11/15/02 CO
Certified

INTERMOUNTAIN POWER SERVICE CORPORATION

November 14, 2002

Mr. Richard Sprott, Director
Division of Air Quality
Department of Environmental Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820

Attention: Milka Radulovic, NSR Engineer

Dear Mr. Sprott:

NOTICE OF INTENT: Modification of Source - Update Information

On September 23, 2002, Intermountain Power Service Corporation (IPSC) submitted a Notice of Intent (NOI) to make certain changes at the Intermountain Generating Station (IGS) in Delta. The IGS is a coal fired steam-electric plant located in Millard County. Specifically, IPSC is requesting approval to make modifications to Units One and Two at IGS to enhance reliability. IPSC is also requesting an affirmative determination from the Division of Air Quality (DAQ) on a proposed pollution control project. This letter provides additional information concerning these requests. Note that the discussions below enhance the information already provided on September 23, 2002 and are based upon the sources cited in footnotes of that NOI.

Corrections

Please make the following corrections to the NOI of September 23, 2002:

On Page 2 of the NOI, under the heading of PRODUCTION SUMMARY, please note that design heat input will increase from 8500 to 9225 Mbtu/hr. We had erroneously put 8352 Mbtu/hr as previous design.

Clarifications

Certain points in the NOI need clarification as follows:

On Page 1 of the NOI, Under Item 1, discussing PROCESS DESCRIPTION, the last sentence of the second paragraph discusses boiler ratings. Please note that the boiler design is a 2,975 psi, 6,600,000 lb/hr steam flow, 1005° F boiler, approved to go to 6,900,000 lbs/hr steam flow. Since pressure and temperature ratings are not changing, no name plate corrections are being made.

On Page 3 of the NOI, in the emissions table, carbon monoxide (CO) emission rates are provided based upon two different derivations. The current CO rate of 0.022 lbs/Mbtu is

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based upon AP-42 calculations. The projected CO rate is based upon combustion modeling for overfire air. The increase from a current calculated rate to a projected rate is about 3,500 tons. Since we have no actual CO monitoring data, IPSC has pulled from its archived files the performance data from the IPP boiler acceptance testing. This data indicates that the actual current CO rate of emissions is about 0.041 lbs/mmbtu, rather than 0.022 lbs/Mbtu, which would project an increase of about 2,400 tons of CO in a worst case change, where NOx is concurrently decreasing 4,000 to 6,000 tons.

On Page 4 of the NOI, Item a. - in the Induced Fan Drive discussion, we are now advising that flow modeling has shown the best approach to correcting our obsolescence problem may be to replace our current power drives with new induced pulse width modulation technology. Such a change would require motor replacements. No changes to the fans themselves are being considered, and no change beyond approved capacity would result from the possible drive and motor change out. We are therefore requesting approval accordingly.

On Page 5 of the NOI, Item c. - in the Overfire Air Ports & Low-NOx Burner discussion, please note that the replacement or rebuild of the present low-NOx burners can be considered as replacement-in-kind, as we do not propose to increase heat input through the new burners from what is currently approved. The current burners have already been shown to accommodate heat input rates of the current uprate modification. The burners in Unit Two have not met design life, and need to be replaced. Unit One burners will undergo repairs or rebuilds as needed.

On Page 5 of the NOI, Item c. - also in the Overfire Air Ports & Low-NOx Burner discussion, we would like to clarify that overfire air is needed, in part, to accommodate the restriction on NOx emissions imposed by Acid Rain regulations that were promulgated based upon the Clean Air Act Amendments of 1990. Specifically, in 2007 Acid Rain requirements impose a 0.46 lb/Mbtu annual cap for NOx emissions on IPP. Since an early election was filed for IPP, this new limit was delayed. Current forecasts of coal quality indicate that without overfire air, the new Acid Rain limit could be difficult to attain.

