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2485 Natomas Park Drive
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CH2MHILL

December 28, 2006
338307

DOCKET
06-AFC-4
DATE DEC 28 2006
RECD DEC 28 2006

Dr. James Reede
Energy Facility Siting Project Manager
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814-5512

RE: Data Response, Set 1B
Vernon Power Project (06-AFC-4)

On behalf of the City of Vernon, please find attached 12 copies and one original of the Data Responses, Set 1B, in response to Staff's Data Requests dated October 6, 2006 and comments raised at the Issue Resolution Workshop held on November 30, 2006. We are also filing copies of this Data Response electronically.

Please call me if you have any questions.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

c: Project File
Proof of Service List

VERNON POWER PLANT
(06-AFC-4)

DATA RESPONSE, SET 1B

(Responses to Data Requests: Air Quality Nos. 3, 9, 10, 13 and 16)

Submitted by

City of Vernon

December 28, 2006

CH2MHILL

2485 Natomas Park Drive, Suite 600
Sacramento, California 95833-2937

VERNON POWER PLANT
(06-AFC-4)
DATA RESPONSES, SET 1B

Technical Area: Air Quality
CEC Author: Joe Loyer

BACKGROUND: FINE PARTICULATE MATTER (PM2.5)

The applicant has not provided any discussion about mitigation of the facility's PM2.5 impacts (generally 100 percent of natural gas combustion particulate matter is PM2.5) on the local and regional air quality. Because the District does not have an offset requirement for PM2.5, staff is concerned that the current or revised Priority Reserve program and PM10 ERC program will not be able to specifically provide PM2.5 emission reductions, thereby making it difficult to conclude that the project's PM2.5 liability is mitigated.

DATA REQUEST

3. Please provide proposal(s) to mitigate the facility's potentially significant PM2.5 impacts.

   Response: The city of Vernon is in the process of developing a $PM_{2.5}$ mitigation strategy. We will provide a report to the CEC as soon as significant progress is made.

BACKGROUND: NATURAL GAS SULFUR CONTENT

The AFC indicate that the facility will use natural gas with a maximum sulfur content of 0.35 grains per 100 standard cubic feet (gr/100scf). Staff has seen in previous siting cases that the delivered natural gas can contain as much as 1gr sulfur/100scf. If higher sulfur content natural gas fuel is used at the facility, SOx and PM emissions may be underestimated.

DATA REQUEST

9. Please provide the method for ensuring continuous compliance with the sulfur content limits specified for the supplied natural gas fuel.

   Response: The ambient SO_2 impacts presented in AFC Table 8.1-27 represent a natural gas sulfur content of 0.35 grains per 100 standard cubic feet. Based on a suggestion by the CEC Staff, the Applicant has scaled the SO_2 short-term (1-hour, 3-hour and 24-hour) impacts in Table 8.1-27 to represent the SO2 impacts of using natural gas with a sulfur content of 1.0 grain per 100 standard cubic feet. The results of this scaling is presented in Table AQ-9, which shows that with a fuel sulfur content of 1 grain per 100 standard cubic feet, the VPP will not cause or contribute to the violation of sulfur dioxide ambient air quality standards.

TABLE AQ-9
Normal Operation Impacts Analysis—Maximum SO2 Modeled Impacts Compared to the Ambient Air Quality Standards

Facility-Wide Emissions

Pollutant	Averaging Time	Maximum Facility Impact (µg/m³)	Background (µg/m³)[a]	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
SO_2	1-hour	3.7	209.4	213.1	655	-
	3-hour	3.1	47.1	50.2	-	1,300
	24-hour	0.63	39.3	39.9	105	365

[a] Background concentrations were the highest concentrations monitored during 2003-2005.

BACKGROUND: CUMULATIVE ASSESSMENT

The applicant indicates on page 8.1-63 in the AFC that the required cumulative assessment will be completed and submitted in August of 2006.

DATA REQUEST

10. Please provide the cumulative assessment.

Response: Table AQ-10 presents the sources to be included in the cumulative impact assessment. The Applicant is retrieving source-specific data from the South Coast Air Quality Management District through a freedom of information act request. This process has extended the time required to prepare the cumulative impact assessment. As a result of this delay, the cumulative impact assessment results will not be submitted until the end of January 2007.

