State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Russell A. Roberts
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000
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(801) 538-4414 T.D.D.

DAQE-403-95

May 8, 1995

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Re: Approval Order for Construction of Two Boilers Each in Buildings 1590 and 1703
Davis County CDS B NA NSPS

Dear Mr. James:

The attached document is an Approval Order for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:AR:dn

cc: Davis County Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER FOR CONSTRUCTION OF TWO BOILERS EACH IN BUILDINGS 1590 & 1703

PREPARED BY: Arjun Ram, Engineer

APPROVAL ORDER NUMBER
DAQE-403-95

Date: May 8, 1995

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. This project does not result in an increase in actual emissions from the boilers; therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_X, 18.98 tons per year NO_X, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_X technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology (BACT) for this project.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. However, air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

Unless you have comments which would require changes, the AO for this project will be based upon the following conditions:

<u>General Conditions:</u>

1. This AO applies to the following company:

   Department Of The Air Force
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone Number: (801) 777-0359
   Fax Number: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   <u>LOCATION</u>

   UTM COORDINATES:
   Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
   Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590

   B. Two boilers (rated at 11.25 MMBTU/HR) and associated equipment in Building 1703

   Hill Air Force Base shall submit to the Division of Air Quality (DAQ), the Manufacturer's name, Boiler's Model and Serial Number (or equivalent information that will enable proper identification of the boilers), for each of the boilers approved by this condition before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (the lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	1.33	40
CO	1.21	60

Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A. | Emission Point | Pollutant | Testing Status | Test Frequency |
|---|---|---|---|
| Boiler Stack | NO_x | * | @ |
| | CO | * | @ |

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the AO for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen Oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon Monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)

B. 141,000 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period

B. 57,500 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calendar months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this AO or in an applicable new source performance standard (NSPS), which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.

Examples of records to be kept at this source shall include the following as applicable:

A. Fuel consumption
B. Test results

16. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	CO	20.05
E.	VOC	1.86

These calculations are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	Tons/yr
A.	Particulate	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	VOC	1.86

Approved By:

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

FILE COPY

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
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Salt Lake City, Utah 84114-4820
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DAQE-104-95

February 8, 1995

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

Re: Intent to Approve Construction of Two Boilers Each in Buildings 1590 and 1703
Davis County CDS B NA NSPS

Dear Mr. James:

The attached document is an Intent to Approve with Fee Statement for the above referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Arjun Ram. He may be reached at (801) 536-4066.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

LRM:AR:dn

cc: Davis County Health Department

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE CONSTRUCTION OF TWO BOILERS IN BUILDING 1590 AND TWO BOILERS IN BUILDING 1703

PREPARED BY: Arjun Ram

INTENT TO APPROVE NUMBER
DAQE-104-95

Date: February 8, 1995

Source

HILL AIR FORCE BASE

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. This project does not result in an increase in actual emissions from the boilers: therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_X, 18.98 tons per year NO_X, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_X technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology (BACT) for this project.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. However, air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

Unless you have comments which would require changes, the AO for this project will be based upon the following conditions:

RECOMMENDED APPROVAL ORDER CONDITIONS

General Conditions:

1. This AO applies to the following company:

   Department Of The Air Force
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone Number: (801) 777-0359
   Fax Number: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   LOCATION

   UTM COORDINATES:
   Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
   Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of

Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590

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   Hill Air Force Base shall submit to the Division of Air Quality (DAQ), the Manufacturer's name, Boiler's Model and Serial Number (or equivalent information that will enable proper identification of the boilers), for each of the boilers approved by this Condition, before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation as an initial compliance inspection is required. Eighteen months from the date of this AO the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

Limitations and Tests Procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (the lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	1.33	40
CO	1.21	60
Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_x	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A.