On Page 6 of the NOI, we discussed the applicability of Prevention of Significant Deterioration (PSD) standards to the addition of overfire air (OFA) at IPP. We would like to further clarify why PSD is not applicable to OFA. This clarification ties directly to procedural safeguards and environmentally beneficial tests as described by EPA guidance, as well as other PSD exemptions for pollution control projects. The EPA guidance for environmentally beneficial pollution control projects can be found in the 7/1/94 Memorandum from John S. Seitz, "Pollution Control Projects and New Source Review Applicability." Our discussion related to that document follows.

Environmentally Beneficial Test

Note that on the outset this guidance is for non-electric utility industries, and specifically states that an explicit pollution control project exclusion for utilities was adopted by rule. However, the guidance discusses the exemption for utilities and the intent of EPA in granting such an exclusion, which is helpful for this discussion. It clearly states that nothing in the guidance is meant to affect the WEPCO exclusion for pollution projects that are currently applicable to utilities. The guidance goes on to clarify that any project undertaken at an existing electric steam generating unit for purposes of reducing emissions, which includes the add-on installation of innovative or conventional NOx control technology, such as overfire air, is a pollution control project that can be presumed, by its nature, to be environmentally beneficial. The presumption fails only if the DAQ believes that the NOx controls will not be operated or maintained according to standard and reasonable practices, or if collateral pollutant increases have not been adequately addressed. There is nothing in the history of the IPP station that can indicate to DAQ anything other than good operation and maintenance. We are providing a detailed discussion below concerning collateral increases.

This and other information presented in the Seitz memorandum should assist DAQ in an affirmative determination that the installation of OFA at IPP is not a major modification. In summary, the guidance directs the consideration of certain safeguards and procedural steps to ensure that a pollution control project is environmentally beneficial. Those tests and steps are discussed item by item.

1. The DAQ must first ascertain that the project is environmentally beneficial. In doing so, the DAQ may account for the reduction of any targeted pollutant against the increase of any collateral pollutant. In this case, when operated to fully minimize NOx, OFA may decrease NOx by 4,000 to 6,000 tons per year, while CO may increase by 2,400 tons per year. Next, the DAQ should also determine that collateral non-target pollutant increases are minimized. This does not mean that DAQ should perform a BACT-type analysis or prescribe secondary controls or permit limits for the non-target pollutants. Rather, minimization means that the source has taken reasonable steps to minimize collateral emissions within the physical configuration and operating standards associated with the control device. Permit limits are to be used only if there is a presumption that a violation of an applicable ambient air quality standard would occur, which is extremely unlikely for CO from this type of project. Inasmuch as OFA is a widely recognized and accepted NOx control technology, IPSC can affirm based upon its own operating history that such controls will be operated according to the standard for minimizing collateral increases.

2. The DAQ must also ensure that the project causes no violation of an NAAQS, or PSD increment, or adversely impacts an AQRV in a Class I area due to increases in collateral pollutants or changes in utilization patterns. IPSC will provide the modeling under separate cover that demonstrates that the installation of OFA and a collateral increase of CO can still be determined to be

environmentally beneficial under this safeguard. Since the IPP facility is located in an attainment area for CO, no offsetting will be required. Further, OFA in and of itself, cannot affect utilization of steam generation. OFA cannot physically cause heat input to boilers to change, nor allow heat input to increase just due to the control of emissions. Additionally, OFA does not affect boiler capacity, decrease production costs, or improve marketability of this station's output, further negating any affect on utilization. In fact, EPA states in the guidance that they do not expect these types of controls to increase utilization.

3. The guidance indicates that for pollution control projects at facilities other than electric utilities, the DAQ must provide a case-by-case approval, along with a public review process because a regulatory exclusion is lacking for those other categories. Although WEPCO has been promulgated into the governing regulations at both the Federal and State levels, IPSC foresees that through the September 23, 2002 NOI, the DAQ will nonetheless provide a case-by-case review and public comment period. Along with this, the DAQ must determine that the project must still comply with all otherwise applicable requirements under both Federal and State standards, which IPSC affirms it will.

Conclusion

A thorough review of the application of the pollution control project exclusion clearly indicates that the DAQ can approve the proposed installation of overfire air at the Intermountain Generating Station as environmentally beneficial. The DAQ can also make this determination based upon IPSC operating history and statements herein.