TABLE AQ-10
List of cumulative impact assessment sources

Facility Name	Application Number	Process Description
Community Linen Rental Services, Inc.	186129	ICE Other Nat Gas Only
Community Linen Rental Services, Inc.	186128	ICE Other Nat Gas Only
Lunday-Thagard Oil Co	435954	Heater/Furnace (5-20 MMBtu/hr) Ng & Misc
Lunday-Thagard Oil Co	438515	
Lunday-Thagard Oil Co	433601	Heater/Furnace (>20-50 MMBtu/hr) Nat Gas
Lunday-Thagard Oil Co	438517	
Aaa Plating & Inspection, Inc	446187	
Aaa Plating & Inspection, Inc	441210	Oven, Cooking Or Curing
E.M.E. Inc/Electro Machine & Engineering	454985	Tank, Sulfuric/Phosphoric Acid - Anodizing
Accurate Anodizing, Inc	438455	Tank, Sulfuric/Phosphoric Acid - Anodizing

VERNON POWER PLANT
(06-AFC-4)
DATA RESPONSES, SET 1B

TABLE AQ-10
List of cumulative impact assessment sources

Facility Name	Application Number	Process Description
J&D Acquisitions Corp. dba Genes Plating	457021	Tank, Decorative Chrome Plating
Chevron USA Inc	421341	
Chevron USA Inc	421342	
Fortifiber Corp	452408	
Fortifiber Corp	449216	
Fortifiber Corp	452407	
Fortifiber Corp	451783	
Clougherty Packing Co, Farmer John Meats	351442	Rendered Product Handling
Masterfoods USA	455722	Meat Products, Size Class
Masterfoods USA	426514	Meat Products, Size Class
Masterfoods USA	426271	
Hexion Specialty Chemicals, Inc.	448740	
John Boyd Designs	457721	
John Boyd Designs	457724	
John Boyd Designs	457723	
John Boyd Designs	457725	
John Boyd Designs	457726	
John Boyd Designs	457720	
John Boyd Designs	457722	
John Boyd Designs	457718	
John Boyd Designs	457719	
E.M.E. Inc/Electro Machine & Engineering	457247	
Great American Packaging Inc	457208	
Pacific Alloy Castings Inc	454307	Furnace Elect Ind & Res Iron-Steel
Pacific Alloy Castings Inc	451545	Sand Handling Equipment Foundry
Pacific Alloy Castings Inc	451547	
Wood Grp Field Srvcs, Thomason Mechanical	455013	
Wood Grp Field Srvcs, Thomason	455016	

TABLE AQ-10
List of cumulative impact assessment sources

Facility Name	Application Number	Process Description
Mechanical		
Wood Grp Field Srvcs, Thomason Mechanical	455015	
Shultz Steel Co	447950	Abrasive Blasting (Cabinet/Machine/Room)
Shultz Steel Co	447949	Abrasive Blasting (Cabinet/Machine/Room)
Shultz Steel Co	448604	
Shultz Steel Co	447952	Abrasive Blasting (Cabinet/Machine/Room)
Shultz Steel Co	447951	Abrasive Blasting (Cabinet/Machine/Room)
Shultz Steel Co	447954	
Shultz Steel Co	448605	
Shultz Steel Co	447956	
Shultz Steel Co	447955	
Shultz Steel Co	454769	Heat Treating Furnace
Shultz Steel Co	454765	Heat Treating Furnace
General Inspection Labs Inc	450525	
General Inspection Labs Inc	450531	Tank Chemical Milling
Clougherty Packing Co, Farmer John Meats	456495	Blood Drying
Clougherty Packing Co, Farmer John Meats	456497	Boiler (>20-50 MMBtu/hr) Nat Gas Only
Clougherty Packing Co, Farmer John Meats	456493	
Clougherty Packing Co, Farmer John Meats	457105	Boiler (>20-50 MMBtu/hr) Nat Gas Only
Univar USA Inc.	455834	
Bowman Plating Co Inc	451427	
Ashland Specialty Chemical Company	457712	
La Uni Sch Dist, Mann Middle School	456559	I C E (50-500 Hp) Em Elec Gen-Diesel
Garment Industry Laundry Inc.	446880	Boiler (5-20 MMBtu/hr) Nat Gas Only
Sterigenics Us, Inc.	438093	
Sterigenics Us, Inc.	438095	
City Of L A Bureau Of Sanitation	451333	

