UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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Air & Radiation Branch
U.S. EPA Region V

MEMORANDUM

SUBJECT: Comments on the Overview of Geneva Steel's PM_{10} Control Plan

FROM: Edwin L. Meyer, Jr., Chief
Model Application Section, SRAB, TSD (MD-14)

TO: Lee Hanley
Utah PM10 SIP Coordinator, EPA Region VIII

At the request of the Model Clearinghouse, members of my staff and I have reviewed the Overview of Geneva Steel's PM_{10} Control Plan. As you know, available models do not allow us to precisely quantify effects of reducing NO_x and SO_2 on PM_{10}. For the most part, the procedure followed in this analysis appears reasonable, given the available tools. There are a few concerns however, which I have outlined below.

First, the control figures given in the 4th column in Table A may be somewhat high. These figures depend on one of the two following assumptions being true:

1. <u>All</u> of the SO_2 emitted by the plant has been converted to PM by the time the plume reaches the monitoring site, or

2. The percent control of SO_2 and primary particulate are identical.

It is unlikely that all SO_2 is converted to PM_{10} and, as shown in Exhibit 1, the second assumption does not hold. Since the percent reduction in SO_2 emissions far exceeds that for primary particulate, control of total particulate (secondary + primary) may be overstated. Fortunately, the "fix" for this potential problem is relatively simple. A distinction should be made between primary PM and secondary PM contributed by the coke stack/gas and open hearth operations. This information should be readily available, since it is stated that the secondary sulfate contribution calculated in the original CMB analysis was apportioned to the Geneva facility based on a comparison of that facility's SO_2 emissions to the total amount of SO_2 emitted in the air basin. Measured PM_{10} attributed to the primary PM component of the plant's emissions should be rolled back according to the percent control implemented on the primary emissions. Measured PM_{10} attributed to the plant's SO_2 emissions should be rolled back according to the percent control implemented on those emissions.

Second, in Table A, secondary sulfate contributions are shown to be zero for both the "current" and "attainment" impacts. However, in the supporting documentation, it is noted that the Geneva SO_2 emissions constitute 85 percent of the total SO_2 emitted in the basin. Therefore, should not 15 percent of the originally identified secondary sulfate remain as a residual in both the current and attainment assessments?

Finally, try as we might, we were unable to reproduce the 82.1 percent control figure included in Table A for coke stack/gas. We kept getting 85 percent for this. If the 82 percent should really be 85 percent, then this error would compensate some for the two previously identified problems.

The net effect of these problems is that the "attainment impact" is most likely understated. Given that the plant's SO_2 emissions are much greater than its primary particulate emissions and that the plant is the major source of SO_2 emissions in the air basin, these effects may well be small. However, in the interest of having a clean, technically defensible SIP, we recommend that the corrections be made.

cc: Q. Nguyen (MD-14)
T. Pace (MD-15)
J. Tikvart (MD-14)
D. Wilson (MD-14)

5/ʻL — Ned - take a brief look at S-II & let me know if you have any concerns, Thx Dean

Dean Wilson - I think Ned should look at the Section II discussion of hydrated sulfate - Also, it doesn't appear that their calc. are consistent w/ Rollback. Thanks, Tom

OVERVIEW OF GENEVA STEEL'S PM_{10} CONTROL PLAN

I. Preface

Upon the purchase of the Geneva Works and the commencement of operations, Geneva Steel established environmental compliance as one of its top priorities. The commitment to improving air quality has been foremost among its environmental concerns. This commitment has been reflected in the resources Geneva Steel has expended to understand the PM_{10} problems in Utah County and to develop an Environmental Modernization and Control Plan (the "Control Plan") that would respond most effectively to reduce levels of PM_{10}.

This analysis has demonstrated that PM_{10} exceedances in Utah Valley are limited exclusively to winter inversion periods when a combination of unique geography and climatic conditions reduce the ability of the natural air flows to eliminate PM_{10} and cause chemical reactions that result in gases (PM_{10} precursors) converting to secondary PM_{10}. Unlike many areas, such as Southern California, that experience almost year round PM_{10} exceedances, Utah County suffers from occasional spikes that in recent years have occurred generally from 2 to 22 times per winter season. Significantly, ? these exceedances occur only in the winter when conditions exist allowing gases to convert to secondary PM_{10}. Thus, any significant reductions in overall PM_{10} levels must come primarily by controlling True? the sources of secondary PM_{10} -- a fact recognized by the Utah Bureau of Air Quality (BAQ) in the draft PM_{10} control plan.