CO Monitoring and Potential-to-Emit

IPSC is willing to work with DAQ on methodology for CO monitoring, including the use of surrogate emission monitoring used in conjunction with other parametric operational data. This is important in light of the fact that changes in determining CO must be made from an AP-42 calculation, to a modeled-based derivation.

We are including with this letter a copy of the original projected emission values from the January 25, 1980 Applicability Determination for IPP. The data thereon shows a potential-to-emit for CO of 5,468 tons per year. We have found nothing else in our archives indicating a change from this PTE for our current two-unit operation. The PTE and operating limit described in our current Approval Order is based wholly upon AP-42 calculations, which are now shown to be incorrect for the proposed addition and operation of overfire air. IPSC is requesting that this be corrected in new Approval Order, as was also discussed in the September 23, 2002 NOI on Page 8. IPSC believes that the DAQ should be able to issue a new Approval Order with an adjusted PTE that more accurately reflects actual operation.

Should you require further information to expedite the approval of this request, please contact Mr. Dennis Killian, Superintendent of Technical Services, at (435) 864-4414, or dennis-k@ipsc.com.

Title V Permit

The changes proposed herein will affect only one condition of the current Title V permit. Condition II.B.1.i limits CO emissions on an annual basis. Since maximizing NOx control efficiency can cause CO emissions to exceed this limit, IPSC requests that this condition be revised accordingly.

In as much as this notice of intent may affect our Title V Operating Permit, I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Cordially,

George W. Cross

George W. Cross
President, Chief Operations Officer, and Title V Responsible Official

BP/RJC:jmg
Enclosure: Copy of 9/23/02 NOI
Copy of 1/25/80 Applicability Analysis

cc: Blaine Ipson, IPSC
Bruce Moore, LADWP CES
John Schumann, LADWP
Lynn Banks, IPSC
Eric Tharp, LADWP
James Holtkamp, LLG&M

11/27/02 jmg

INTERMOUNTAIN POWER SERVICE CORPORATION

November 26, 2002

Mr. Richard Sprott, Director
Division of Air Quality
Department of Environmental Quality
P.O. Box 144820
Salt Lake City, UT 84114-4820

ATTENTION: Milka Radulovic, NSR Engineer

Dear Mr. Sprott:

NOTICE OF INTENT: Transmittal of Additional Information

On September 23, 2002, Intermountain Power Service Corporation (IPSC) submitted a Notice of Intent (NOI) to make certain changes at the Intermountain Generating Station (IGS) in Delta. IPSC followed up with a letter of clarification on November 14, 2002. Under cover of this letter, we are submitting additional information concerning that NOI.

Please find enclosed a copy of the modeling report on carbon monoxide impacts due to the proposed addition over-fire air ports for nitrogen oxides control at IGS.

Should you require further information to expedite the approval of this request, please contact Mr. Dennis Killian, Superintendent of Technical Services, at (435) 864-4414, or dennis-k@ipsc.com.

Cordially,

George W. Cross

George W. Cross
President, Chief Operations Officer, and Title V Responsible Official

BP/RJC:jmg
Enclosure: Copy of IPP Over-Fire Air Project Carbon Monoxide Impact Report

cc: Blaine Ipson, IPSC
Bruce Moore, LADWP CES
John Schumann, LADWP
Lynn Banks, IPSC
Eric Tharp, LADWP
James Holtkamp, LLG&M

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CH2MHILL

November 25, 2002

176784.A0.01.02

Rand Crafts
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, Utah 84624

Subject: IPP Over-Fire Air Project: Carbon Monoxide Impacts

Dear Rand:

This letter presents a summary of our analysis of potential carbon monoxide (CO) impacts from the proposed addition of over-fire air to the existing Units 1 and 2 (OFA Project) at the Intermountain Power Project (IPP). CH2M HILL evaluated the impact from the CO emissions resulting from the OFA Project on the following:

- Class II area National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments
- Class I area PSD increments and air quality related values (AQRVs)

The IPP is situated in an area that is designated as attainment for all criteria pollutants, while the surrounding areas are designated as Class II areas for PSD permitting.