TABLE AQ-10
List of cumulative impact assessment sources

Facility Name	Application Number	Process Description
Lac/USC Medical Center	452799	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452798	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452797	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452795	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452794	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452802	Boiler (>20-50 MMBtu/hr) Comb Gas-Lpg
Lac/USC Medical Center	452796	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452805	Boiler (>20-50 MMBtu/hr) Comb Gas-Lpg
Lac/USC Medical Center	452803	Boiler (>20-50 MMBtu/hr) Comb Gas-Lpg
Lac/USC Medical Center	452804	Boiler (>20-50 MMBtu/hr) Comb Gas-Lpg
Lac/USC Medical Center	452800	I C E (>500 Hp) Em Elec Gen Diesel
Lac/USC Medical Center	452801	Boiler (>20-50 MMBtu/hr) Comb Gas-Lpg
Gws Wholesale Nursery	451171	I C E (50-500 Hp) N-Em Port N-Rent Diesel
The Gas Co./ Sempra Energy	457059	Heater/Furnace (<5 MMBtu/hr) Nat Gas
Fisherman's Pride Process., Neptune Foods	450574	
Fisherman's Pride Process., Neptune Foods	417695	Heater/Furnace (<5 MMBtu/hr) Nat Gas
Los Angeles Chemical Co	456911	
Los Angeles Chemical Co	456910	Misc Inorganic Acid Blending
Coca-Cola Bottling Co Of La	446478	I C E (50-500 Hp) Em Fire Fght-Diesel
Overhill Farms Inc	456905	Boiler (5-20 MMBtu/hr) Nat Gas Only P/P
Owens-Brockway Glass Container Inc	452503	
Owens-Brockway Glass Container Inc	452501	Glass Forming Machine
Owens-Brockway Glass Container Inc	452502	
Shultz Steel Co	455695	Heat Treating Furnace
Shultz Steel Co	455693	Heat Treating Furnace
Bowman Plating Co Inc	434535	
Bowman Plating Co Inc	434534	Oven, Drying
Bowman Plating Co Inc	434537	Abrasive Blasting (Cabinet/Machine/Room)
La City, Bureau Of Sanitation	439655	I C E (>500 Hp) Em Elec Gen Diesel

TABLE AQ-10
List of cumulative impact assessment sources

Facility Name	Application Number	Process Description
Univ Of So Cal	451950	I C E (>500 Hp) Em Elec Gen Diesel
Univ Of So Cal	451951	I C E (>500 Hp) Em Elec Gen Diesel
Univ Of So Cal	445944	Boiler (5-20 MMBtu/hr) Nat Gas Only
Univ Of So Cal	451952	I C E (>500 Hp) Em Elec Gen Diesel
Univ Of So Cal	445943	Boiler (5-20 MMBtu/hr) Nat Gas Only
Univ Of So Cal	457249	I C E (50-500 Hp) Em Elec Gen-Diesel
Petrochem Manufacturing, Inc.	457106	Aggregate Blending
Petrochem Manufacturing, Inc.	457108	Aggregate Blending
Petrochem Manufacturing, Inc.	457107	Aggregate Blending
Demenno/Kerdoon	452879	
Demenno/Kerdoon	452878	
Demenno/Kerdoon	452881	
Demenno/Kerdoon	454854	
Royal Printex Inc	455752	Boiler (5-20 MMBtu/hr Nat Gas Only C/G
Shamrock Base Corporation	449896	Asphalt Prod/Recycle <5000 TPD
Plains Exploration And Production Co	455283	
La Co., Metropolitan Trans Authority #2	455043	I C E (50-500 Hp) Em Elec Gen-Diesel
La Co., Metropolitan Trans Authority #2	455044	I C E (50-500 Hp) Em Elec Gen-Diesel
Commerce Refuse To Energy Facility	446552	Boiler (>50 MMBtu/hr) Refuse
Brite Plating Co Inc	429335	Nickel Stripping Tank
Darling International Inc	442911	Rendered Products, Reaction-Rendering
Darling International Inc	442910	Rendered Product Handling
Darling International Inc	442909	Storage Tank Rendered Products
Cargill Inc	407218	Rendering Equipment Separation Liquid

BACKGROUND

Staff intends to conduct a plume modeling analysis using the Combustion Stack Visible Plume (CSVP) model and the Seasonal Annual Cooling Tower Impact (SACTI) model for the project, as is done for all projects with cooling towers. Staff will provide the applicant with a copy of the CSVP model training manual upon request.

