adhere to the following during a severe weather occurrence:

- Are prohibited on or near scaffolds during storms or high winds unless a competent person (ERC or FRC) has determined that it is safe for employees to be on the scaffold and those employees are protected by personal fall arrest system. Wind screens shall not be used unless the scaffold is secured

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against the anticipated wind forces imposed. (OSHA regulation CFR 1926.451(F)(12).

- Stay off or away from anything tall or high, including rooftops, scaffolding, ladders, utility poles, trees and large equipment such as bulldozers, cranes, backhoes, track loaders and tractors.
- Not touch materials or surfaces that can conduct electricity, including metal scaffolding, metal equipment, utility lines, water, water pipes and plumbing.
- Stay off cell phones, laptop computers, and other electrical equipment that puts them in direct contact with electricity.

8.0 Public Relations

A central spokesperson shall ensure that only informed and consistent information is made public regarding the activities. Additional details should follow to be clear on this communication.

8.1 Media Inquiry Procedure

All inquiries or requests for interviews from the news media (broadcast or print) shall be referred directly to the ABEINSA EPC Mojave Site Construction Director and immediately communicated to ASI's Site Manager – Nicholas Potrovitza. ABEINSA EPC Mojave or subcontractor personnel receiving calls from reporters, regardless of the nature of their inquiry, should respond with the following statement:

"I appreciate your interest and would like to get you the information you need. All public information is handled from our home office. Please leave me your telephone number and I can have someone get back with you as soon as possible."

ABEINSA EPC Mojave or subcontractor personnel receiving media inquiries shall notify the ABEINSA EPC Mojave Site Construction Director immediately. ABEINSA EPC Mojave or subcontractor personnel should not provide a "no comment" statement, nor should they ask the reporter if they can make an "off the record" statement. "No comment" is normally interpreted as an admission of guilt, and all statements ABEINSA EPC Mojave personnel make to the media are considered authorized information.

9.0 Communication of Emergencies

1. A combination of radio devices, and/or air horns will be used to alert personnel on the project of an emergency situation until the Fire Protection and alarm system is in place. At that moment this plan will be updated in order to include the new situation.

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2. Once notified, the emergency team will perform a call down to the Activity Manager's and respective subcontractor groups.
3. ERT members will proceed to designated locations to disseminate appropriate communication up to and including initial and final area "sweeps" to ensure all personnel have been notified to the emergency.
4. ERC, IC and ERT members will collaborate and provide clear direction including the **"all clear"** by verbal, phone, radio, and/or with 3 - 3 second blasts of the air horn.
5. Use of air horns for bird control or non-emergency isolated communication will be short 1 second blast, preceded by verbal notification in the area of use and prior notice through phone, electronic device and/or radio to the S&H department and all other affected departments.

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Lightning Safety

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**When  Thunder
Roars,
Go Indoors!**

STOP all activities.

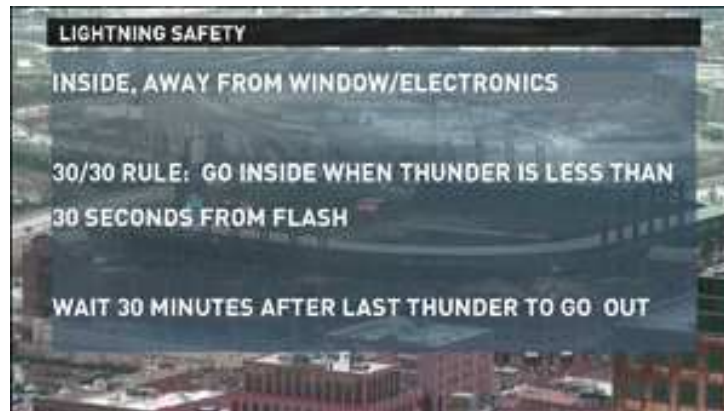
**Seek shelter in a substantial building
or hard-topped vehicle.**