Emission Point	Pollutant	Testing Status	Test Frequency
Boiler Stack	NO_x	*	@
	CO	*	@

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the AO for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen Oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon Monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent

sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)

B. 141,000 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period

B. 57,500 gallons of fuel oil to be burned per 12-month period

C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calendar months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

    The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this AO or in an applicable new source performance standard (NSPS), which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Examples of records to be kept at this source shall include the following as applicable:

    A. Fuel consumption
    B. Test results

16. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this AO. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	Tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	CO	20.05
E.	VOC	1.86

These calculations are for the purposes of determining the applicability of prevention of significant deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	Tons/yr
A.	Particulate	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	VOC	1.86

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

Hill Air Force Base
Construction of Two Boilers In Bldg 1590 an Two Boilers in Bldg. 1703)

Filing Fee	$	1000.00
Review Engineer hours @ $50.00/hr	$	0.00*
Modeler hours @ $50.00/hr	$	0.00*
Computer Fee	$	0.00*
Notice To Paper	$	0.00*
Travel . miles @ $0.23/mile	$	0.00
		=============
Total Charges	$	1000.00
Amount Paid to Date	$	0.00
		=============
Balance Due	$	1000.00

* These costs are included in the Filing Fee.

Please remit a copy of this invoice with your payment.

Please send payment to:

Utah Division of Air Quality
150 North 1950 West
Salt Lake City, Utah 84114-8420
(801) 536-4000

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

W. Robert James
OO-ALC/EM
7274 Wardleigh Road
Hill Air Force Base, Utah 84056-5137

RE: Notice of Intent to Construct Two Boilers in Building 1590 and Two Boilers in Building 1703
Davis County, CDS B; NA; NSPS

ENGINEER: Arjun Ram

DATE: January 19, 1995

NOTICE OF INTENT DATED: December 22, 1994

PLANT CONTACT: Mr. Andreas Zekorn

PHONE NUMBER: (801) 777-0359
FAX NUMBER (801) 777-4306

PLANT LOCATION: Building 1590 (2 boilers) and Building 1703 (2 boilers), Hill Air Force Base

UTM COORDINATES: Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

FEES:

Basic Approval Order Fee	$1000.00
Review Engineer - XXXX total hours at $50.00/hour	$000.00
Modeler - XXXX hours at $50.00/hour	$000.00
Notice To Paper	$000.00
Travel - 00 miles at $0.23/mile	$000.00
TOTAL	**$1000.00**

APPROVALS:
Review Engineer AR 2/2/95
(Signature & Date)

F:\AQ\ENGINEER\ARAM\WP\AO\HAFB_BOI.AO

TYPE OF IMPACT AREA

Attainment or Non-Attainment . . . . Non-Attainment
Non-Attainment Pollutants . . . . PM10 SOx Ozone CO

NSPS Applies . . . . yes
NSPS Subparts A and Dc apply to this source
NESHAP Applies . . . . no

Toxic Pollutants . . . . no
Toxic Major Source . . . . no
[> 10 tpy of any one Hazardous Air Pollutant(HAP) of > 25 tpy of any combination of HAPs]

New Major Source . . . . no
Major Modification . . . . no
PSD Permit . . . . no
PSD Increment . . . . no
(modeling)

Send to EPA . . . . no

Operating Permits Program . . . . yes (NSPS applies)
Title V Major Source . . . . no
Process Path . . . . Regular AO Processing

EMISSIONS SUMMARY

Total Emissions for 2 Boilers to be Installed in Building 1590, Each Rated at 27.6 MMBTU/HR

Pollutant	rate(tpy)
PM_{10}	3.18
SO_2	11.34
NO_X	13.49
CO	14.24
VOC	1.32

Total Emissions for 2 Boilers to be Installed in Building 1590, Each Rated at 11.25 MMBTU/HR

Pollutant	rate(tpy)
PM_{10}	1.30
SO_2	4.62
NO_X	5.50
CO	5.80
VOC	0.54

Total Emissions from this Project for the 4 Boilers Summarized in the Above Tables to be Installed in Buildings 1590 and 1703

Pollutant	rate(tpy)
PM_{10}	4.48
SO_2	15.96
NO_X	18.98
CO	20.05
VOC	1.86

Abstract

This Review/Approval Order is for the installation of two natural gas fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. This project does not result in an increase in actual emissions from the boilers and therefore, a 30-day public comment period is not required for this project. All the four boilers are capable of using #2 fuel oil as backup fuel. Emissions from the four boilers with a maximum of 720 hours of burning fuel oil per 12-month period are 4.48 tons per year PM_{10}, 15.96 tons per year SO_X, 18.98 tons per year NO_X, 20.05 tons per year CO, and 1.86 tons per year VOC. Low-NO_X technology in conjunction with a 10% opacity limitation and the use of natural gas as primary fuel are considered Best Available Control Technology for this project.