VERNON POWER PLANT
(06-AFC-4)
DATA RESPONSES, SET 1B

DATA REQUEST

13. Please provide the values for heat rejection (MW/hr), exhaust temperature, and exhaust mass flow rate that affect cooling tower vapor plume formation for a range of ambient conditions that represent reasonable worst-case operating scenarios. At a minimum, please fill in all blanks in the table below. Please also update/correct the table, if necessary.

Parameter	Cooling Tower Exhausts		
Number of Cells	14		
Cell Height*	17.68 meters		
Cell Diameter*	9.14 meters		
Tower Housing Length (7 cells)*	117.35 meters		
Tower Housing Width (2 cells)*	31.70 meters		
Ambient Temperature	43 °F	59 °F	104 °F
Ambient Relative Humidity	80 %	65 %	50 %
Heat Rejection ~~(MW/hr) or~~ (MMBtu/hr)	1725	1690	1615
Exhaust Flow (CFM) (10^6)	19.66	19.75	20.07
Exhaust Mass Flow Rate (lb/hr)	87.09x10^6	86.22x10^6	83.16x10^6
Air Density (lbs/scf)	0.07383	0.07276	0.06906
Ambient Air Pressure (psia)	14.6	14.6	14.6
Exhaust Temperature (°F)	72.1	78.6	100.5

*Stack dimensions from AFC.

Staff intends to model the cooling tower using hourly estimated exhaust conditions based on the hourly ambient conditions of the meteorological file. Staff will assume saturated cooling tower exhaust at the exhaust temperature determined through interpolation for the hourly ambient conditions. Therefore, additional combinations of temperature and relative humidity, if provided by the applicant, will more accurately represent the cooling tower exhaust conditions.

Response: The submittal of Data Response #13 (Set 1A) provided cooling tower performance data for the fully duct fired case, representing the worst case. The performance for the non-duct fired cases is provided in the table above. Regarding the number of cooling tower cells that would operate at lower ambient conditions, it is possible to turn off individual cells. The impact will be a higher exhaust air temperature from the tower and a higher temperature for the circulating water returned to the plant condenser. There is a tradeoff between lower fan power and a higher condenser backpressure resulting in a reduction in power output from the steam turbine generator. This is an operational consideration. The performance data provided assumes all 14 cells are in operation.

16. Please provide a fogging frequency curve from the cooling tower vendor, if available.

Response: The response for this data request in Set 1A inadvertently omitted the fogging frequency curve for the temperature range of 55°F to 75°F. The full set of curves for the duct fired case is provided as Attachment AQ-16A. The fogging frequency curves for the non-duct fired cases have not been received from the vendor. They will be provided upon receipt.