Intermountain Power Service Corporation (IPSC) requested that CH2M HILL conduct the analysis described here. The scope of the project was summarized in our proposal to IPSC dated November 12, 2002. This report provides an overview of the analysis, including dispersion modeling inputs and results.

Selected Model

To evaluate air quality impacts in the Class II areas surrounding the IPP, CH2M HILL used the EPA Industrial Source Complex Short-Term (ISCST3) dispersion model. The ISCST3 model (Version 02305) is the latest generation of the EPA model that is recommended for predicting impacts from industrial point sources. The model combines simple terrain and complex terrain algorithms, which make it ideal for the terrain surrounding the IPP. The selected model is the same model that was proposed for use with the Intermountain Power Project (IPP) Unit 3 Project and approved for use by the Utah Division of Air Quality (UDAQ).

The ISCST3 model was run with EPA regulatory default options, with the addition of the model option for processing missing meteorological data. By using the missing data processing routine, the model can recognize the periods of missing data and adjust calculated impacts in the same manner that calm winds are processed.

Meteorological Input

For meteorological input to the ISCST3 model, CH2M HILL used data collected from the 50-meter (m) level from the meteorological monitoring station at the IPP. Data from the IPP station meet all EPA requirements for consideration as representative of the IPP. The period of record represented by the data is the most current, as the continuous collection of meteorological data began at the IPP station on July 19, 2001. A full calendar year of data was used for the modeling, spanning from August 1, 2001 to July 31, 2002. Twice-daily mixing heights to couple with the on-site surface data were obtained through the use of raw upper-air data from the Salt Lake City National Weather Service station, and the EPA Mixing Heights Program. Figure 1 presents a wind rose for the 50-m data.

Receptor Grid

The base receptor grid for ISCST3 modeling consisted of receptors that were placed at the ambient air boundary, and Cartesian-grid receptors that were placed beyond the boundary at spacing that increased with distance from the origin. Ambient boundary receptors were placed at 50-m intervals. Beyond the ambient boundary, receptor spacing was as follows:

- 100-m spacing from property boundary to 1 kilometer (km) from the origin
- 250-m spacing from beyond 1 km to 3 km from the origin
- 500-m spacing from beyond 3 km to 20 km from the origin
- 1,000-m spacing from beyond 20 km to 50 km from the origin

Terrain in the vicinity of the IPP was accounted for by assigning elevations to each modeling receptor. CH2M HILL used Digital Elevation Model (DEM) data from the U.S. Geological Survey (USGS) to determine receptor elevations. We obtained DEM data from the USGS National Elevation Dataset (NED). The NED has been developed by merging the highest-resolution, best-quality elevation data available across the United States, and is the result of the USGS effort to provide 1:24,000-scale (7.5-minute) DEM data for the entire continental United States. Figure 2 presents a depiction of terrain features near the IPP.

Building Downwash

Building downwash effects for structures near Units 1 and 2 were determined with the EPA Building Profile Input Program (BPIP, version 95086).

Emissions and Exhaust Parameters

Rather than attempt to estimate and evaluate the CO emissions increase from the OFA Project alone, the maximum 1-hour and 8-hour emissions from full operation of each unit (at various loads, after approved uprate modifications) were input to the ISCST3 model. This represents a conservative approach to estimating the impacts from the OFA Project. Attachment 1 presents the modeled emissions and exhaust parameters for each load condition.

Maximum 1-hour emissions for the modeling analysis were calculated from data collected during the 1988 acceptance testing for Units 1 and 2. During those acceptance tests, the highest recorded CO value for either unit over a two-hour period 0.263 lb/MMBtu. To arrive at a conservative estimate of worst-case 1-hour emissions at approved full uprate load operation, the value of 0.263 lb/MMBtu was multiplied by the maximum heat input for full load (9,225 MMBtu/hr). To arrive at emissions for reduced loads (75% load and 50% load), the 0.263 lb/MMBtu value was multiplied by the heat inputs expected at the particular reduced load. Exit velocities for reduced load conditions were calculated by scaling the flow at 100% load to reflect the expected flow at 75% and 50% loads.