Geneva Steel has developed a Control Plan that addresses these unique climatic and geographic conditions while maintaining the efficiency and resources necessary to modernize the mill and preserve its production capabilities. The Plan has three major components, each of which reduces PM_{10} emissions, but hits hardest the sources of secondary PM_{10}. The center piece of the Plan is the Q-BOP which will replace the open hearth process at an estimated cost of $62 million. Once in operation, the Q-BOP will eliminate essentially all of the NO_x now emitted by the open hearth. The Q-BOP will also improve the ability to control and reduce stack and fugitive PM_{10} emissions.

The second component of the Plan is the Sulfur Removal Facility which is estimated to cost $10.8 million and will reduce sulfur emissions from combustion of coke oven gas by approximately 95%. The reductions in sulfur emissions should also result in a greater proportionate reduction of the PM_{10} particulates measured at the monitors in the form of sulfates. (See Section II.) The third major component of the Plan is the Biological Wastewater Treatment Facility estimated to cost $6.5 million. The operation of the Wastewater Facility will reduce PM_{10} emissions associated with the evaporation of the coke flushing water on blast furnace slag by about 80%. Detailed information on each of the three components has previously been submitted to the Bureau of Air Quality, but no single document describes the overall effect the Plan will have on PM_{10} emissions. The purpose of this summary is to explain the overall reductions from the Plan. As is explained in more detail in the following sections, the Plan, when fully implemented, will reduce Geneva Steel's impact from PM_{10} emissions by at least 57%. An important part of the Control Plan is that it will be enforce-able under the bubble concept, allowing improved monitoring of emissions and greater flexibility to comply with PM_{10} standards. (See Section III.) The Q-BOP is scheduled to be completed on September 15, 1991, the Sulfur Removal Facility on April 30, 1992 and the Wastewater Facility on March 1, 1991. The time periods on the Q-BOP and the Sulfur Removal Facility are contingent upon expeditious approval by BAQ of the permit applications for these facilities.

The Plan is an innovative and responsible approach to improving air quality in Utah County. It allows Geneva Steel to reduce PM_{10} emissions by the amount required by the draft SIP, while maintaining its production capabilities that add to the economic well-being of the community. Moreover, it effectively addresses the unique conditions that contribute to PM_{10} exceedances in Utah County by reducing PM_{10} precursors that convert and are measured at the monitors as secondary PM_{10}. The implementation of Geneva Steel's Control Plan, together with the adoption of similarly responsible plans for controlling emissions from other sources of PM_{10}, will attain the PM_{10} standards and significantly improve air quality in Utah County.

II. Impact of Geneva Steel PM_{10} Control Plan

The current draft SIP Control Strategy Worksheet requires Geneva Steel to demonstrate additional controls to reduce the impact of its emissions on the design value for the Lindon monitor by 57%. The Control Plan, once implemented, will achieve this requirement. The following Table A, presented in the same format and analysis as BAQ's SIP Control Strategy Worksheet, demonstrates that the Control Plan will satisfy this requirement.[1]

inconsistent w/ Table B. numbers in Table A are internally consistent.

TABLE A

IMPACT OF GENEVA STEEL CONTROL PLAN

Total conc. 260

	Design Day % Contribution	Impact) (ug/m³)	Additional Control[2]	Attainment Impact (ug/m³)
Geneva Steel Subtotal	**59.9**	**155.7** 69.8	**56.6%**	**67.66** (=(1-.566)(155.7
Coke Stack/Gas	34.5	89.8 P+HS +SS	82.1%	16.07
Open Hearth	10.6	27.6	38.7%	16.92
Blast Furnace	3.8	9.9	0	9.9
Sinter Plant	1.6	4.1	0	4.1
Secondary Sulfate	0	0	0	0
Secondary Nitrate	9.4	24.4	15.3%	20.67
				67.62

The Control Plan's impact as shown in Table A has been calculated based on the detailed technical information contained in the Control Plan/Permit Applications for the Wastewater Treatment Plant, Q-BOP, and Sulfur Removal Facility submitted to

[1]Geneva Steel has submitted previously information from NEA, Inc. and other data that demonstrates that the BAQ has over-estimated the impact at the monitor of its emissions. BAQ has declined to use this analysis for the SIP. For purposes of this analysis, Geneva Steel has used the same approach as the SIP.

