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May 11, 2007

Mr. Bill Pfanner
Project Manager
Systems Assessment and Facility Siting Division
California Energy Commission
1516 9th Street, MS 15
Sacramento, CA 95814-5512

Subject: LSP South Bay, LLC - South Bay Replacement Project AFC (06-AFC-3):
Docketing of Data Response Information Provided to San Diego Air Pollution
Control District

Dear Mr. Pfanner:

On behalf of South Bay Replacement Project, LLC (previously LS Power South Bay, LLC), please find attached the following that has recently been provided to the San Diego Air Pollution Control District (District) in response to their requests for information to facilitate their review of the application for a Determination of Compliance on the South Bay Replacement Project:

- 12 hard copies of the following:
 - May 1, 2007 transmittal email to Dick Brightman
 - Updated health risk assessment modeling results AFC Table 8.1-32
 - Updated AFC Appendix Table 8.1B-3 Emergency Engine
 - Updated AFC Appendix Table 8.1E-5 Aux HHI
 - Updated health risk assessment modeling input AFC Appendix Table 8.1E-6
 - May 4, 2007 transmittal email to Dick Brightman
- 5 compact discs containing health risk assessment modeling files

Please call me if you have any questions.

Sincerely,
CH2M HILL

for Robert C. Mason
Project Director

Attachments

cc: Docket Unit - California Energy Commission
Kevin Johnson, LSP South Bay, LLC
Proof of Service List

Eric Walther

From: Eric Walther
Sent: Tuesday, May 01, 2007 2:03 PM
To: Dick.Brightman@sdcountry.ca.gov
Cc: 'Kevin Johnson'; Gary Rubenstein
Subject: Extra HRA for Non-cancer Acute Health Hazard Analysis of Speciated Gaseous Components in Diesel Exhaust of Emergency Standby Fire Water Pump Engine
Attachments: Updated TABLE 8.1-32 HRA Results for SBRP w Speciated Diesel Exhaust Acute HH Gases.doc; SB26b_00.zip; SB26b_01.zip; SB26b_02.zip; Diesel Acute HHA for SBRP.xls

Dick:

In response to your request, Sierra Research performed the extra health risk analysis of the potential non-cancer acute health hazard from the acute health hazard gaseous constituents in the exhaust of the Diesel-fueled emergency standby fire water pump engine. The change in the previously submitted AFC Table 8.1-32 is underlined in the first attachment, along with the modeling files. As can be seen the maximum potential acute inhalation health hazard index only increases 0.005 from 0.247 (normally rounded to 0.25) to 0.252 (also normally rounded to 0.25). The other underlined changes relate to our discussion of your use of the Derived (Adjusted) Method (vs. the High-End Point Estimate) for determining Rule 1200 compliance.

The modeling files are contained in the second, third and fourth zipped attachments.

AERMOD was given the bolded acute health hazard input shown in the fifth attachment (updated AFC Appendix 8.1 Table 8.1E-6), which did not exist in previous runs for which the fire water pump engine Diesel exhaust had not been speciated into its gaseous components. The calculations behind the modeling input are shown in updated AFC Table 8.1B-3 (engine specifications) and Appendix 8.1 Table 8.1E-5 (Calculation of Risk Assessment Modeling Inputs and Results for Auxiliary Boiler and Fire Pump Engine), also in the fifth attachment.

Eric

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TABLE 8.1-32 UPDATED APRIL 27, 2007 FOR REMODELING OF FIRE WATER PUMP ENGINE DIESEL EXHAUST SPECIATED GASEOUS CONSTITUTENTS HAVING POTENTIAL NON-CANCER ACUTE HEALTH HAZARDS (HH)

MAXIMUM POTENTIAL HEALTH RISKS FROM THE OPERATION OF SBRP

Health Impact	Significance Thresholds	SBRP without Acute HH-Speciati ed Diesel Exhaust Gases	SBRP with Acute HH-Speciati ed Diesel Exhaust Gases
Maximum Incremental Cancer Risk (MICR) at Point of Maximum Impact	10 in one million	<u>2.11</u> ^a (1.21) ^b in one million	<u>2.11</u> ^a (1.21) ^b in one million
MICR to Maximally-Exposed Individual (Resident) (MEI)	10 in one million	<u>1.13</u> ^a (0.60) ^b in one million	<u>1.13</u> ^a (0.60) ^b in one million
MICR to Maximally-Exposed Worker (Offsite) (MEW) ^c	10 in one million	<u>0.42</u> in one million	<u>0.42</u> in one million
Maximum Acute Inhalation Health Hazard Index	1.0	<u>0.25 (actually 0.247)</u>	<u>0.25 (actually 0.252)</u>
Maximum Chronic Inhalation Health Hazard Index	1.0	<u>0.067</u>	<u>0.067</u>