Fogging Frequency Curve for
City of Vernon

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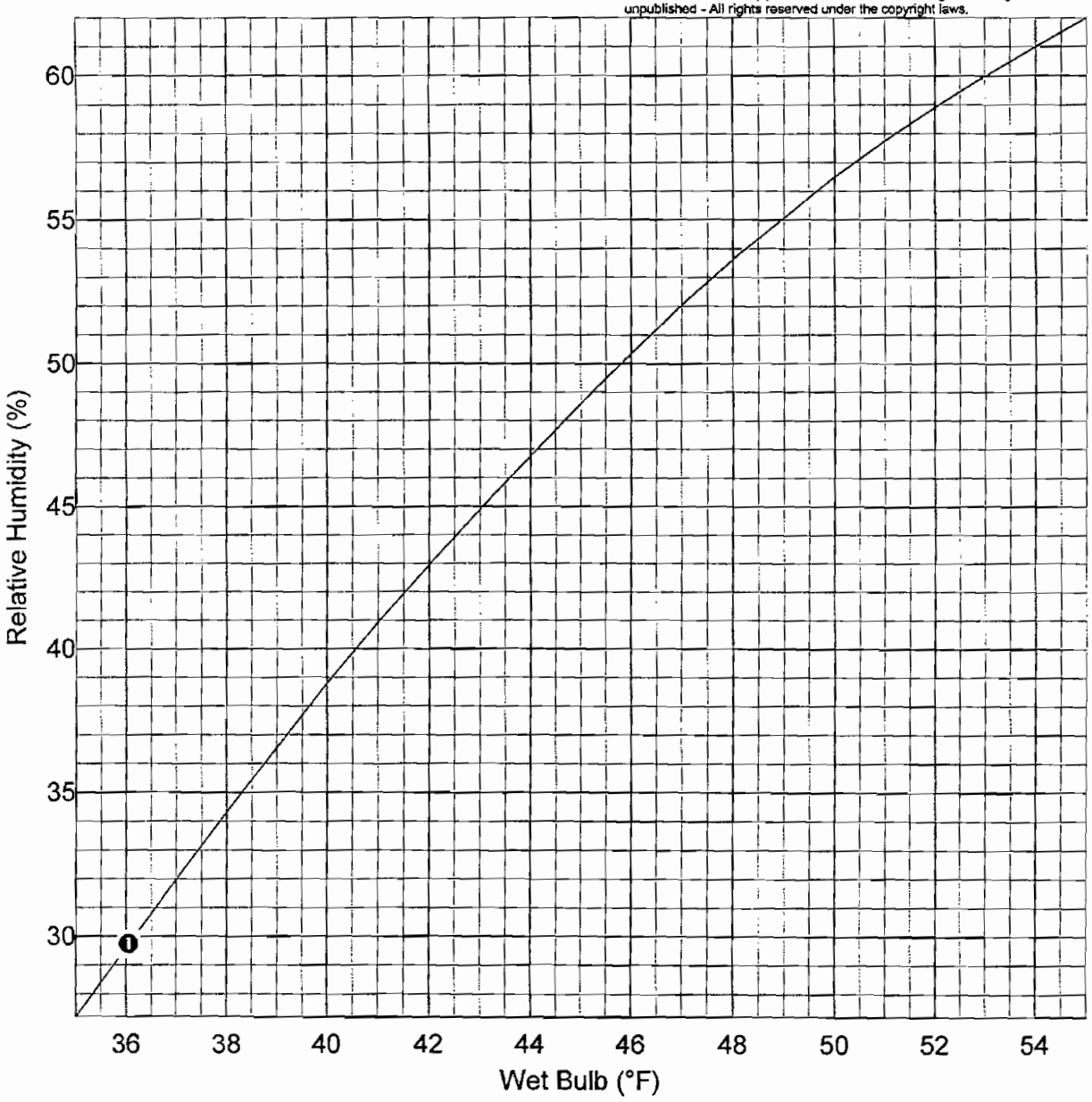

SPX Cooling Technologies
TRACS Version 04-AUG-06

Model	F499A-5.0-14B
Number of Cells	14
Motor Output	232.2HP
Motor RPM	1800
Fan	336HP7-9
Fan RPM (Full Speed)	129

Design Conditions:

Flow Rate	202000GPM
Hot Water	98.80°F
Cold Water	79.00°F
Wet-Bulb	70.00°F

Curve Conditions:

Fan Pitch	Constant
Flow Rate	202000GPM

(100% Design Flow)

FOGGING FREQUENCY CURVE: The curve shown to the left is referred to as a 'Fogging Freqency Curve'. The Fogging Freqency Curve separates entering cooling tower conditions that produce fog at the discharge (Top-Left region of chart) from those that do not produce fog (Bottom-Right region of chart)