[2]Percentages calculated as shown on Exhibit 1.

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the Utah Department of Health on February 23, 1990, March 19, 1990 and April 4, 1990, respectively. The SIP Control Strategy is designed to reduce Geneva's impact on the monitor as represented by the design value. The design value is based upon the occasional spikes at the monitor and is selected to reflect worst case conditions[3]. Based on the experience of the three winter seasons since Geneva Steel has been reopened (Fall 1987 through Spring 1990), the design value day may occur as infrequently as once every three or more years. Reductions at the Lindon monitor on more typical winter days should cause overall PM_{10} levels to be substantially below the federal standard of 150 ug/m^3.

Geneva Steel's reduction of its SO_x emissions as part of the Control Plan will result in a greater proportionate reduction of PM_{10} mass at the monitor. The close correlation and relationship between the reduction of sulfates and a commensurate reduction of hydrated sulfates (water molecules attached to sulfur particles) at the PM_{10} filter has been noted by John G. Watson of the Desert Research Institute ("DRI") in a letter dated January 16, 1990, and submitted as part of the EPA comments on the PM_{10} SIP for Utah County. Dr. Watson states concisely, "Take away the sulfate and you also take away the mass from the hydrated water" (DRI comments at p. 9). Accordingly, Geneva Steel should receive an appropriate

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[3]Geneva Steel recently submitted comments to BAQ which would justify a reduction in the current proposed design value because of monitoring observations made during the winter of 1989-90 during which the PM_{10} 24-hour standard was exceeded only 2 times. Accordingly, any reduction in the design value should be reflected in the PM_{10} control percentage imposed on Geneva Steel.

(i.e. greater than "1 for 1") PM_{10} SIP credit at the monitoring sites.

Dr. John Cooper of NEA, Inc. has confirmed this same relationship. The combination of water with sulfur particles appears to be greatest under the same conditions that create the high levels of PM_{10} on which the design value has been based. Thus, the conditions that result in the highest likelihood of an exceedance will also create conditions during which the water molecules are likely to be attached to sulfur particles and measured as PM_{10}. Under the conditions most likely to result in exceedances, Dr. Cooper has estimated the ratio between sulfate and hydrated sulfate containing compounds at 1 : 1.95. Using this ratio, the Geneva Control Plan on a typical exceedance day will result in a greater PM_{10} reduction than the removal of the sulfur itself. The following Table B demonstrates this reduction:

Sum of the $SO_4^=$ + $SO_4 \cdot H_2O$ should be reduced proportionally if SO_2 availability rather than some cation (eg, NH_4^+) is the factor limiting formation of secondary particulate sulfate. Thus the proposed proportional reduction of $SO_4^=$ only appears to strike a middle road. Judging from the bracketed discussion on p. 7 & Table A, it is implied that Geneva is not claiming more than a proportional reduction. ~~(i.e., [illegible]~~

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These # are inconsistent with those in Table A. Is this because Table A pertains to the design value day & Table B depicts average figures, or is there some other reason?

TABLE B

Geneva Steel's Average Daily Emissions Including Hydrated Sulfates[4] (Tons/Day)

In Table A, secondary $SO_4^=$ contribution is shown to be 0. How then is this discussion relevant?

	SO_2 as Sulfate[5]		Hydrated Sulfates[6]	NO_x	Primary PM_{10}	Total[7]
Pre-Control	34.17	x1.95	66.63	13.67	3.46	83.76
Post-Control	5.30	x1.95	10.33	11.58	3.40	25.31
				Reduction (Tons/Day)		58.45
				Reduction (Percent)		69.8

Recent analysis also indicates that there is a similar reduction in PM_{10} mass for hydrated nitrates when NO_x emissions are reduced. This appears to be an appropriate area for future study for the state and interested parties. The existence of that relationship, however, provides assurance that Geneva's Control Plan is conservative and that the actual experience will be in excess of the reductions necessary to attain and maintain the PM_{10} standards.

In fact on the highest PM_{10} days, over half of the total PM_{10} mass measured at the monitor during winter inversion episodes in Utah County consists of chemical species associated with the

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[4]Based on Geneva Steel's 1988 Emissions Inventory. A copy of the 1988 Emissions Inventory is attached as Exhibit 1 hereto.

[5]SO_2 emissions multiplied by 1.5 to adjust for difference in molecular weight between SO_2 and SO_4. SO_4 is the form in which the particulate is measured at the monitor.