- a. High-End Point Estimate gives the maximum cancer risk of the four methods used by OEHA and in HARP Version 1.3.
- b. Derived (Adjusted) Method used by San Diego Air Pollution Control District to determine compliance with Regulation 1200.
- c. The worker is assumed to be exposed at the work location 8 hours per day, instead of 24, 245 days per year, instead of 365, and for 40 years, instead of 70.

Note: The underlined numbers are updated values from the February 14, 2007 submittal.

Table 8.1B-3

**Emergency Engine (UPDATED APRIL 27, 2007 FOR REMODELING OF FIRE WATER PUMP ENGINE DIESEL EXHAUST SPECIATED GASEOUS CONSTITUTENTS HAVING POTENTIAL NON-CANCER ACUTE HEALTH HAZARDS (HH))
South Bay Replacement Project**

Emergency Fire Water Pump Engine						
Assume testing and maintenance duration each week (hours) =	1					
Rating (bhp) =	240					
Fuel =	Diesel					
Fuel Consumption (gal/hr) =	10.3 , hence	10.3	gal/hr	each week		
Exhaust Temperature (F) =	891					
Exhaust Diameter (inches) =	6					
Exhaust Flow Rate (acfm) =	1,227					
Exhaust Velocity (ft/sec) =	104					
Stack height (ft AGL) =	22					
		NOx	CO	VOC	SOx	PM10
Emission Factor (g/bhp-hr) =		4.41	0.59	0.49	0.0050	0.14
Hourly Emissions (lbs/hr) =		2.33	0.31	0.26	0.0026	0.074

<u>Toxic Air Contaminant (TAC)</u>		
<u>Emissions</u>		
<u>TAC</u>	<u>Emission Factor ⁽¹⁾</u>	<u>Hourly Emission Rate</u>
	<u>(lbs/1000 gal)</u>	<u>(lbs/hr)</u>
<u>Acrolein</u>	<u>0.0339</u>	<u>3.49E-04</u>
<u>Arsenic</u>	<u>0.0016</u>	<u>1.65E-05</u>
<u>Benzene</u>	<u>0.1863</u>	<u>1.92E-03</u>
<u>Copper</u>	<u>0.0041</u>	<u>4.22E-05</u>
<u>Formaldehyde</u>	<u>1.7261</u>	<u>1.78E-02</u>
<u>Hydrogen chloride</u>	<u>0.1863</u>	<u>1.92E-03</u>
<u>Mercury</u>	<u>0.002</u>	<u>2.06E-05</u>
<u>Nickel</u>	<u>0.0039</u>	<u>4.02E-05</u>
<u>Toluene</u>	<u>0.1054</u>	<u>1.09E-03</u>
<u>Xylenes</u>	<u>0.0424</u>	<u>4.37E-04</u>

1) Ventura County Air Pollution Control District. AB 2588 Combustion Emission Factors, Diesel (Internal) Combustion Factors, May 17, 2001.

Note: The underlined numbers are updated values from the February 14, 2007 submittal.

Table 8.1E-5 (UPDATED APRIL 27, 2007 FOR REMODELING OF FIRE WATER PUMP ENGINE DIESEL EXHAUST SPECIATED GASEOUS CONSTITUENTS HAVING POTENTIAL NON-CANCER ACUTE HEALTH HAZARDS (HH))

**South Bay Replacement Project
Calculation of Risk Assessment Modeling Inputs and Results for Auxiliary Boiler and Fire Pump Engine**