❶ 19.8 °F Range

Time: 09:23:59 Date: 11-06-2006 Drawn By: GFA

Fogging Frequency Curve for City of Vernon

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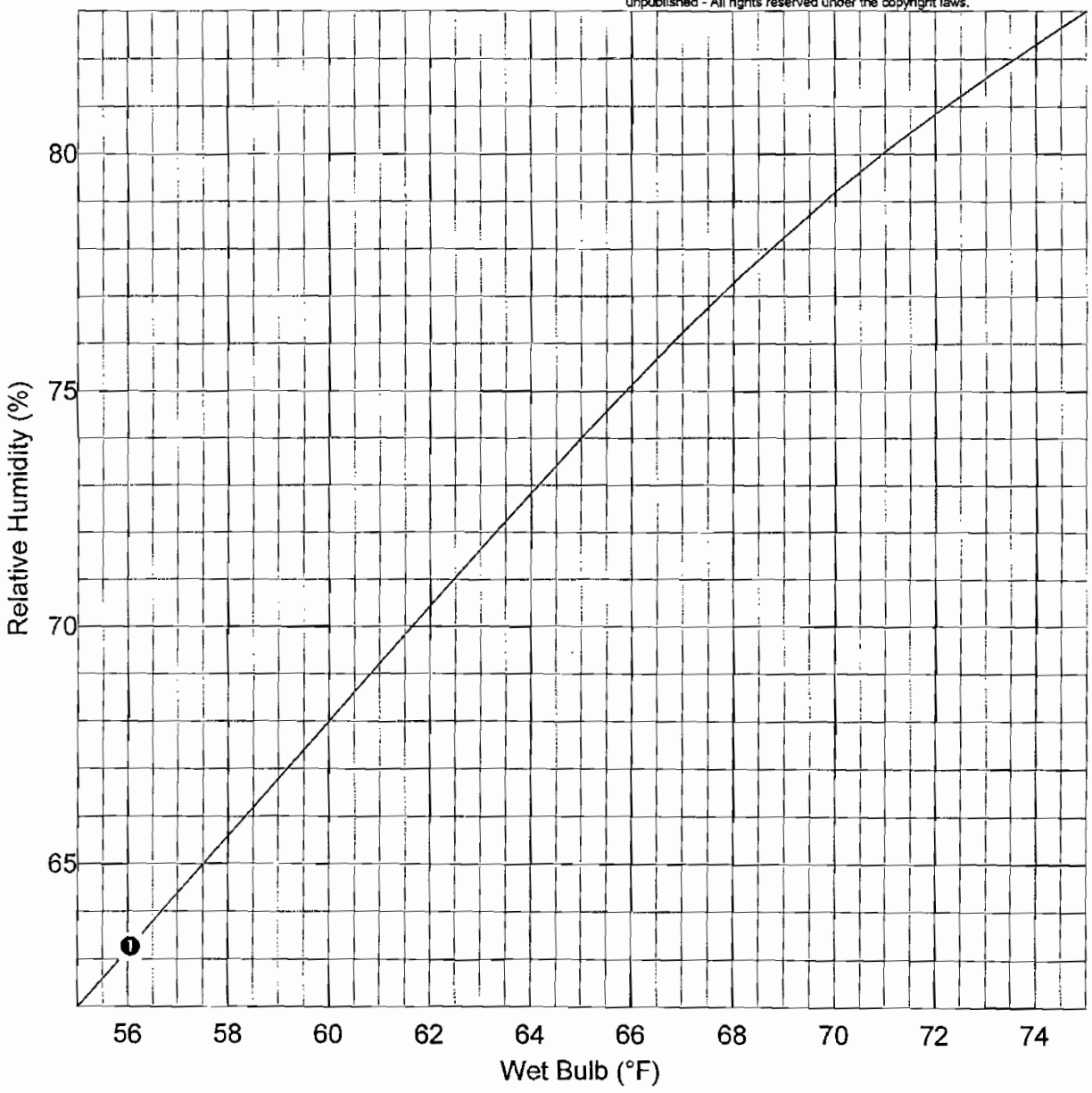