[6]Sulfate multiplied by 1.95 to account for the ratio between hydrated sulfate and its associated compounds.

[7]Sum of hydrated sulfates, NO_x and primary PM_{10}.

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secondary gases SO_x and NO_x. Geneva Steel is the predominant source of SO_x in Utah Valley and conditions during inversions cause the SO_x emitted from the steel mill to be transformed to hydrated sulfates during winter inversions. The chemical mass balance (CMB) analyses that have been performed affix a certain amount of mass in the form of water to sulfates collected on the PM_{10} filters. Elimination of the sulfates and nitrates from the filter because of reduced SO_x and NO_x emissions will result in additional reductions of mass from the PM_{10} filters.

Reduction ?

III. Enforcement of the Geneva Steel PM_{10} Control Plan Through Adoption of a Plantwide PM_{10} bubble

A key element of an approvable draft SIP is a demonstration that the controls upon which credits are claimed will be enforceable. The Geneva Steel Control Plan satisfies this requirement. In fact, however, no PM_{10} SIP has ever been implemented in any area that has the unique characteristics of Utah County. It is therefore warranted to discuss the practicalities of the enforcement of a realistic Control Plan in that context. Two overriding factors must be kept in mind. First, PM_{10} exceedances in Utah County occur only seasonally. There have not been exceedances during the spring, summer or fall, but only during the months of December, January and February. Second, the operations of Geneva Steel vary somewhat from day to day based upon production levels, raw material and fuel costs and other operational needs. The operations will also change and vary as the plant is modernized. The enforcement mechanism must accommodate these two factors. Geneva Steel believes that the bubble concept - approved as part of the SIP - will best accommodate the unique circumstances of the Utah County air and Geneva's operational complexities.

The objective of emissions controls under the Clean Air Act is to assure and maintain air quality, but to allow industry maximum flexibility to design and implement the control mechanisms (See Kamp v. Hernandez, 752 F.2d 1444, 1450 (9th Cir. 1985)). The goal is intended to allow industry to determine how it can best preserve an increase in production capacity, accomplish needed efficiencies, while still achieving compliance (Ibid). One of the principal ways used to accomplish these objectives is to allow emissions trading within a single facility, a practice often referred to as the bubble concept. (EPA, Emissions Trading Policy Statement, 51 Fed. Reg. 43814 (December 4, 1986)). The bubble concept assures compliance while allowing the operation maximum flexibility to demonstrate compliance at lowest achievable cost. (51 Fed. Reg. at 43830 ("bubbles give plant managers the ability to implement less costly ways of meeting air quality requirements")). EPA officials agree that the emissions trading/bubble principles set forth in the EPA Emissions Trading Policy logically apply to PM_{10} Group I areas and PM_{10} SIPs (B. Korb, I. Tether, K. Woodard, "PM_{10} Bubbles," printed in PM_{10} Implementation of Standards, An APCA/EPA Specialty Conference (February 1988)). Utah Regulations adopt and allow offsetting, banking and bubbling to the fullest extent permitted by federal law. (E.g., R446-1-3.3.5).

It is not clear that in a SIP development process a bubble must satisfy all federal requirements for emissions trading, but it seems clear that a bubble that does should be adopted. Under federal law an industry is permitted to use a bubble to demonstrate compliance if it satisfies the following requirements.

1. Any reductions to be traded must be surplus. This right allows trades within the bubble: The company can increase emissions from one source when it reduces emissions from another source below the amount used for SIP planning purposes or otherwise allowed by regulation. (51 Fed. Reg. at 43832). The purpose for the bubble is to assure that overall emissions do not increase above emissions allowed to achieve air quality standards.

2. The bubble must be approved by the State and be enforceable by the EPA. If the bubble is approved as a part of the SIP, it will be enforceable by both the BAQ and the EPA. (Ibid.)

3. All reductions for trading must be "permanent", in the sense that for purposes of trading, any reductions must be assured for the same period and same duration as any increase lasts. (Ibid.)

4. All reductions to be traded must be quantifiable. This element requires that the company demonstrate procedures to calculate the base line emissions and any reductions to be traded below that level. (Ibid.)