The manufacturer of the OFA Project equipment has guaranteed a steady-state CO emission rate of 0.064 lb/MMBtu. To estimate maximum 8-hour emissions, the manufacturer's guaranteed emission rate of 0.064 lb/MMBtu was multiplied by the expected heat input for each unit at 100%, 75%, and 50% loads.

Because the Unit 1 and Unit 2 flues are released from a common shell (stack) location, both units were modeled with a common pair of Universal Transverse Mercator (UTM) coordinates, representing the center of the common stack. Similarly, because the maximum estimated emissions are identical for each unit, the two sources were modeled as a single point source, with the emissions for a single unit doubled to represent both units within the model.

Results

CH2M HILL compared the highest 1-hour and 8-hour impacts predicted by the ISCST3 model for 100%, 75%, and 50% loads to the Class II Area modeling significance levels. The highest predicted 1-hour impact was 399.4 $\mu g/m^3$. This impact was estimated to occur with 100% load, approximately 35 km west-northwest of the Units 1 and 2 stack, and in an area with receptor spacing of 1,000 m. According to modeling guidelines published by the UDAQ: "In general, the receptor network will be considered adequate if the difference in concentrations at neighboring receptors is no larger than one half the difference between the maximum modeled concentration and the NAAQS or increment under consideration" (UDAQ, 2000). In this case, the air quality standard under consideration is the Class II modeling significance level, and one half of the difference between the maximum modeled concentration (399.4 $\mu g/m^3$) and the modeling significance level (2,000 $\mu g/m^3$) is

approximately 800 $\mu g/m^3$. The difference between concentrations at neighboring receptors is much less than 800 $\mu g/m^3$, and therefore the receptor network was adequate to capture the maximum 1-hour impacts of CO.

The maximum 8-hour impact of 24.7 $\mu g/m^3$ also occurred with 100% load operation. This impact occurred approximately 2.5 km south of the Units 1 and 2 stack in an area with 250-m receptor spacing. As with the maximum predicted 1-hour concentration, the difference between concentrations at neighboring receptors is much less than one half of the difference between the maximum modeled concentration and the modeling significance level (500 $\mu g/m^3$), and therefore the receptor network was adequate to capture the maximum 8-hour impacts of CO.

The maximum predicted 1-hour concentration of CO is less than 20% of the modeling significance level, while the maximum 8-hour concentration is less than 5% of the modeling significance level. These modeled impacts were conservatively predicted for full operation of both units after completion of the OFA Project as opposed to simply evaluating the increase in CO emissions that would be expected from the project. Therefore the analysis demonstrates that air quality impacts of CO from Units 1 and 2 after completion of the OFA Project will be insignificant, and Class II NAAQS and PSD increments will not be threatened.

TABLE 1
Maximum Estimated Carbon Monoxide Impacts

Averaging Period/Load	Maximum Estimated Impact ($\mu g/m^3$)	UTM Location	Class II Area Modeling Significance Level ($\mu g/m^3$)
1-hour/100% Load	399.4	330,054 m East 4,382,464 m North	2,000
1-hour/75% Load	360.0	366,054 m East 4,401,464 m North	2,000
1-hour/50% Load	311.0	366,054 m East 4,401,464 m North	2,000
8-hour/100% Load	24.7	364,804 m East 4,371,964 m North	500
8-hour/75% Load	21.4	364,804 m East 4,371,964 m North	500
8-hour/50% Load	16.9	365,054 m East 4,376,464 m North	500

Notes:
$\mu g/m^3$ = micrograms per cubic meter
UTM = universal transverse mercator
m = meters

Air Quality and AQRVs in Class I Areas

The IPP plant is located within 150 km of Capitol Reef National Park (NP) in Utah, the nearest Class I area to the IPP. The plant is located within 250 km of several other Class I areas in Utah, including Zion NP, Bryce Canyon NP, and Canyonlands NP. Because of the presence of these Class I areas, CH2M HILL evaluated the potential impacts of CO emissions from the Units 1 and 2 OFA Project on Class I area air quality and AQRVs.