I. DESCRIPTION

A. This Review/Approval Order is for the installation of two natural gas-fired, low-NO_X, watertube, steam boilers rated at 27.6 MMBTU/HR in Building 1590 and the installation of two natural gas-fired, low NO_X, firetube steam boilers, rated at 11.25 MMBTU/HR in Building 1703. These boilers would replace existing boilers in the buildings, which do not have low-NO_X burners. Provisions are included for the use of fuel oil as a backup fuel. This will be limited in the Approval Order (AO) to less than 200 hours per year.

B. The primary pollutants of concern are nitrogen oxides (NO_X) and carbon monoxide (CO). Nitrogen oxides are formed at high temperatures when atmospheric nitrogen combines with atmospheric oxygen. CO is a product of incomplete combustion due to a lack oxygen, low residence time, or poor mixing.

II. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT for the boilers covered under this review (from previously established BACT guidelines, stated in the generic permit review for boilers) is determined to be:

1. An opacity limitation of 10% shall apply to the boiler stack.

2. The NOI states that the boilers can meet NO_X emission limit (concentration) of less than 40 ppm. which is as stringent as is required of a 100 MMBTU/HR boiler according to the following equation:

$$NO_X\ ppm \leq (82.105 - 0.4211 \times (Boiler\ \ Rating\ ))$$

where:

NO_X ppm = NO_X limitation corrected to 3% Oxygen
Boiler Rating = Rating in 10^6 BTU/HR

3. Natural gas or Liquid Petroleum Gas (LPG) shall be used as the primary fuel. Number 2 fuel oil or cleaner fuel shall be used as a backup fuel.

III. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH ADMINISTRATIVE CODES (UAC)

This review is for a new minor source or minor modification. It is not a new major source or a major modification. The following federal regulations and state rules have been examined to determine their applicability to this source category:

1. R307-1-3.1, UAC - Notice of Intent required for a new source, modified source, or a new piece of control equipment. This rule applies.

2. R307-1-3.1.7 (A), UAC - A Notice of Intent is not required for natural gas fuel burning equipment with a rated capacity of less than 5 x 10^6 BTU per hour. This rule does not apply because the boilers are rated at more than 5 MMBTU/HR.

3. R307-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

4. R307-1-3.1.8 (C), UAC - Approval of the UAQB is required before the Executive Secretary can approve a source under Section 3.6.5 that consumes more than 50% of a PSD increment. This rule does not apply because a PSD permit is not being issued.

5. R307-1-3.1.8 (D), UAC - Enforceable offset of 1.2:1 required for new sources or modifications that would produce an emission increase greater than or equal to 50.00 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake, Davis, and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. Offsets are not required because the four new boilers are going to replace four existing boilers which have actually been emitting pollutants to the airshed. The new boilers would have low-NO_x technology, and therefore, they would emit less pollutants than the existing boilers.

6. R307-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications that would produce an emission increase greater than or equal to 25.00 tons per year but less than 50 tons per year of any combination of PM_{10}, SO_2, and NO_x. This is required in Salt Lake. Davis. and Utah Counties and in any area that affects these three counties as defined in the rule. The effective date is November 15, 1990. Offsets are not required because the four new boilers are going to replace four existing boilers which have actually been emitting pollutants to the airshed. The new boilers would have low-NO_x technology, and therefore, they would emit less pollutants than the existing boilers.

7. R307-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R307-1-3.1.12, UAC - Requirement for installation of low-NO_x burners on all existing sources whenever existing fuel combustion burners are replaced, unless the replacement is not physically practical or cost effective. The effective date is November 15, 1990.

   If a Notice of Intent is received for a replacement, the definition of Low-NO_X is:

   $$limit[ppm] = 82.1 - (boiler\ rating[MMBTU/HR] * 0.421)$$

   where the limit is given in ppm corrected to 3% O_2 and applies to natural gas fired external combustion equipment rated at or below 100 MMBTU/HR heat input.
   This NOI meets the requirements of this rule. The boilers would emit less 40 ppm NO_x.