All of the requirements of the bubble under federal regulations will be satisfied under the Control Plan. The bubble should be based upon two emissions limitations: One for the inversion season of December through February and a second for the period March through November. The adoption of different emissions limitations is both recognized in the EPA guidance document and justified by the available data. In addressing the type of controls that may be appropriate under unique climatic conditions that often cause PM_{10} exceedances in western valleys, the EPA stated:

> <u>Are seasonal controls legal, e.g., burn natural gas in winter and coal in summer</u>?
>
> Generally, control measures must be applied year-round (especially those applicable to combustion sources) to continually meet the applicable emission limit. However, it may be necessary for a State to develop separate control strategies to solve different seasonal PM_{10} problems. In such cases, the seasonal control strategies must have seasonally enforceable emission limits and separate demonstrations of attainment of the 24-hour NAAQS. The abilities of the seasonal control strategies to attain the annual PM_{10} NAAQS must also be demonstrated using the highest seasonal allowable emission rates or an average annual rate (see SIP guideline supplement, section 7.4.1).

(EPA Office of Air Quality, Planning and Standards, "Response to Questions Regarding PM_{10} State Implementation Plan (SIP) Development," (June 1988) at p.32.)

Implicit in the recognition of the need for seasonal controls is a recognition that emission limits can also vary. There could be no justification for allowing different control strategies other than to allow emissions to be higher during seasons when the clearing characteristics were such that there would be no likelihood of an exceedance. Indeed, absent monitored data demonstrating likely exceedances, there would be no justification for imposing any reduction in emissions, and certainly not reductions to the extent required by a design value that only occurs during the winter.

The draft SIP in fact recognizes that exceedances in Utah County occur only in the winter and that controls should be determined in recognition of that fact:

> Because the exceedances and violations of the PM_{10} standard only occur during the winter, it is appropriate to look at winter seasons to determine the controls which may be necessary to reduce ambient PM_{10} concentrations to levels which are below the standard of 150 ug/m^3.

Draft SIP, (11/21/89), at page 3.

The BAQ's conclusion is supported by the data. For the years 1985 through 1989, the Draft SIP reports no exceedances from March through November. See Draft SIP, Distribution of Exceedances, at page 3. In view of these facts, the Control Plan should be designed to assure compliance during the winter, but should not impose similarly restrictive emissions reductions during the rest of the year.

Geneva's Control Plan accommodates this flexibility, but assures the design value will be reduced during the critical period. Level I emissions (emissions allowed from December through February) would be limited to the total allowed by the following formula:

$$E_{AI} = \frac{E_T \leq E_{PM10}}{4}$$

$$E_T = E_{CP} + E_S + E_{BF} + E_Q + E_{RM} + E_{PH} + E_M$$

In the formula, the symbols have the following meanings:

E_{AI} = Total emissions in tons allowed during December, January and February

E_{PM10} = Modelled emissions cap necessary to demonstrate compliance under the SIP as shown on Tables A and B above, based upon the emissions shown on Exhibit 1. Under the current analysis, with the hydrated sulfates expressed as SO_2, that number is 6758 tons.

E_T = Total annual emissions in tons

E_{CP} = Annual emissions in tons from Coke Plant

E_S = Annual emissions in tons from Sinter Plant

E_{BF} = Annual emissions in tons from Blast Furnace

E_Q = Annual emissions in tons from Open Hearth/Q-BOP

E_{RM} = Annual emissions in tons from Rolling Mill[8]

E_{PH} = Annual emissions in tons from Power House

E_M = Annual emissions from miscellaneous sources

Level II emissions (allowed March through November) would be limited to the amount under the following formula:

$$E_{AII} = E_T \leq 0.75\ E_{1988}$$

The new terms in the formula have the following meanings:

E_{AII} = Total emissions in tons allowed during March through November

E_{1988} = Total emissions in tons from the Geneva Steel 1988 Emissions Inventory shown on Exhibit 1 attached hereto.

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[8] The rolling mill emissions include emissions from the structural mill which was idle during 1988 and thus had no emissions. Under the Bubble, emissions from future operation of the structural mill will be "netted out" against other plant emissions.

The Level II emissions limitation is justified because there is no data suggesting any likelihood of an exceedance during March through November as long as Geneva Steel operations do not produce emissions exceeding that level. Moreover, under normal operations, Geneva Steel will operate the Q-BOP, the Sulfur Removal Facility and the Wastewater Treatment Facility during the entire year. Thus, emissions during the Level II period will be substantially below the allowable limit.