No Class I area PSD increments have been established for CO. Therefore, the OFA Project will not cause or contribute to a violation of a Class I area PSD increment.

To evaluate the effect of CO emissions from the OFA Project on Class I area AQRVs, CH2M HILL examined the document titled *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report* (FLAG, 2000) to determine the Class I AQRVs that are of most concern to the Federal Land Managers (FLM). The goal of the FLAG process has been to provide consistent policies and processes both for identifying AQRVs and for evaluating the effects of air pollution on AQRVs, primarily those in Federal Class I air quality areas.

Details are provided in the FLAG document for the types of analyses that should be conducted for AQRVs. These analyses include: visibility impacts, acid deposition of sulfur and nitrogen compounds, and ozone effects on vegetation. Carbon monoxide is an air pollutant that does not contribute to visibility degradation, acid deposition, or ozone formation. Therefore, CO emissions from the OFA Project will not adversely affect any Class I area AQRVs.

List of Files

ISCST3 modeling files are included with this report on CD. The file names and descriptions are as follows:

IPP_CO_1.DTA(.LST) – ISCST3 input (.DTA) and output (.LST) files for maximum 1-hour CO impacts

IPP_CO_8.DTA(.LST) – ISCST3 input (.DTA) and output (.LST) files for maximum 8-hour CO impacts

IPP50M.MET – Meteorological input file

References

UDAQ, 2000. *Utah Division of Air Quality Modeling Guidelines (Revised Draft)*, Utah Division of Air Quality, Technical Analysis Section, August 17, 2000.

FLAG, 2000. *Federal Land Managers' Air Quality Related Values Workgroup (FLAG) Phase I Report*, December 2000.

Please contact me at (720) 286-5362 if you have any questions.