Non-Criteria Pollutant	Max Hourly Emissions, g/s	HARP Acute HI (per $\mu\text{g}/\text{m}^3$)	Acute HHI Model Input (per $\mu\text{g}/\text{m}^3$ per g/s)	Modeled Contribution to Acute HHI	Annual Average Emissions, g/s	HARP Chronic HI (per $\mu\text{g}/\text{m}^3$)	Chronic HHI Model Input (per $\mu\text{g}/\text{m}^3$ per g/s)	Modeled Contribution to Chronic HHI
Auxiliary Boiler								
Propylene	7.29E-05	--	--	--	1.39E-05	3.33E-04	4.61E-09	1.05E-08
Acetaldehyde	4.235E-06	--	--	--	8.05E-07	1.11E-01	8.93E-08	2.03E-07
Acrolein	3.765E-06	5.26E+00	1.98E-05	1.08E-03	7.15E-07	1.67E+01	1.19E-05	2.71E-05
Benzene	8.000E-06	7.69E-04	6.15E-09	3.35E-07	1.52E-06	1.67E-02	2.54E-08	5.77E-08
Ethylbenzene	9.412E-05	--	--	--	1.79E-05	5.00E-04	8.94E-09	2.03E-08
Formaldehyde	1.694E-05	1.06E-02	1.80E-07	9.79E-06	3.22E-06	3.33E-01	1.07E-06	2.44E-06
Hexane	6.118E-06	--	--	--	1.16E-06	1.43E-04	1.66E-10	3.78E-10
Naphthalene	1.412E-06	--	--	--	2.68E-07	1.11E-01	2.98E-08	6.77E-08
Polycyclic Aromatic Hydrocarbons	4.706E-07	--	--	--	8.94E-08	--	--	--
Toluene	3.671E-05	2.70E-05	9.91E-10	5.40E-08	6.97E-06	3.33E-03	2.32E-08	5.28E-08
Xylene	2.729E-05	4.55E-05	1.24E-09	6.77E-08	5.18E-06	1.43E-03	7.41E-09	1.69E-08
		<u>Total =</u>	<u>2.00E-05</u>	<u>1.09E-03</u>		<u>Total =</u>	<u>1.32E-05</u>	<u>3.00E-05</u>
Fire Pump Engine								
Particulate Emissions from Diesel-Fueled Engines	9.33E-03	n/a	n/a	n/a	5.33E-05	0.2	1.07E-05	3.10E-04
						<u>Total =</u>	<u>1.07E-05</u>	<u>3.10E-04</u>
Acrolein	4.40E-05	5.26E+00	2.31E-04	2.17E-01				
Arsenic	2.08E-06	5.26E+00	1.09E-05	1.02E-02				
Benzene	2.42E-04	7.69E-04	1.86E-07	1.74E-04				
Copper	5.32E-06	1.00E-02	5.32E-08	4.99E-05				
Formaldehyde	2.24E-03	1.06E-02	2.37E-05	2.23E-02				
Hydrogen chloride	2.42E-04	4.76E-04	1.15E-07	1.08E-04				
Mercury	2.60E-06	5.56E-01	1.44E-06	1.35E-03				
Nickel	5.06E-06	1.67E-01	8.44E-07	7.91E-04				
Toluene	1.37E-04	2.70E-05	3.69E-09	3.46E-06				
Xylenes	5.50E-05	4.55E-05	2.50E-09	2.35E-06				
		<u>Total =</u>	<u>2.687E-04</u>	<u>2.52E-01</u>				

Note: The underlined numbers are updated values from the February 14, 2007 submittal.

**Table 8.1E-6 (UPDATED APRIL 27, 2007 FOR REMODELING OF FIRE WATER PUMP ENGINE DIESEL EXHAUST SPECIATED GASEOUS CONSTITUENTS HAVING POTENTIAL NON-CANCER ACUTE HEALTH HAZARDS (HH))
South Bay Replacement Project
Summary of Modeling Input Values for HRA**

Unit	Derived (OEHA) Method Cancer Risk (Res)	Average Point Estimate Cancer Risk (Res)	High-end Point Estimate Cancer Risk (Res)	Derived (Adjusted) Method Cancer Risk (Res)	Derived (OEHA) Method Cancer Risk (Worker)	Acute HHI Model Input (per $\mu\text{g}/\text{m}^3$ per g/s)	Chronic HHI Model Input (per $\mu\text{g}/\text{m}^3$)
Each CTG	1.827E+00	1.338E+00	2.832E+00	1.463E+00	6.990E-01	1.406E-02	1.016E-01
Auxiliary Boiler	8.089E-04	7.788E-04	3.679E-03	7.891E-04	1.327E-03	1.999E-05	1.320E-05
Fire Water Pump Engine	2.211E-02	1.524E-02	2.211E-02	1.699E-02	3.351E-03	2.687E-04	1.065E-05

All modeling input values are in units of per $\mu\text{g}/\text{m}^3$

Note: The underlined number is a new value, not part of the February 14, 2007 or other previous submittals.

