California Energy Commission
Energy Facilities Siting & Environmental Protection Division
REPORT OF CONVERSATION

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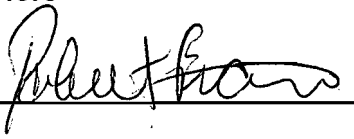
Project Title: Ridgecrest Solar Power Project

() TELEPHONE() MEETING LOCATION (x) EMAIL:

NAME: Bob Fiore, Planner II	**TIME:** 2:53 PM	**DATE: 2/22/2010**
WITH: CDR Harmon, James Jewell and Bob Fiore	**PHONE**	

SUBJECT: The potential for glare to affect military operations.

I, Robert Fiore, facilitated communication between CDR HARMON and James Jewell regarding the potential for glare to impact US Navy China Lake Naval Air Weapons Station military operations. According to the emails, glare would represent a minimal likelihood to affect military operations.

COPIES TO: **David Flores** **Eric Solorio**	**NAME Bob Fiore** **SIGNATURE** 

From: James Jewell <jjewell@arch-light.com>
To: "Harmon, Daniel P CDR NAWS China Lake, N32" <daniel.harmon@navy.mil>
CC: David Flores <Dflores@energy.state.ca.us>, Eric Solorio <ESolorio@energy...
Date: 2/22/2010 2:53 PM
Subject: Re: SES Solar One and Ridgecrest Solar

CDR HARMON -- Thanks for your note. I saw your initial inquiry, but this details your concerns. As a frequent flier I share your interest in safe takes offs. The two projects used quite different technology, so let me explain each and the potential issues. You and your colleagues can then consider them and I can then suggest possible mitigation to the Commission staff.

The Ridgecrest plant uses reflective troughs. In the morning the troughs turn from stow position to tracking position and in the evening do the reverse. It is in that transition before the sun is properly focused that the mirrors send out a linear solar reflection which can produce thermal damage to humans within 60 feet of the plant boundary. This line of light is not cumulative; that is, it represents only one sun at any given point on the mirror. Once the sun and the mirror are aligned 95% of the direct sunlight falls on the heat collecting element and an observer then sees the bright blue sky or clouds reflected from the mirror and not total solar energy. The mirrors can produce "bright spots" at their top and bottom, but I think these will not bother a take off.

Applicants for other plants have described the transition to focused tracking taking 6 seconds to pass across a 6 foot tall person. That implies that the transition in reasonably fast.

The SES plant uses individual parabolic mirrors to focus solar energy on to a heat collecting device at the focal point of the parabola. These devices also go from stow to tracking, but also have a condition of moving off focus when they return energy to the heat collector after clouds pass by. In both cases the focal point is only slightly longer than the focal point of the mirror. Once again the device is not cumulative and only one sun is reflected.

In both cases the greater part of the total solar energy (94% to 96%) is focused on the heat collecting elements. The remaining 4 to 6% of visible radiation will contribute to the general brightness on the mirrors but not pass beyond the heat collecting elements as excessive glare.

There is no question that the mirrors in either case have the possibility to be bright, intrusive objects in the field of view. They will not produce produce retinal damage but may be distracting. That unfortunately is in the eye of the observer. In a long career in the light and vision field I have found differences in what people perceive to be "glaring".

There is general agreement in the field of specialists dealing with these mirror fields that they have the appearance of lakes. That means that the luminance or brightness will not be high and could be compared to taking off over a sunlight body of water, except at the morning and evening brief times of transition. This long explanation assures you that past 60 feet from the plant boundary total solar energy and therefore the visible spectrum will be at moderate levels.