**Wait 30 minutes after storm to
resume activities.**



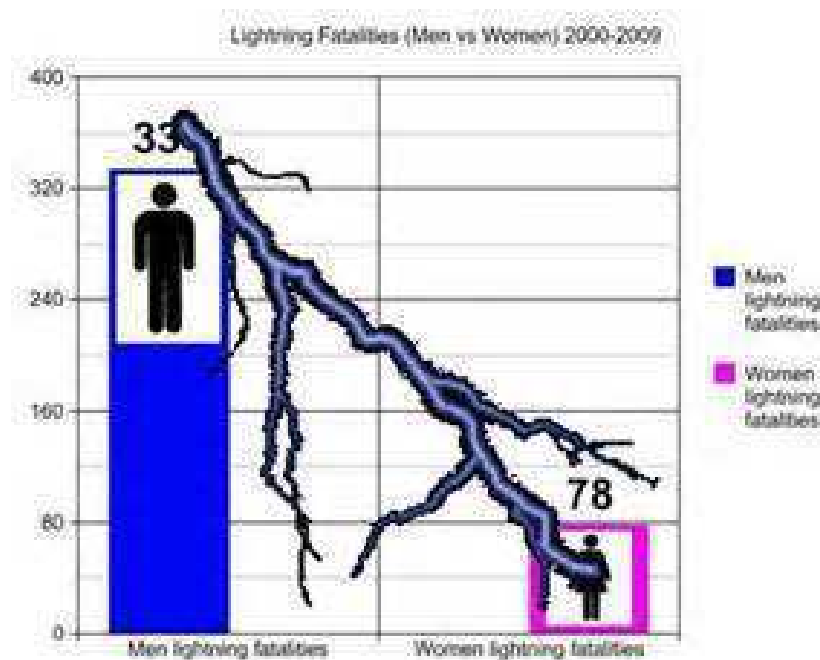
www.lightningsafety.noaa.gov





- ⚡ THE TEMPERATURE OF LIGHTNING RANGES FROM 15,000° TO 60,000° (SURFACE OF SUN: 9,000°)
- ⚡ LIGHTNING MOVES AROUND 62,000 MPH (1/3 THE SPEED OF LIGHT) & IS UP TO 1" WIDE
- ⚡ SOUND OF THUNDER TRAVELS 1 MILE/5 SECONDS
- ⚡ RANKS THIRD FOR WEATHER-RELATED DEATHS
LIFETIME ODDS OF BEING STRUCK: 1 IN 6,250

Potential Effects of Exposure



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[Lightning Mitigation Plan]

Title: Lightning Mitigation Plan
Process: Emergency Egress Routes and Muster Points
Sub process: Establish an OH&S Emergency Management Process

Document:	6007-PEM-ATM-79-00-0002 Appendix 02
Revision:	01
Date:	11/13/2014

Prepared by:	
Bruce Asaro – Health and Safety	Electronic Signature
Manjunath Shivalingappa– Environmental Engineer	Electronic Signature

Concurred by:	
Larry Davis– Health and Safety Manager	Electronic Signature
Steve Pochmara – Permitting Manager	Electronic Signature
Efrain Perez – Quality Manager	Electronic Signature

Approved by:	
Nicolás Gallo Massa – Project Sub-Director	Electronic Signature
Pablo Enrique Schenone Laborde – Project Director	Electronic Signature

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If for any exceptional reasons due to specificities of project (e.g.: confidential project information, legal or regulatory requirements of local level and/or contractual requirements of the client), there was the need to modify these requirements, the changes must be documented in the quality, environment and prevention of occupational risks of the project plan, prior authorization by the Department of Central Services Management Systems

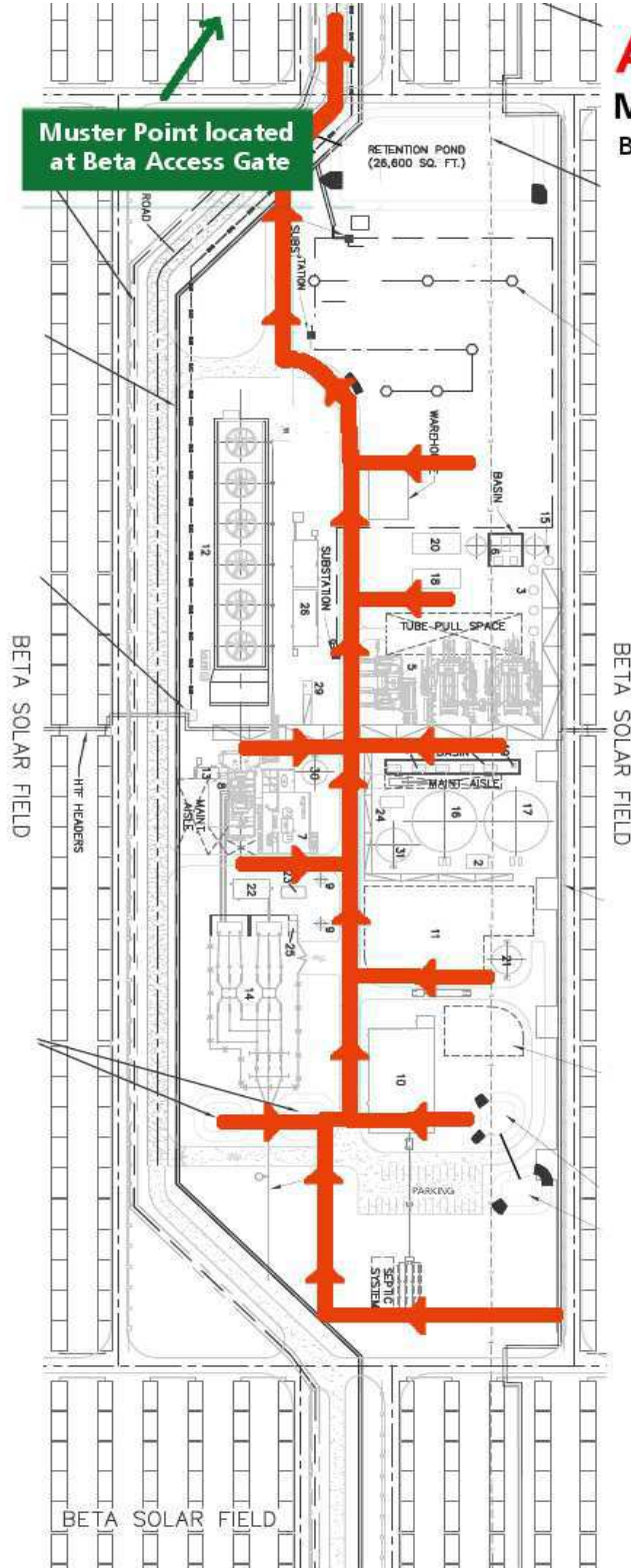
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Revisions Control Sheet