Sincerely,

CH2M HILL

James Nall

James (Josh) Nall
Air Quality Meteorologist

Figure 1 – Wind Rose

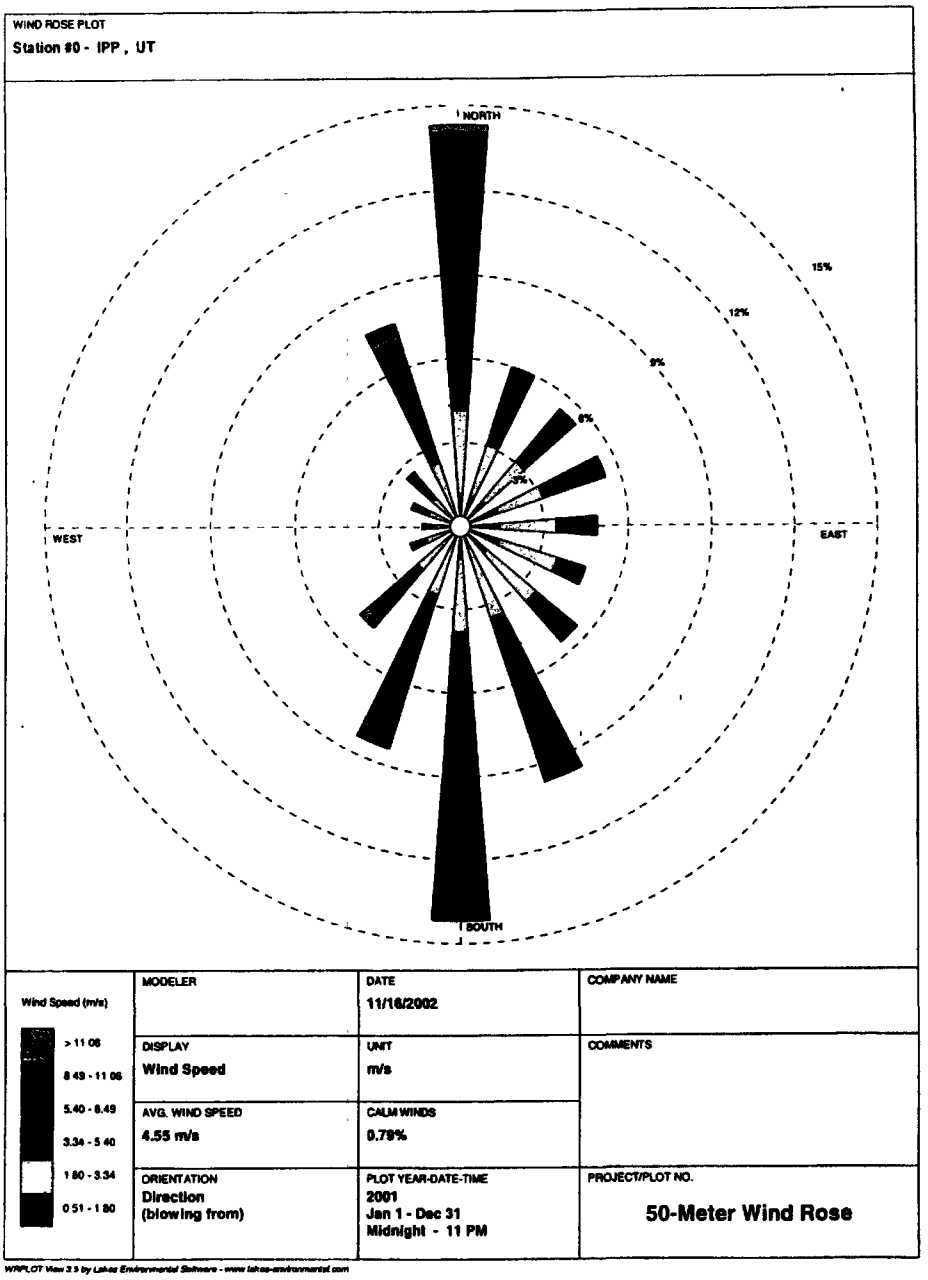
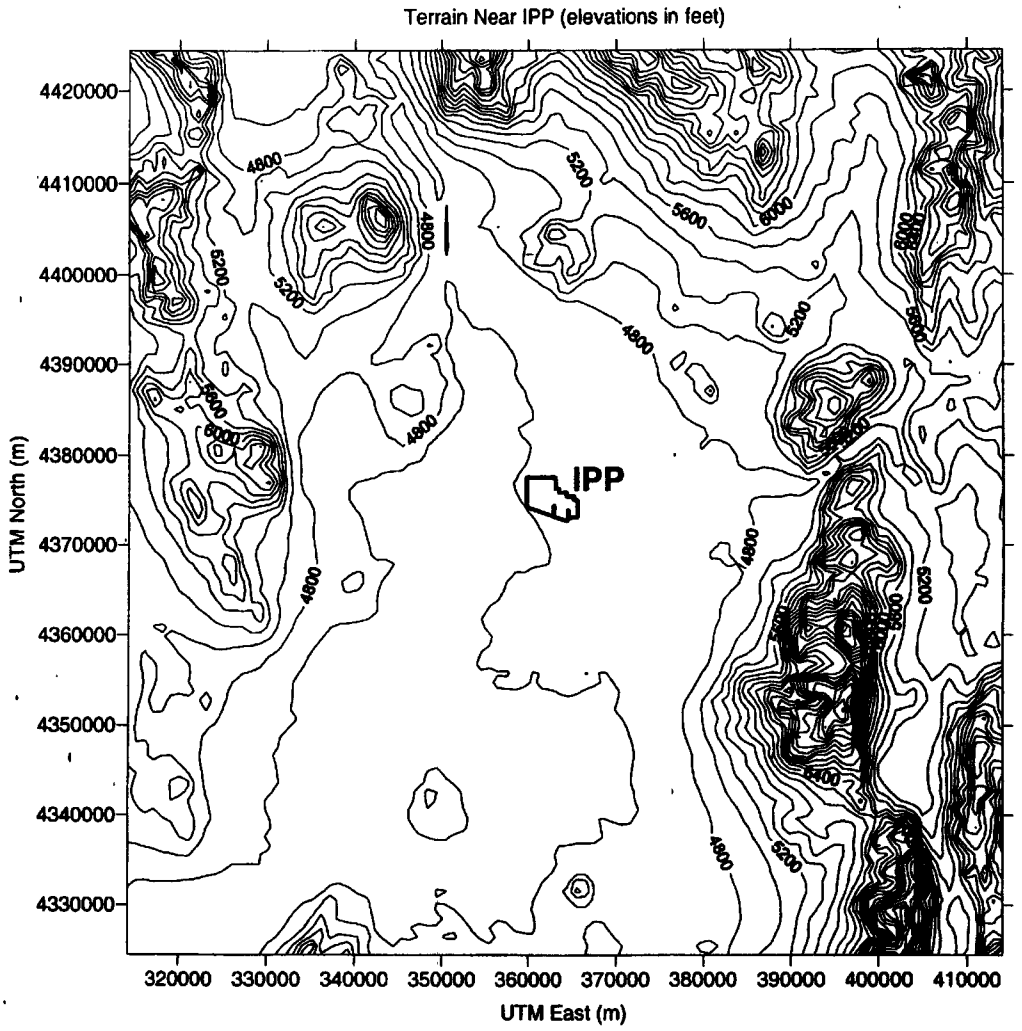