SPX Cooling Technologies
TRACS Version 04-AUG-06

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❶ 19.8 °F Range

Time: 09:40:50 Date: 11-02-2006 Drawn By: GFA

Fogging Frequency Curve for City of Vernon

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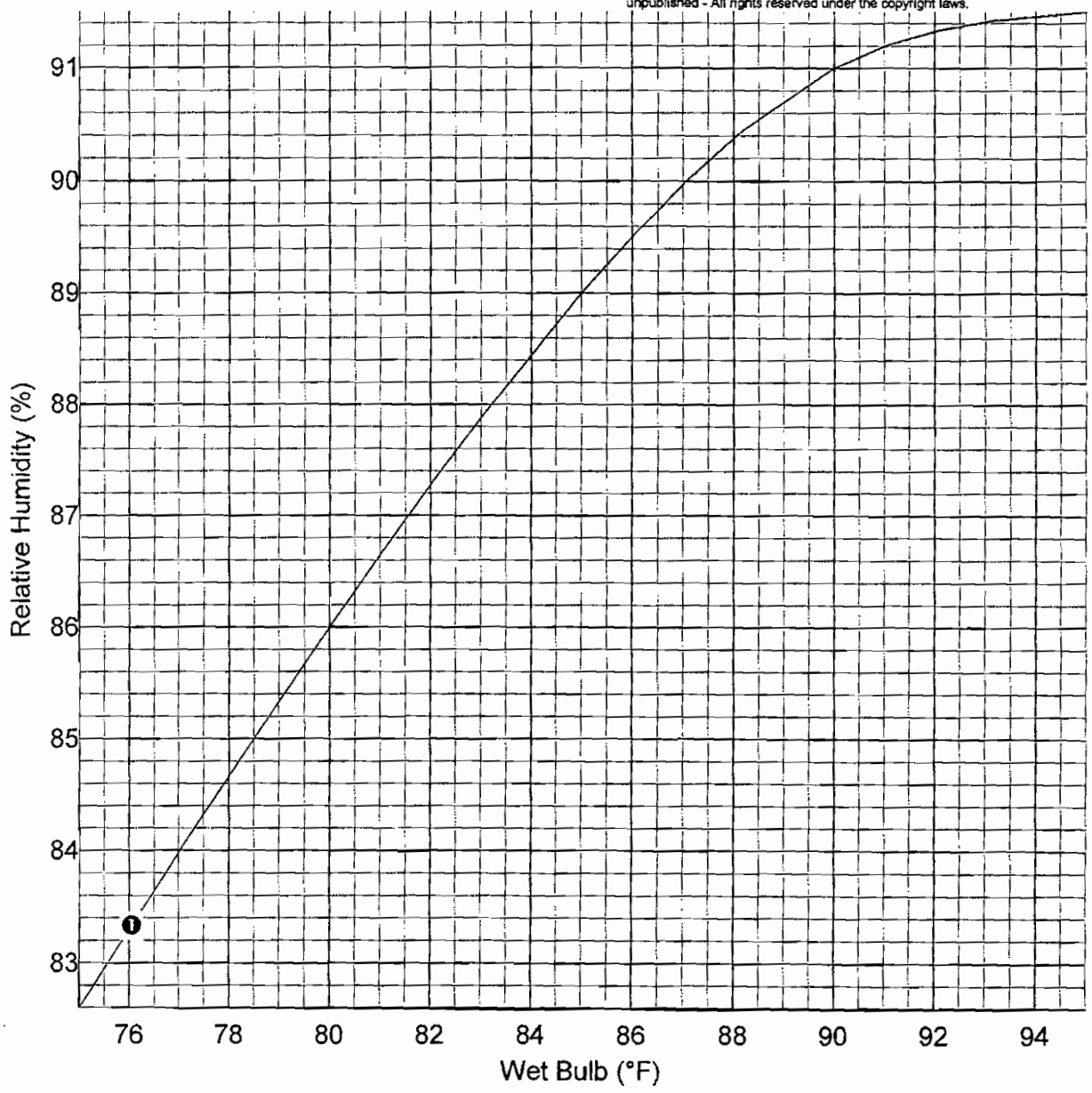

SPX Cooling Technologies
TRACS Version 04-AUG-06

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Fan Pitch	Constant
Flow Rate	202000GPM

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1 19.8 °F Range

Time: 09:50:49 Date: 11-06-2006 Drawn By: GFA

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE VERNON POWER PLANT PROJECT BY THE CITY OF VERNON	**DOCKET NO. 06-AFC-4** PROOF OF SERVICE LIST (REVISED 10/12/06)

INSTRUCTIONS: All parties shall (1) file a printed, original signed document plus 12 copies OR file one original signed document and e-mail the document to the Docket address below, AND (2) all parties shall also send a printed OR electronic copy of the document, plus a proof of service declaration, to each of the entities and individuals on the proof of service list:

CALIFORNIA ENERGY COMMISSION
Attn: DOCKET NO. 06-AFC-4
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

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DECLARATION OF SERVICE

I, Jeannette Harris, declare that on 12/28/06, I deposited the required copies of the attached Data Response, Set 1B in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above. I declare under penalty of perjury that the foregoing is true and correct.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Jeannette Harris
[signature]