Following up on our phone conversation, you may wish to take some staff and pilots and observe the existing trough plants to determine the probable problems. If you find these are insurmountable, I will be pleased to recommend mitigation measures to Commission staff. The tests and measures we are recommending for the Blythe plant and the adjacent Blythe airport may be helpful for you and your pilots. Give me a call at 415 282-3135 if you want to discuss all of this further. JAMES

On 2/22/10 11:14 AM, "Harmon, Daniel P CDR NAWS China Lake, N32" <daniel.harmon@navy.mil> wrote:

> James,
>
> The concern I have regarding the reflectivity is that the aircraft departing
> China Lake, are usually on a southwesterly heading to cross Inyokern Rd at
> Jack's Ranch Rd then proceed climbing to the South. My concern is that in the
> mornings the directional array will be pointed east and the reflective energy
> will be right in the eyes of the pilots during what is termed as a "critical
> phase of flight". Upwards of 80% of mishaps occur during critical phases of
> flight (takeoffs and landings), due to high task loading, proximity to ground
> and changes in aircraft configuration. Additional distractions only increase
> the probability of mishap. Do you have any data that shows, in layman's
> terms, the effects of low angle reflectivity? Or, would there be a
> possibility of a procedural mitigation, for example that the array would not
> be depressed below X degrees to the east?
>
> I'm very interested in supporting renewable. I just want to help ensure the
> greatest degree of compatibility at the user level.
>
> v/r
> CDR Dan Harmon
> Operations Officer / N3
> NAWS China Lake
> Comm (760) 939-5117/ DSN 437-5117
> Cell (760) 382-7158
>
> For Official Use Only - Privacy Sensitive: Any misuse or unauthorized
> disclosure may result in both civil and criminal penalties
>
> -----Original Message-----
> From: Robert Fiore [mailto:RFiore@energy.state.ca.us]
> Sent: Friday, February 19, 2010 10:45
> To: jjewell@arch-light.com; Harmon, Daniel P CDR NAWS China Lake, N32
> Cc: David Flores
> Subject: Fwd: RE: RE: SES Solar One and Ridgecrest Solar
>
> Dear CDR Harmon and James,
>
> Thank you for your comments. James Jewell is the CEC's glare analyst so I have
> included him on the discussion. Our traffic and transportation analysis is
> scheduled to be complete early next week. Please let me know what details
> would be beneficial so we can include your comments in our analysis.
>
> Thank you.
>

> Robert Fiore, Planner II
> California Energy Commission
> Environmental Protection Office
> 1516 9th Street, MS-40
> Sacramento, CA 95814-5504
> T: 916-651-0319
> F: 916-651-8868
> www.energy.ca.gov
> rfiore@energy.state.ca.us
>
>
>
>>>> "Harmon, Daniel P CDR NAWS China Lake, N32" <daniel.harmon@navy.mil>
>>>> 2/18/2010 3:58 PM >>>
> Sir,
>
> Sorry about the delay, I've been trying to get some more information on this.
> I was under the impression this was a photocell type, but have been made aware
> that it is a reflective type similar to the one at Kramer Junction. I do has
> reservations about the reflective type. The reflective energy in the mornings
> will be focused towards the departure corridor of NEWS. This may not seem
> like much but it will be right in the pilots eyes at a critical point in
> flight. I'd need more data, but first glance I'd say it could have a negative
> impact on flight operations.
>
> v/r
> CDR Dan Harmon
> Operations Officer / N3
> NAWS China Lake
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> Cell (760) 382-7158
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> For Official Use Only - Privacy Sensitive: Any misuse or unauthorized
> disclosure may result in both civil and criminal penalties
>
> -----Original Message-----
> From: Robert Fiore [mailto:RFiore@energy.state.ca.us]
> Sent: Tuesday, January 12, 2010 11:18
> To: Harmon, Daniel P CDR NAWS China Lake, N32
> Cc: Engleking, Branden B AC3 NAWS China Lake, N32
> Subject: Fwd: RE: SES Solar One and Ridgecrest Solar
>
> Dear Commander Harmon,
> Please pardon any redundancy. Solar Millennium is proposing to build a large
> scale solar project on lands southwest of the China Lake Naval Air Weapons
> Station. The details can be found at the web-site link below.
>
> As you can see below, Tony Parisi noted that the DoD Southwest Renewable
> Energy Workgroup reviewed both projects and found that there would be no
> military impacts caused by the project. For a similar project in Palmdale,
> vertical velocity plumes and visible water vapor plumes may affect USAF Plant
> 42 flight paths and patterns. The Palmdale project is located abutting Plant
> 42 so this case is a different but I am seeking local input.
>
> Some of the issues with the Palmdale site were structure heights (imaginary
> military surfaces and inner horizontal surfaces), vertical velocity plumes