9. R307-1-3.2.1, UAC - Particulate emission limitations for existing sources that are located in a nonattainment area. This rule has been superseded by the PM_{10} SIP, except for Weber County. The effective date is November 15, 1990. This source is not in a non-attainment area for PM_{10} and PM_{10} is not a pollutant of concern for emissions from natural gas fired boilers.

10. R307-1-3.3.2, UAC - Review requirements for new major sources or major modifications that are located in a nonattainment area or which impact a nonattainment area. This Notice of Intent does not represent a new major source or a major modification. Therefore, this rule will not apply.

11. R307-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source that emits 25 tons or more per year of any pollutant to submit an emission inventory to the Division of Air Quality at least every third year or as determined necessary by the Executive Secretary.

This rule applies to Hill Air Force Base as a part of their annual emission inventory reporting requirements for major sources. The emissions from these boilers will be included as a part of the base-wide emissions inventory.

12. R307-1-3.6.3, UAC - PSD Increment Consumption - This rule lists the allowable PSD increment consumption. Under the PSD rules. the entire state has been triggered for TSP, SO_2, and NO_x. The allowable increments are as follows:

TSP			
	Three Hour	24 Hour	Annual
Class I Area		**10 μg/m^3**	**5 μg/m^3**
Class II Area		**37 μg/m^3**	**19 μg/m^3**
SO_2			
Class I Area	**25 μg/m^3**	**5 μg/m^3**	**2 μg/m^3**
Class II Area	**512 μg/m^3**	**91 μg/m^3**	**20 μg/m^3**
NO_X			
Class I Area			**2.5 μg/m^3**
Class II Area			**25 μg/m^3**

There are also Class III increments, which do not apply in Utah. The above increments apply at all locations, unless the area is already nonattainment. The entire increment may not be available at all locations due to previously permitted sources consuming increment. Modeling analysis is not routinely performed for air pollution sources with emissions below the following levels:

Criteria for Screen Modeling (Tons per Year)		
	Nonattainment Areas	Attainment Areas
TSP	10	10
PM_{10}	5	5
SO_2	10	20
NO_X	20	20
CO	25	50
VOC	10	20
O_3	5	5

Generic scenarios were modelled for the largest size (100 MMBTU/HR) using worst case assumptions for stack gas temperature, stack dimensions, and meteorology. No increment violations were shown to occur as a result of the addition of a boiler using Low NO_x technology.

13. R307-1-3.6.5 (b), UAC - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This Notice of Intent does not represent a new major source or a major modification under PSD rules. Therefore, this rule does not apply.

14. R307-1-3.6.6, UAC - Increment violations. This rule requires the UAQB to promulgate a plan and implement rules to eliminate any PSD increment violations that occur in the state. No known violation has yet occurred. A typical 100 MMBTU/HR boiler was modelled for increment consumption. Any boiler rated at or less than 100 MMBTU/HR would not consume more than the following increment at the points of maximum impact:

    A. TSP annual . . . . 0.09 $\mu g/m^3$
    B. TSP 24 hr . . . . 0.37 $\mu g/m^3$
    C. SO_2 3 hr . . . . 0.04 $\mu g/m^3$
    D. SO_2 24 hr . . . . 0.02 $\mu g/m^3$
    E. SO_2 annual . . . . 0.00 $\mu g/m^3$
    F. NO_x annual . . . . 0.54 $\mu g/m^3$

15. R307-1-3.8, UAC - Stack height rule. This rule limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.100. A deminimus height of 65 meters (213.2 feet) is allowed.

16. R307-1-3.11, UAC - Visibility screening analysis requirements. This rule requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This review does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R307-1-4.1.2, UAC - 20% opacity limitation at all emission points. Unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, an opacity limitation of 10% is recommended as BACT.

18. R307-1-4.1.9, UAC - EPA Method 9 shall be used for visible emission observations. This rule applies.

19. R307-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This source will be permitted to burn #2 fuel oil or lighter better as a backup fuel. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input.