Rev.	Date	Cause for Revision	Prepared By	Concurred By	Approved By
01	11/13/14	Revision 1	BA-MS	LD-SP-EP	NGM-PESL

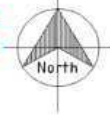
Changes from the original content to the next revision will be identified by underlines for quick identification of changes.

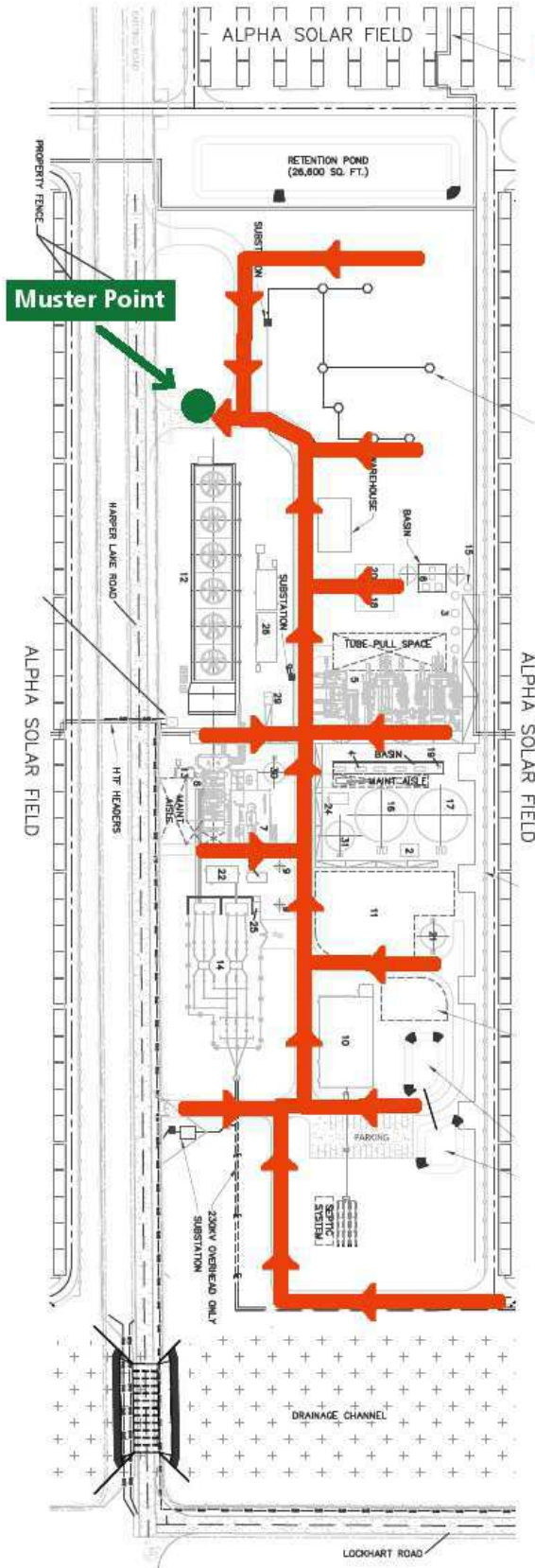


ABEINSA EPC

Mojave Solar Plant

Beta Power Block

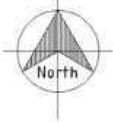




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Mojave Solar Plant

Alpha Power Block




"Rundquist, Dale@Energy"