> and visible water vapor plumes. Structure heights for the proposed Solar
> Millennium project will not exceed 150 feet. Vertical velocity plumes are
> noted to upset aircraft at 4.3 meters-per-second at 1,000 feet above the stack
> heights. It is our understanding that there is a 5,000 foot elevation
> restriction over the proposed project site but, again, we want to make sure no
> operations occur that would be affected by the project. Visible water vapor
> plumes can affect visibility but typically no more than 1500 feet AGL.
>
> We are also seeking local input on the SES Solar One project near the
> Twenty-nine Palms Marine Corps Base, web-site link below. Do you have a
> counterpart we can contact there?
>
> We greatly appreciate your assistance in this matter.
>
> Respectfully,
>
>
> Robert Fiore, Planner II
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> Environmental Protection Office
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> rfiore@energy.state.ca.us
>
>
>
>>>> "Parisi, Tony NAVAIR" <anthony.parisi@navy.mil> 1/9/2010 9:26 AM >>>
> The DoD Southwest Renewable Energy Workgroup has previously reviewed both
> projects and determined that, based on the current project plans, neither will
> have significant military mission impacts. Our review included potential
> impact of tall structures on low level military airspace and glare. I do not
> know if the applicants have executed FAA Form 7460-1.
>
> If any changes are made, particularly in the height of structures, we would
> need to review the projects again.
>
> Thanks for giving us the opportunity to comment on the projects.
>
> V/R,
> Tony
>
> Anthony M. Parisi, PE
> Head, Sustainability Office
> NAVAIR Ranges
> (805) 989-9209
> FAX: (805) 989-7418
> Cell: (805) 816-0935
> anthony.parisi@navy.mil
>
> -----Original Message-----
> From: Robert Fiore [mailto:RFiore@energy.state.ca.us]
> Sent: Friday, January 08, 2010 12:01
> To: Parisi, Tony NAVAIR

> Subject: SES Solar One and Ridgecrest Solar
>
> Dear Mr. Parisi,
> It is my understanding that you are the contact for developments projects
> proposed near military bases. The California Energy Commission is analyzing
> two Applications for (Power Plant) Certification (AFC) for the referenced
> projects. We are concerned that flight patterns and paths may be affected by
> either of the proposed projects. The issues we assess include, the height of
> structures, glare associated with the solar facilities, low flying aircraft,
> vertical velocity and visible water vapor plumes and whether the applicant has
> executed a FAA Form 7460-1. It is not expected that all these issues apply but
> your direction and comment is appreciated. You can find the AFC's at:
>
> SES Solar One is located north of I-40 between Hector and Lavic and directly
> north of the Marine Corps Air Ground Combat Center:
> AFC:
> http://www.energy.ca.gov/sitingcases/solarone/documents/applicant/afc/index.ph
> p
>
> Traffic:
> http://www.energy.ca.gov/sitingcases/solarone/documents/applicant/afc/volume_0
> 1/Master_Section_5.11.pdf
>
> Ridgecrest Solar is located in an area bordered by US 395 and Brown Road
> Southwest of the China Lake Naval Air Station:
> AFC:http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest/documents
> /applicant/afc/
>
> Traffic:
> http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest/documents/app
> licant/afc/5.13%20Traffic.pdf
>
> Please review and comment. Your prompt attention to this matter is important
> as you are probably aware that these are high profile national and state
> renewable energy projects If you have any comments or concerns about the
> information we are providing you please contact me at 916-651-0319.
>
> Sincerely,
>
> Robert Fiore, Planner II
> California Energy Commission
> Environmental Protection Office
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> Sacramento, CA 95814-5504
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>
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