20. R307-1-4.6, UAC - <u>Continuous Emission Monitoring Systems Program</u> - Reporting and technical requirements for continuous emission monitoring systems. It covers breakdowns and quarterly reports for continuous monitoring systems. Section 4.6.5 states that this regulation applies to the following:

    A. Sources required to install CEMS as required by the following documents:

        1) NSPS
        2) State Implementation Plan
        3) Approval Order
        4) Consent Decree
        5) Administrative Orders and Agreements

    B. Any source that constructs after the promulgation of this rule, two or more emission points that may interfere with VEO's, shall install an opacity monitor on each stack.

    This source is not required to install CEMs.

21. R307-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than two hours must be reported to the Executive Secretary within three hours of the beginning of the breakdown, if reasonable, but in no case longer than 18 hours after the beginning of the breakdown. A written

report is required within seven calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

22. R307-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule covers specific processes. Boilers are not covered in this rule.

23. R307-1-5, UAC - Emergency episode requirements. This rule requires the Executive Secretary to determine the stage and extent of an air pollution episode based on pollution levels and meteorological conditions. Under section 40 of the Code of Federal Regulations, part 51, subparts 150 and 151, it is required that sources plan emergency measures based upon the severity of the Non-Attainment area in which they operate. In Utah, these rules require that CO sources in CO Non-Attainment areas and sources of Ozone precursors in Ozone Non-Attainment ares, who emit 25 tons per year or more, submit an Emergency Episode Plan which provides for additional pollution reductions in the event of an Air Pollution Alert, Warning or Emergency Episode. These plans can include total shut-down of the process. (Some sources are required to submit an emergency episode plan in the PM_{10} SIP).

    HAFB is not located in a CO non-attainment area. For Ozone precursors, a basewide plan should be available/submitted.

24. New Source Performance Standards (NSPS) - 40 CFR 60.40c to 60.48c, NSPS, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units - The effective date is June 9, 1989. An affected facility is each steam generating unit for which construction, modification, or reconstruction commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 million BTU/hr or less, but greater than 10 million BTU/hr. The standards are as follows:

    Sulfur Dioxide

    If coal is the only fuel, no owner/operator shall cause to be discharged into the atmosphere any gases which:

    A. Contain SO_2 in excess of 10% of the potential SO_2 emission rate (90% reduction)

    B. Contain SO_2 in excess of 1.20 lb per million BTU heat input

    If oil is the only fuel, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain SO_2 in excess of 0.50 lb per million BTU heat input

B. As an alternative - No owner/operator shall combust oil that contains greater than 0.50% sulfur by weight. Percent reduction requirements are not applicable. This requirement applies.

The SO_2 emission limits, fuel oil sulfur limits, and percent reduction requirements apply at all times, including periods of start-up, shutdown, and malfunction.

There is no limit for natural gas fired boilers.

Particulate

If coal is the only fuel (or coal with other fuels) and the heat input is 30 million BTU/hr or greater, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain TSP in excess of 0.05 lb per million BTU heat input (coal only or coal with other fuels) and has an annual capacity factor for the other fuels of 10% or less

B. Contain TSP in excess of 0.10 lb per million BTU heat input (coal only or coal with other fuels) and has an annual capacity factor for the other fuels of greater than 10% and is subject to a federally enforceable requirement limiting operation to an annual capacity factor greater than 10% for fuels other than coal

If wood is the only fuel (or wood with other fuels except coal) and the heat input is 30 million BTU/hr or greater, no owner/operator shall cause to be discharged into the atmosphere any gases which:

A. Contain TSP in excess of 0.10 lb per million BTU heat input (wood only or wood with other fuels except coal) and has an annual capacity factor for wood greater than 30%

B. Contain TSP in excess of 0.30 lb per million BTU heat input (wood only or wood with other fuels except coal) and has an annual capacity factor for wood of 30% or less and is subject to a federally enforceable requirement limiting operation to an annual capacity factor for wood of 30% or less

There is no limitation for natural gas fired equipment.

Opacity

No owner/operator that combusts coal, wood, or oil and has a heat input capacity of 30 million BTU/hr or greater shall cause to be discharged into the atmosphere any gases that exhibit 20% opacity or greater, except for one six minute period per hour of not more than 27% opacity.