The Level I and Level II emissions limitations will be enforced by regular reports, available on a daily basis if requested, showing the emissions in each of the categories. The emissions will be monitored by a requirement that operating practices remain consistent with practices required in 1988, or as subsequently approved by BAQ, and where necessary by fuel monitoring and gas analyses. Under the bubble, Geneva Steel will be in compliance as long as its total emissions as regularly reported show that the total emissions for the period will be in compliance with the applicable Level I or Level II limitations.

The use of the bubble allows BAQ the advantage of a simpler enforcement mechanism than would be required if it were to impose and monitor operating limitations in each plant division. In addition, the bubble allows Geneva to operate the plant in the most efficient manner while still remaining in compliance with PM_{10} standards. Both of these advantages are consistent with the purposes for allowing a bubble.

The use of a bubble to demonstrate SIP compliance will be to the advantage of BAQ and Geneva. More importantly, it will permit the flexibility needed for Utah County to attain and maintain compliance with the PM_{10} standards. The BAQ will be able to monitor and enforce compliance by reviewing the reports to be submitted by Geneva Steel and by periodic review of operating and monitoring procedures. In fact, the bubble concept at Geneva Steel is clearly workable because of the total tons, 85% will be emitted from stacks and only 15% from area (including fugitive) sources. Moreover, the bubble will allow Geneva Steel the flexibility to develop operating procedures that will be most efficient to demonstrate compliance.

EXHIBIT 1

GENEVA STEEL ANNUAL EMISSION INVENTORY, TONS/YEAR

	1988 ACTUAL				POST CONTROL			
	Primary PM_{10}	NO_x	SO_x	Hydrated Sulfate	Primary PM_{10}	NO_x	SO_x	Hydrated Sulfate
Coke Gas Combustion Sources	597.3	3008.3	8145.3	23825.1	690.9	3903.4	1237.4	3619.5
Open Hearth	299.9	1801.3	121.6	355.6	183.8	91.2	0.0	0.0
Blast Furnace	244.5	151.1	9.5	27.7	244.5	203.6	12.8	37.3
Sinter Plant	122.3	30.2	38.3	112.0	122.3	30.2	38.3	112.0
Totals	1264.0	4990.9	8314.7	24320.4	1241.5	4228.4	1288.5	3768.8
Total PM_{10}, NO_x, SO_x		14569.6				6758.4		

Type of Source	1988 Actual		Post Control		% Control	
Open Hearth Primary	299.9 tn/yr	2578.4	183.8 tn/yr	275	38.7%	89.33
Blast Furnace Primary	244.4 tn/yr	432.8	244.5 tn/yr	498.2	0.0%	
Sinter Plant Primary	122.3 tn/yr	302.8	122.3 tn/yr	605.6	0.0%	
Secondary Nitrate	4990.9 tn/yr		4228.4 tn/yr		15.3%	
COG Comb Sources/Hydrated Sulfate	24917.7 tn/yr	35575.9	4459.7 tn/yr	9370.2	82.1%	73.66%
Totals	30575.2 tn/yr		9238.7 tn/yr		69.8%	
		38889.9		10749.0		72.36%
		43880.8		14977.4		65.87%

FY 90 MODEL CLEARINGHOUSE MEMORANDA

Date	Region	Subject
10/17/89	VI	Ambient Air
11/7/89	II	Interpretation of On-site Meteorological Data Requirements and the Use of RTDM for a PSD Source
11/28/89	VIII	Utah PM-10 Secondary Sulfate and Nitrate Calculations
01/02/90	IV	Effect of Changing Stack Heights on Prevention of Significant Deterioration (PSD) Modeling and Monitoring
01/10/90	VIII	Utah PM-10, Secondary Sulfate and Projections
01/10/90	VIII	Review of The Utah County PM-10 Draft SIP
01/11/90	VI	Alternative Emission Reduction (Bubble) SIP Revision Authorizing Operation of a New Sulfur Recovery Plant at the Conoco Inc. Ponca City Refinery
01/16/90	VI	Recent Texas Air Control Board (TACB) Evaluation of the ISC Area Source Algorithm
01/16/90	V	Refined Metals Lead Modeling Analysis
02/22/90	III	Approval of Equivalence Demonstration Plan Integrated Intermediate Terrain Model
03/01/90	VIII	East Helena Lead SIP
03/23/90	III	Mon Valley SO_2 Study Allegheny County, PA
05/10/90	VIII	Four Billings Montana Modeling Proposals
05/14/90	VIII	Comments on the Overview of Geneva Steel's PM_{10} Control Plan