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Rio Mesa Workshop: November 14, 2012
Biological Resources, Alternatives & Technical Questions
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The following questions relate to information provided in the August 28, 2012 Solar Flux Workshop and impacts to avian species.

1. BSE stated the model used to model the flux has been in use for 4 years. Where was this in use for 4 years?

2. States upper bound flux was based on a full load. What was this load?

3. Who was the independent 3rd party engineer that verified the accuracy of this model and when was this done?

4. At 50 kW/m2 there was light singeing on the feathers. What is the equivalent temperature of this?

    a) Is there a chart available that provides approximate temperatures for the kW/m2? Such as, what is the temperature of 50 kW/m2, 79 kW/m2, 150 kW/m2, 250 kW2, 600 kW/m2 and 900 kW2?

5. At the Israel test facility, did Mr. Santolo check the test birds eyes and did they show any visible signs of eye damage?

6. What is the kW/m2 threshold maximum permissible exposure for a birds eye?

7. What is the acreage size (mirror field) of the Israel facility?

8. It was stated that the footprint of the solar field didn't matter, only the flux level on the receiver. The receiver needs 600 kW/m2 to generate steam. If the field size doesn't matter, why do they need so many more mirrors (larger footprint) to achieve the 600 kW/m2 flux level at the RM and HH site?

9. What is the maximum flux level the Israel facility receiver uses? 600 kW/m2?

10. Why didn't they test birds at the 500-600 kW/m2 level?

11. The standby points were discussed as being reduced to 150 kW/m2, 3x's higher than what Mr. Santolo measured feather singeing began to occur. Why didn't they test flux levels at the 150 kW/m2 rate?

12. How many standby points will there be on average throughout the day?

13. The 8/28/12 workshop included this statement: "We look at the upper boundary, 1,000 kW/m2, a normal day, a good day would be 900 kW/M2, dusk would be around 200 to 250. The intensity will be very, very low."

    a. About how many hours a day would the solar fields be capable of generating the 600 kW/M2 needed by the receivers?
    b. Why would the solar flux be maintained at the receivers at kW/M2 that were lower than the receiver needs to generate steam, i.e., 200-250 kW/m2?

    c. Will the solar receiver ever be subject to kW/m2 that is higher that 600 and if so, why?

Around 43:30 into the 8/28/12 workshop, the following statement is made: "What this tells me is this is not a very efficient way to heat something". Please explain how this relates to the use of flux to heat the receiver if it is not a very efficient way to heat something.

14. Around 1:10 in the 8/28/12 workshop, the following statement is made: "*As I understand it, solar flux, the efficiency of the energy, isn't very efficient for heating water molecules.*" Around 43:30 into the 8/28/12 workshop, the following statement is made: "*What this tells me is this is not a very efficient way to heat something"*.

    Please explain how this relates to the use of flux to heat the receiver and power the solar plant if it is not a very efficient way to heat something.

15. In HHSEGS, Data Response Set 2C, 3-05-12, #149, it was stated that: "As can be seen from the ray tracing results in Figure DR149 2, the beam intensity does not exceed the 4.8 kW/m2 and decreases to less than 1 kW/m2 after 500 m; the retinal irradiance (Er) decreases quickly."

    a) Why does the flux decrease and how does this relate to flux focused on the tower receivers?
    b) If flux decreases to less than 1 kW/m2 after 500 m, does this indicate the use of flux to generate steam is highly inefficient? If not, why not?

16. In 4-16-12 Data Response Set 2D-2 pg. 8, it was stated that*: "In the diagram we only show flux greater than 10kW/m2, from 10 meters (33 feet) to 230 meters (755 feet) in height; therefore, the diagram becomes relevant only at 400 meters (1,312 feet). We used a 10kW/m2threshold since it is the maximum permissible exposure (MPE) for the human eye. The raw data used for this model are: time (year, month, day, hour, minute, sec.), geographic data (longitude, latitude, altitude), and heliostat beam shape."*

a) Why wasn't flux modeled for levels up to 10 kW/m2 as this level would show potential human eye impact and related heights?