The TSP and opacity standards apply at all times, except during periods of start-up, shutdown, and malfunction.

There is no limitation for natural gas fired equipment.

Testing (Methods are found in 40 CFR, Part 60, Appendix A)

If only coal, only oil, or a mixture of coal and oil is combusted, the procedures in Method 19 are used to determine the hourly SO_2 emission rate.

For TSP, the following methods shall be used:

Method 1 shall be used to select the sampling site and the number of sampling points. The sampling time for each run shall be at least 120 minutes and the minimum sampling volume shall be 60 dscf.

Method 3 shall be used for gas analysis when applying Method 5, 5B, or 17.

Method 5, 5B, or 17 shall be used as follows:

A. Method 5 may be used only at facilities without wet scrubber systems.

B. Method 17 may be used at facilities with or without wet scrubbers, provided the stack gas temperature does not exceed 320°F.

C. Method 5B may be used in conjunction with a wet scrubber system.

D. Method 9 shall be used for determining opacities.

Monitoring

The owner/operator of an affected facility subject to the SO_2 limits in 60.42c shall install and operate a CEM for measuring SO_2 concentrations and either O_2 or CO_2 at the outlet of the SO_2 control device or at the stack outlet. The owner/operator of an affected facility subject to the percent reduction requirements shall install and operate a CEM for measuring SO_2 concentrations and either O_2 or CO_2 at both the inlet and outlet of the SO_2 control device.

The owner/operator of an affected facility combusting coal, residual oil, or wood that is subject to the opacity standards shall install and operate a CEM for measuring the opacity.

Record keeping requirements

Natural gas-fired boilers rated at or less than 100 MMBTU/HR but more than 10 MMBTU/HR have only one requirement under this NSPS. Subsection 60.48c contains the reporting and record keeping requirements for affected facilities. Paragraph g of this Subsection requires:

> "(g) The owner or operator of each affected facility shall record and maintain records of the amount of fuel combusted during each day".

Under this requirement "each boiler" must have an individual "fuel use meter" to determine how much fuel that boiler used each day to be in compliance with Paragraph (g). This requirement applies.

25. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.

26. National Ambient Air Quality Standards (NAAQS) - This permit can be used throughout the state of Utah. Within the state, we have the following non-attainment areas:

    Salt Lake County, which is a nonattainment area for PM_{10}, SO_2, ozone, and CO (Salt Lake City only).
    Utah County, which is a nonattainment area for PM_{10} and CO (Provo City only).
    Davis County, which is a nonattainment area for PM_{10} and ozone.
    Tooele County, which is a nonattainment area for SO_2 in the eastern mountains above 5600 feet.
    Weber County, which is a nonattainment area for CO (Ogden only).

    All other areas are in attainment for all pollutants.

This source has been modeled as a 100 MMBTU/HR source for TSP. PM_{10}, SO_2, NO_X, ozone, CO. The scenario included 200 hours per year of #2 fuel oil combustion. The increases are listed below. Backgrounds are in addition to these values. The results are as follows:

Pollutant	Flow Rate (g/s)	Averaging Time	Maximum Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	0.288	24-HR	0.37	150	0.24
		ANNUAL	0.09	50	0.18
NO_2	1.701	ANNUAL	0.54	100	0.54
SO_2	0.0126	3-HR	0.04	1300	0.00
		24-HR	0.02	365	0.00
		ANNUAL	0.00	80	0.01
CO	1.281	1-HR	4.07	40000	0.01
		8-HR	2.85	10000	0.03
VOC as O_3	0.0585	1-HR	0.19	235	0.08

For VOC emissions, there is no model that can predict an ozone impact directly from VOC emissions. However, since VOC are precursors to ozone formation, this new source will contribute to the existing exceedances of the ozone standard in Davis County. The amount of that contribution has not been decided. The ozone nonattainment area of Davis and Salt Lake Counties must show reasonable further progress toward attainment of the standard. This source, along with all other VOC sources having emissions above ten tons per year, may have to apply more controls to lower the VOC emissions. This would be a SIP change action.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which an NSPS standard applies. The following are not by themselves considered modifications:

 1) Maintenance, repair, and replacement

 2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility

3) An increase in the hours of operation

4) Use of an alternate fuel or raw material if. before the date any standard under this part becomes applicable to that source type, as provided by 60.1, the existing facility was designed to accommodate that alternative use

5) The addition or use of any system or device whose primary function is the reduction of air pollutants

6) Relocation or change in ownership

Also see Section 1.92, which is the State's definition. It is a planned increase in emissions. This review might be used for modifications.

