

DOCKETED

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| Docket Number: | 85-AFC-03C |
| Project Title: | Compliance - Application for Certification for Midway-Sunset Cogeneration Project |
| TN #: | 201921 |
| Document Title: | Additional information pertaining to MSCC DLN1+ Amendment |
| Description: | N/A |
| Filer: | Mary Dyas |
| Organization: | California Energy Commission |
| Submitter Role: | Commission Staff |
| Submission Date: | 3/26/2014 7:43:02 AM |
| Docketed Date: | 3/13/2014 |

Dyas, Mary@Energy

From: Ray Smith [RSmith@midwaysunset.com]
Sent: Wednesday, March 12, 2014 3:29 PM
To: Hughes, Joseph@Energy
Cc: Dyas, Mary@Energy; Dave Faiella; Greg Jans; Sandra Henriksen
Subject: RE: Questions for Midway Sunset AQ Petition to Amend
Attachments: DOC575.pdf; DOC576.pdf

Joseph,

Following up on your phone call concerning the original intent of the bypass stacks and their contribution to the operation of MSCC, I have attached a copy of conditions from the "Engineering" section of the CEC's certification for MSCC and a copy of a corresponding condition from one of the original District Permits to Operate. It seems clear to me that the original intent was for MSCC to operate only as a cogeneration facility. The bypass stacks were to be utilized for contingencies (damaged steam line, lack of water to convert to steam, HRSG problems, etc.) allowing MSCC to continue supplying power to the grid while the HRSG was bypassed. It also seems clear to me that for MSCC to operate one or two of the units as peaker units MSCC must seek CEC (and District) concurrence through the addendum process. We have received the District's concurrence by means of their approved Authorities to Construct. If I can offer any additional help, please let me know.

Ray

From: Ray Smith
Sent: Monday, January 13, 2014 1:11 PM
To: 'Joseph.Hughes@energy.ca.gov'
Cc: Mary Dyas (mdyas@energy.ca.gov); Dave Faiella; Greg Jans; Sandra Henriksen
Subject: FW: Questions for Midway Sunset AQ Petition to Amend

Joseph,

I hope the following responses will satisfy the CEC's questions concerning MSCC's proposed amendment to replace Units A&B existing combustion systems with DLN1+TE combustion systems.

1. The original design of the combustion turbine units (CTGs) included bypass stacks for the heat recovery steam generators (HRSGs). The HRSGs require flowing water in order to operate without damaging the heat recovery tubes. When the facility was first permitted, the bypass stacks allowed the CTGs to continue to operate, supplying power to the grid, on the rare instances that produced water from the oil field was not available for the HRSGs. Eventually, the permitted NOx limits were reduced to the point that SCR was required. When SCR grids were installed inside the evaporator sections of the HRSGs, the bypass stacks could no longer be utilized without exceeding the permitted NOx limit. The change out to the DLN1+TE combustion systems will allow Units A&B to utilize the bypass stacks once again.
2. In order to take full advantage of the DLN1+TE combustion systems, MSCC is installing a continuous emissions monitor (CEM) grid with testing and sampling ports upstream of the bypass stack. The grid will cover a wider area of the stack and will mitigate any stratification that might occur. The existing SCR cogeneration stack sample system will remain in place and be annually certified in preparation of the unlikely event that ammonia injection is required during a cogeneration operation.
3. The DLN1+TE is, currently, leading edge technology. If it works as presented, MSCC's permitted NOx limits will be obtained without the use of the SCR system. If there are any problems, MSCC wishes to preserve the option of activating the SCR system.
4. If the DLN1+TE combustion system performs as designed, MSCC would have no reason to inject ammonia, and a financial incentive to not inject ammonia. Ammonia injection will be avoided to the extent feasible.

5. The SCR grid is basically inert unless ammonia is injected. The CTG exhaust passing through the SCR grid upstream of the main exhaust stack (HRSG) will have no effect on the SCR.
6. Other than eliminating ammonia slip, the change out to DLN1+TE combustion systems will have no effect on any CTG emissions. As peaking units, Units A&B will operate less than base loaded cogeneration units and subsequent emissions will be correspondingly less.

Thanks again, Joseph, for your efforts on MSCC's petition. If the CEC has any other questions or concerns, please contact me.

From: Hughes, Joseph@Energy [<mailto:Joseph.Hughes@energy.ca.gov>]
Sent: Monday, January 06, 2014 2:29 PM
To: Ray Smith
Cc: Dyas, Mary@Energy
Subject: Questions for Midway Sunset AQ Petition to Amend

Mr. Smith,

Per our recent conversation, can you please provide confirmation or clarifications on the following questions pertaining to the Midway Sunset air quality Petition to Amend to Replace Units A&B combustion systems with DLN1+TE combustion systems?