Eric Walther

From: Eric Walther
Sent: Thursday, May 03, 2007 11:42 AM
To: Camqui T. Nguyen (Camqui.Nguyen@sdcounty.ca.gov)
Cc: Kevin Johnson; Gary Rubenstein; Eric Walther
Subject: SBRP Contemporaneous Emission Increase

Camqui:

Thanks for the reminder. To provide the District with a response to your request for a demonstration that the proposed South Bay Replacement Project satisfies the requirements of Rule 20.1 (c)(16), we submit the following information in the format of the underlying questions posed by the rule section:

Question 1: What is the calendar year in which the new source is expected to commence operation?

Answer 1: 2010

Question 2: What is the contemporaneous period?

Answer 2: The five-year period of 2006 through 2010.

Question 3: What emission increases from new or modified emission units occur within this period?

Answer 3: The components of the emission changes within this period include:

- a. normal operation of the existing South Bay Power Plant prior to the commencement of SBRP commissioning in 2010
- b. commissioning emissions of the proposed South Bay Replacement Project in 2010
- c. reduced operation of the existing South Bay Power Plant during SBRP commissioning activities in 2010 to the extent that SBRP is delivering power to the grid
- d. normal operation of the SBRP following the completion of commissioning activities
- e. cessation of operation of the existing South Bay Power Plant in 2010 following the completion of commissioning of the SBRP,

The total annual emissions during the period 2006 – 2010 never exceeds the following baseline emissions:

- NOx: 106.5 tpy
- VOC: 27.1 tpy
- SOx: 6.8 tpy
- CO: 550.2 tpy
- PM-10: 69.3 tpy

Question 4: What actual emission decreases occurred at the stationary source within this period?

Answer 4: Shutdown of the existing South Bay Power Plant in 2010:

- NOx: 106.5 tpy
- VOC: 50.0 tpy
- SOx: 6.9 tpy
- CO: 763.5 tpy
- PM-10: 69.3 tpy

Question 5: What is the contemporaneous emission increase?

Answer 5:

- NOx: $106.5 - 106.5 = 0$ tpy
- VOC: $27.1 - 50.0 = 0$ tpy [as required by Rule 20.1 (c)(16)(ii)]
- SOx: $6.8 - 6.9 = 0$ tpy [as required by Rule 20.1 (c)(16)(ii)]
- CO: $550.2 - 763.5 = 0$ tpy [as required by Rule 20.1 (c)(16)(ii)]
- PM-10: $69.3 - 69.3 = 0$ tpy

Please call if you have any questions.

Eric

Eric Walther
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Eric Walther

From: Eric Walther
Sent: Friday, May 04, 2007 4:30 PM
To: Dick.Brightman@sdcounty.ca.gov
Cc: Eric Walther; Marc Valdez; Wei Liu
Subject: HARP Question

Dick:

On a recent project, I carefully ran HARP 1.2a and 1.3 for its internal tabulations of unit cancer risk {UCR, [($\mu\text{g}/\text{m}^3$)⁻¹]} for all available pathways. The 4 pathways of interest for the question you posed are inhalation, dermal absorption, soil ingestion and mother's milk. These pathways are enabled in the Sierra Research approach because they do not require detailed input information such as on vegetables in gardens for the home produce pathway. The other pathways are disabled. We use a conservative deposition rate of 5 cm/sec as the only "extra" input information needed for the 4 pathways.

I found that the version change from 1.2a to 1.3 reduced the dermal absorption contribution to the total UCR for the 4 pathways. For example, the dermal absorption UCR for benz(α)pyrene (BaP) was reduced from 3.37E-02 ($\mu\text{g}/\text{m}^3$)⁻¹ in 1.2a to 1.99E-03 ($\mu\text{g}/\text{m}^3$)⁻¹ in 1.3, thereby reducing the 3.98E-02 ($\mu\text{g}/\text{m}^3$)⁻¹ you expected to see for BaP to the 8.90E-03 ($\mu\text{g}/\text{m}^3$)⁻¹ that I gave you in the Excel table. A similar adjustment was needed for the 7 PAHs in our HRA on turbine exhaust. The HARP UCRs for the 7 PAHs on the other 3 pathways did not change between HARP Versions 1.2a and 1.3.

Eric

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Revised 03/09/07**

**SOUTH BAY REPLACEMENT PROJECT
APPLICATION FOR CERTIFICATION
DOCKET NO. 06-AFC-3**

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I declare that I transmitted the foregoing document via e-mail, or as indicated by first class postal mail, to the above named on the date indicated thereby. I declare under penalty of perjury that the foregoing is true and correct.

**Jeannette Harris
CH2M HILL**

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