The NOI does not represent a modification.

28. 40 CFR 60.15, <u>Definition of Reconstruction</u> - the replacement of components of an existing facility to such an extent that:

1) The fixed capital cost of the new components exceeds 50% of the fixed capital cost that would be required to construct a comparable entirely new facility and

2) It is technologically and economically feasible to meet the applicable standards set forth in this part

This review will generally not be used for a reconstruction, however, R307-1-3.1.12, UAC, requires the installation of Low NO_x burners whenever burners are replaced. The NOI does not represent a reconstruction. However, the boilers will have Low NO_x burners installed.

29. R307-1-1, <u>Definition of Major Modification</u> - It means any physical change in or changes in the method of operation of a major source that would result in a significant net emission increase of any pollutant. A net emissions increase that is significant for VOC shall be considered significant for ozone. A physical change or change in the method of operation shall not include:

A. Routine maintenance, repair, or replacement

B. Use of an alternative fuel or raw material by reason of an order under Section 2a and b of the ESECA of 1974 or by reason of a natural gas curtailment plan pursuant to the Federal Power Act

C. Use of an alternative fuel by reason of an order under Section 125 of the CAA

D. Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste

E. Use of an alternative fuel or raw material by a source:

   1) which the source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any enforceable permit condition

   2) which the source is otherwise approved to use

F. An increase in the hours of operation or the production rate unless such change would be prohibited under any enforceable permit condition

G. Any change in ownership at a source

This rule does not apply.

RECOMMENDED APPROVAL ORDER CONDITIONS

General Conditions:

1. This Approval Order (AO) applies to the following company:

   Department Of The Air Force
   OO-ALC/EM
   7274 Wardleigh Road
   Hill Air Force Base, Utah 84056-5137
   Phone Number: (801) 777-0359
   Fax Number: (801) 777-4306

   The equipment listed below in this AO shall be operated at the following location:

   LOCATION
   UTM COORDINATES:
   Building 1590: 4,553,750 m. Northing; 415,290 m. Easting
   Building 1703: 4,554,870 m. Northing; 414,210 m. Easting

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Air Conservation Rules (UACR), Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Hill Air Force Base shall install and operate the natural gas fired boiler according to the information submitted in the Notice of Intent dated December 22, 1994.

4. A copy of this Approval Order (AO) shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

5. The approved installations shall consist of the following equipment (MMBTU/HR stands for million BTUs per hour):

   A. Two boilers (rated at 27.60 MMBTU/HR) and associated equipment in Building 1590;
   B. Two boilers (rated at 11.25 MMBTU/HR) and associated equipment in Building 1703.

   Hill Air Force Base shall submit to DAQ, the Manufacturer's Name, Boiler's Model and Serial Number (or equivalent information that will enable proper identification of the boilers), for each of the boilers approved by this Condition, before commencing the operation of the boilers.

6. Hill Air Force Base shall permanently shut down the operation of two boilers in Building 1590 and two boilers in Building 1703 before commencing the operation of the boilers approved in Condition #5.

7. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required. Eighteen months from the date of this Approval Order the Executive Secretary shall be notified in writing of the status of installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the Approval Order in accordance with R307-1-3.1.5, UAC.

Limitations and tests procedures

8. Emissions to the atmosphere from the stacks of the boilers approved in Condition #5 shall not exceed the following rates and concentrations (The lbs/hr and ppmdv values are equivalent and the source has the option of demonstrating compliance with values in either of the units):

Source: Stacks of Boilers in Building 1590		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_X	1.33	40
CO	1.21	60
Source: Stacks of Boilers in Building 1703		
Pollutant	lbs/hr	ppmdv (3% O_2, dry)
NO_X	0.54	40
CO	0.49	60

9. Stack testing to show compliance with the emission limitations stated in the above condition shall be performed as specified below for each of the boilers specified in Condition #5:

A.