11/14/2014 12:20 PM

Send To	"Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>
cc	"kathleen.sullivan@solar.abengoa.com" <kathleen.sullivan@solar.abengoa.com>, "charles.walker@us.bureauveritas.com" <charles.walker@us.bureauveritas.com>, "shamica.zenn@us.bureauveritas.com" <shamica.zenn@us.bureauveritas.com>, "Dr. Alvin Greenberg"
bcc	
Subject	RE: Status of WKSF-01-03-01 Lightning Mitigation and WKSF-01-04-01 Lighting plan

Send to: "Steven.Pochmara@abeinsaepc.abengoa.com" <Steven.Pochmara@abeinsaepc.abengoa.com>
"kathleen.sullivan@solar.abengoa.com" <kathleen.sullivan@solar.abengoa.com>,
cc: "charles.walker@us.bureauveritas.com" <charles.walker@us.bureauveritas.com>,
"shamica.zenn@us.bureauveritas.com" <shamica.zenn@us.bureauveritas.com>, "Dr. Alvin Greenberg"
Subject: RE: Status of WKSF-01-03-01 Lightning Mitigation and WKSF-01-04-01 Lighting plan

History:  This memo has been forwarded

Hi Steven,

Both submittals (WORKER SAFETY 01-03-01 (Lightning Mitigation Plan) and WORKER SAFETY 01-04-01 (Lighting Mitigation Plan) have been reviewed and approved by staff.

Thank you,

Dale R.

From: Steven.Pochmara@abeinsaepc.abengoa.com [mailto:Steven.Pochmara@abeinsaepc.abengoa.com]

Sent: Friday, November 14, 2014 11:30 AM

To: Dale Rundquist; Rundquist, Dale@Energy

Cc: kathleen.sullivan@solar.abengoa.com

Subject: Re: Status of WKSF-01-03-01 Lightning Mitigation and WKSF-01-04-01 Lighting plan

▼ Steven Pochmara---14/11/2014 20:17 CET---Hi Dale, Please let me know the status of these submittals, thanks.

From: Steven Pochmara
To: "Dale Rundquist" <drunqui@energy.ca.gov>
Cc: Kathleen Sullivan
Date: 14/11/2014 20:17 CET
Subject: Status of WKSF-01-03-01 Lightning
Mitigation and WKSF-01-04-01
Lighting plan

Hi Dale,

Please let me know the status of these submittals, thanks.

Steve

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ABENER TEYMA MOJAVE

Letter of Transmittal

Date: November 7, 2014
Subject: Mojave Solar Project (09-AFC-5C)
Condition Number: **Worker Safety-1**
Description: **Lighting Mitigation Plan for TCO**
Submittal No.: WKSF-01-04-00
To: Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
DRundquist@energy.state.ca.us

WE ARE SENDING YOU

☒ Attached

Document	Title	REV
Cover Letter	Lighting Mitigation Plan For TCO Cover Letter	NA
Lighting Plan for Alpha	Lighting mitigation plan for TCO – Alpha Site	14
Lighting Plan for Beta	Lighting mitigation plan for TCO – Beta Site	14

THESE ARE TRANSMITTED as checked below:

☒ For Approval

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

ABENER TEYMA MOJAVE

Cover Letter

Date:	November 7, 2014
Subject:	Mojave Solar Project (09-AFC-5C)
Condition Number:	Worker Safety-1
Description:	Lighting Mitigation Plan for TCO
Submittal No.:	WKSF-01-04-00

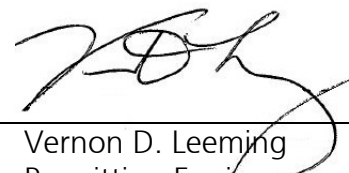
Mr. Dale Rundquist, CPM
California Energy Commission
1516 Ninth Street (MS-2000)
Sacramento, CA 95814
DRundquist@energy.state.ca.us

Dear Mr. Rundquist,

Attached please find the **Lighting Mitigation Plan** being submitted as part of our request to grant the Temporary Certificate of Occupancy for the Mojave Solar Project. We have prepared a lighting Site Plan for each plant depicting the areas where permanent lighting is in place, as well as the areas where temporary lighting is being proposed to provide the required levels for life and safety, while the permanent installations are finalized in accordance to the action plans submitted to Bureau Veritas

Should you have any questions or comments, please don't hesitate to contact me.

COPY TO: File SIGNED BY:



Vernon D. Leeming
Permitting Engineer
ABEINSA EPC

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