1. Please confirm that in addition to the three GE frame 7E combustion turbine generators (CTGs) and three heat recovery steam generators (HRSGs), Midway Sunset also consist of three existing bypass valves and stacks that were utilized for operation in simple cycle mode when cogeneration operation was not needed.
2. Please confirm that in order to utilize the bypass stacks, one sampling port and one test port would need to be installed on each of the bypass stacks to remain in compliance with all LORS.
3. Please explain how and when the use of the Selective Catalytic Reduction (SCR) system would be used if the DLN1+TE system is capable of achieving 5ppm NOx emission limit?
4. Would ammonia injection be avoided to the extent feasible?
5. Can the HRSGs, or more specifically, the SCR be operated without injecting ammonia?
6. Please describe how this petition to amend (operation as simple cycle or cogeneration) would affect GHG emissions. Would there be an expected increase in facility operations?

Joseph Hughes
Air Resources Engineer
California Energy Commission
916.651.0970
Joseph.Hughes@energy.ca.gov

CEC CERTIFICATION

operating life of the Project. If at any time there is a significant drop in the annual efficiency levels anticipated for the plant by the Staff, as shown at Table 1, Staff is encouraged to petition the Commission for an Order Instituting Investigation. The purpose of such investigation shall be to determine the cause of the significant efficiency drop and to take such actions as may then be appropriate.

FINDINGS

Based upon the evidence of record, the Commission finds:

1. The Midway-Sunset Cogeneration Project complies with the applicable Federal and State definitions of "cogeneration".
2. The Midway-Sunset Project is thermally matched, producing no excess electricity beyond that required to meet its process steam demand.
3. The Midway-Sunset Project is likely, even by a conservative estimate, to meet the Commission's stated preference for those cogeneration projects which are significantly more efficient than the minimum level necessary to qualify as a cogeneration facility under Federal and State law.

CONDITIONS OF CERTIFICATION

1. ~~Over the lifetime of the project, Sun Cogeneration Company and Southern Sierra Energy Company (SCE/SSEC) shall operate the facility as a cogeneration system as proposed in the Application for Certification (AFC) and certified by this Commission (i.e., operate in accordance with the definition of cogeneration contained in PRC Sections 25134(a) and (b); 18 CFR 292.205(a)(1) and (a)(2)(i)(B); 10 CFR 500.2.~~

~~Verification: SCC/SSEC shall file with the California Energy Commission (CEC), during each calendar year, an annual report in which monthly average values of the following plant operating parameters will be given:~~

- ~~A. Monthly fuel use (includes quantity and Btu value) as evidenced by an invoice from the gas supplier.~~
- ~~B. Monthly electrical sales (includes kWh) as evidenced by an invoice to the Southern California Edison Company.~~

*Condition
Amended
1-29-90
See copy*
*Condition
Amended
6-6-90,
See copy
at end of
chapter*

C. Monthly steam sales (includes quantity and Btu value) as evidenced by an invoice to Sun Exploration and Production Company.

If the rate of Items A, B, or C above differs by more than +5, +15, +10 percent, respectively, from rated conditions, SCC/SSEC will provide to the CEC staff an explanation of such anomaly.

D. Monthly rate (lbs/month and heat content in Btu/lb) of feedwater to the 3 HRSGs.

SCC/SSEC shall annually provide CEC staff information describing any partial or total power and/or process steam production curtailment, duration of curtailment, reasons for the curtailment, and actions taken or proposed to correct the conditions. The information shall be certified by the plant manager.

2. No change in the plant baseline design, physical configuration or mode of operation, for example, simple cycle versus cogeneration cycle operation, shall be made without CEC concurrence, if those changes could result in operating characteristics which could not or would not comply with the operational requirements identified in Condition 1.

Verification: SCC/SSEC shall petition the CEC for approval of any changes to design or operating characteristics as discussed above. Any petition shall be filed in accordance with procedures identified in Appendix C, Compliance Plan General Provisions, Amendments to the Decision.



KERN COUNTY AIR POLLUTION CONTROL DISTRICT

PERMIT TO OPERATE

Number: 4014801(B)

2700 "M" STREET, SUITE 275
BAKERSFIELD, CA. 93301
TELEPHONE: (805) 861-3682

PERMIT TO OPERATE IS HEREBY GRANTED TO:

ORYX ENERGY COMPANY dba
MIDWAY SUNSET COGENERATION COMPANY

OR EQUIPMENT LOCATED AT:

Sec. 17, T31S, R22E

EQUIPMENT OR PROCESS DESCRIPTION:

Cogeneration Facility

OPERATIONAL CONDITIONS LISTED.

THIS PERMIT BECOMES VOID UPON ANY CHANGE OF OWNERSHIP OR LOCATION, OR ANY ALTERATION.

NOTE: The permittee may be required to provide adequate sampling and testing facilities. Equipment modification requires a new permit.

WILLIAM J. RODDY
AIR POLLUTION CONTROL OFFICER

REVOCABLE: This permit does not authorize the emission of air contaminants in excess of those allowed by the Rules and Regulations of the K.C.A.P.C.D.