Figure 2 – Terrain Features



ATTACHMENT 1

IPSC CO Modeling for OFA Project

Modeling Input Summary - Unit 1

Modeling Scenario	Heat Input MMBtu/hr	Stack Height ft	Stack Diameter ft	Stack Flowrate acfm	Exit Velocity ft/sec	Exhaust Temperature °F	1-Hour CO Emissions lb/hr	8-Hour CO Emissions lb/hr
Full Load Operation - 100%	9,225	712	28.0	3,056,345	82.7	115	2,426.18	590.40
Partial Load Operation - 75%	6,919	712	28.0	2,292,259	62.0	115	1,819.63	442.80
Partial Load Operation - 50%	4,613	712	28.0	1,528,173	41.4	115	1,213.09	295.20

Modeling Input Summary - Unit 2

Modeling Scenario	Heat Input MMBtu/hr	Stack Height ft	Stack Diameter ft	Stack Flowrate acfm	Exit Velocity ft/sec	Exhaust Temperature °F	1-Hour CO Emissions lb/hr	8-Hour CO Emissions lb/hr
Full Load Operation - 100%	9,225	712	28.0	3,056,345	82.7	115	2,426.18	590.40
Partial Load Operation - 75%	6,919	712	28.0	2,292,259	62.0	115	1,819.63	442.80
Partial Load Operation - 50%	4,613	712	28.0	1,528,173	41.4	115	1,213.09	295.20

Modeling Input Summary - Unit 1+2 (metric)

Modeling Scenario		Stack Height m	Stack Diameter m		Exit Velocity m/sec	Exhaust Temperature K	1-Hour CO Emissions g/s	8-Hour CO Emissions g/s
Full Load Operation - 100%		217.0	8.53		25.21	319	611.40	148.78
Partial Load Operation - 75%		217.0	8.53		18.91	319	458.55	111.59
Partial Load Operation - 50%		217.0	8.53		12.61	319	305.70	74.39

Assumptions:

1) The manufacturer has provided a steady-state CO emission guarantee of 0.064 lb/MMBtu. The 8-hour CO modeled average (lb/hr) is based on this value.
2) The maximum CO recorded during the 1988 Units 1 and 2 acceptance test was 0.263 lb/MMBtu averaged over a period of two hours. The 1-hour CO modeled average (lb/hr) is based on this value.
3) Lb/hr CO = lb/MMBtu CO x MMBtu/hr Heat Input.
4) Stack flow and stack exit velocity were estimated for 75% and 50% load conditions.