By: 

For Period: 2-28-90 TO 2-28-91

ADDITIONAL APPROVAL:

Compliance with all conditions of approval imposed by any applicable Authority to construct is required for life of this equipment unless modified by application. Equipment authorized by this Permit to Operate shall comply in full with applicable Rule 10.1.

EQUIPMENT DESCRIPTION: Midway-Sunset 225 MW Cogeneration Facility, including the following equipment:

- Three natural gas or light oil-fired General Electric, Model G7111E, combustion turbine generators (CTG's) (Air Pollution Control District (APCD #'s 4014800, 4014801 and 4014802),
- Three unfired heat recovery steam generators (HRSG's), one for each gas turbine engine assembly, with a total rated steam output of 1.2×10^6 lbm/hr 80% quality steam production,
- Three CTG combustor water injection systems for NOx control, one for each CTG,
- Two 420 gpm demineralizer systems to provide water to NOx control, one for each CTG,
- Continuous emission monitoring systems for SOx, NOx and CO designed to sample each CTG flue gas stream,
- Two 6,000 bbl capacity, 40 ft. dia. floating roof fuel oil "day" tanks with liquid-mounted, foam filled primary seals and rim-mounted secondary seals, and two 370 gpm transfer pumps (APCD #'s 4014803 and 4014804),
- One 200,000 bbl capacity, 180 ft. dia. floating-roof fuel oil storage tank with liquid-mounted, foam filled primary seals and rim-mounted secondary seals, and two 370 gpm transfer pumps (APCD #'s 4014805),
- Truck fuel oil unloading facility with three (two normal, one standby) 350 gpm unloading pumps (APCD #4014803),
- One 1,500 kw, 1,200 hp, diesel-fired piston engine for cold-startup of cogeneration plant (APCD #4014806),

ORYX COMPANY DBA MIDWAY SUNSET COGEN
#4014801(B)

Potential sources of fugitive emissions in all railcar and truck fuel oil unloading and all fuel oil transfer facilities shall be inspected and maintained on regular schedule, approved by the APCO to prevent hydrocarbon emissions. (Rule 210.1)

All new or existing wells producing from zones newly steamed or new wells producing from a currently steamed zone shall be served by APCO approved well head casing vent vapor recovery system. (Rule 210.1)

Steam produced by this facility shall only be utilized by Oryx Energy Company (OEC) unless prior APCO approval is granted otherwise. (Rule 210.1)

Facility shall operate as a cogeneration facility pursuant to Public Resources Code Section 25134 for thermally enhanced oil recovery operations unless prior District and California Energy Commission (CEC) approval is granted to operate otherwise. (Rule 210.1)

MSCC may increase emissions from approved emission limits upon approval of additional offsets in an amount sufficient to offset the increased levels provided, that in no case shall the facility be operated at any emission rate which would exceed any limits contained in District regulations. Future revisions resulting in emission decreases will be approvable pursuant to the requirements of Rule 210.1. (Rule 210.1)

Lube oil cooler/accumulator vent(s) shall not have detectable emissions. (Rules 209 and 210.1)

Facility shall utilize only natural gas as fuel until such time that compliance is demonstrated utilizing fuel oil.

EMISSION SAMPLING LIMITS:

Gas-Firing Case: (each turbine)

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|----------------------------|--------|-----------------------------|----------------------------------------------|
| <u>Particulates:</u> | 10.00 | lbm/hr | (Rules 210.1 and 408) |
| <u>Sulfur Compounds:</u> | 0.62 | lbm/hr | (of SO ₂) (Rule 210.1) |
| | 0.45 | lbm/hr | (of SO ₄) (Rule 210.1) |
| <u>Oxides of Nitrogen:</u> | 85.00 | lbm/hr | (as NO ₂) (Rule 210.1) |
| | 25.00 | ppmv @ 15.0% O ₂ | @ 75% load or greater (each turbine) |
| | 255.00 | lbm/hr | (as NO ₂) (total for 3 turbines) |
| <u>Hydrocarbons:</u> | 9.00 | lbm/hr | (Rule 210.1) |
| <u>Carbon Monoxide:</u> | 94.00 | lbm/hr | (Rule 210.1) |

Oil-Firing Case:

| | | | |
|--------------------------|--------|--------|--------------------------------------------------|
| <u>Particulates:</u> | 10.00 | lbm/hr | (Rules 210.1 and 408) (per turbine) |
| <u>Sulfur Compounds:</u> | 77.00 | lbm/hr | (of SO ₂) (Rule 210.1) (per turbine) |
| | 5.63 | lbm/hr | (of SO ₄) (Rule 210.1) (per turbine) |
| | 109.00 | lbm/hr | (of SO ₂) (total for 3 turbines) |
| | 7.96 | lbm/hr | (of SO ₄) (total for 3 turbines) |