Emission Point	Pollutant	Testing Status	Test Frequency
Boiler Stack	NO_x	*	@
	CO	*	@

B. Testing Status (To be applied above)

* No initial testing is required. However, the Executive Secretary may require testing at any time in accordance with R307-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** Initial compliance testing is required. The initial test date shall be within 180 days after the start up of a new emission source, or the granting of the Approval Order for an existing emission source.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

C. Notification

The applicant shall provide a notification of the test date at least 45 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

D. Sample Location

40 CFR 60. Appendix A, Method 1

E. Volumetric flow rate

40 CFR 60, Appendix A, Method 2

F. Nitrogen oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E or an alternative method to be approved by the Executive Secretary. The test protocol shall be submitted for review at the time of notification of the test.

G. Carbon monoxide (CO)

40 CFR 60, Appendix A, Method 10

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. Source Operation

The heat (gas) input rate during all compliance testing shall be no less than 90% of the rates listed in MMBTU/HR in Condition #5 of this AO.

10. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply. Any time interval with no visible emissions shall not be included.

11. The following consumption limits shall not be exceeded without prior approval in accordance with R307-1-3.1, UAC:

For each boiler in building 1590 (rated at 27.6 MMBTU/hr):

A. 242,000 decatherms (242 million cubic feet) of natural gas per 12-month period (1 decatherm = 1,000,000 BTU)
B. 141,000 gallons of fuel oil to be burned per 12-month period
C. 720 hours of operation burning fuel oil per 12-month period

For each boiler in building 1703 (rated at 11.25 MMBTU/hr):

A. 98,550 decatherms (99 million cubic feet) of natural gas per 12-month period
B. 57,500 gallons of fuel oil to be burned per 12-month period
C. 720 hours of operation burning fuel oil per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Before the fifteenth day of each month, a new 12-month total shall be calculated using data from the previous 12 calender months. Records of oil consumption shall be kept for all periods when the plant is in operation. Records of oil consumption shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Consumption shall be determined by operating logs or vendor receipts. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Fuels

12. The owner/operator shall use only natural gas or liquid petroleum gas as a primary fuel and #2 fuel oil or light grade as a backup fuel in the boiler. If any other fuel is to be used, an Approval Order shall be required in accordance with R307-1-3.1, UAC. Number two (#2) fuel oil may be used only when natural gas supply has been interrupted.

13. The sulfur content of any fuel oil burned shall not exceed 0.5 percent by weight. Sulfur content shall be decided by ASTM Method D-4294-89, or approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.

Federal Limitations and Requirements

14. In addition to the requirements of this Approval Order, all provisions of 40 CFR 60, NSPS Subparts A and Dc, 40 CFR 60.40c to 60.48c (Standards of Performance for Small Industrial - Commercial - Institutional Steam Generating Units) apply to this installation.

    The owner or operator shall record and maintain records of the amount of fuel combusted during each day. Each boiler must have an individual fuel use meter which cannot be reset, to determine how much fuel that boiler used each day.

Records & Miscellaneous

15. All records referenced in this Approval Order or in an applicable NSPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Examples of records to be kept at this source shall include the following as applicable:

    A. Fuel consumption

B. Test results

16. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed, maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as; pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, CEMs, etc., shall be installed and operated properly and easily accessible to compliance inspectors.

17. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

18. The owner/ operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

19. This source is required to pay an annual emission fee upon start-up. The fee will be based on calculated annual emissions listed at the end of this Approval Order. This fee is valid until inventory data for one year are available for the source. The owner or operator of this source will be billed upon start-up for all emissions that are considered "chargeable" as of that date.

Any future modifications to the equipment approved by this order must also be approv. . in accordance with R307-1-3.1.1, UAC.

This Approval Order in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the Utah Air Conservation Rules.

Annual emissions for this source (four boilers in Condition #5) are currently calculated at the following values:

	Pollutant	tons/yr
A.	PM_{10}	4.48
B.	SO_2	15.96
C.	NO_X	18.98
D.	CO	20.05
E.	VOC	1.86

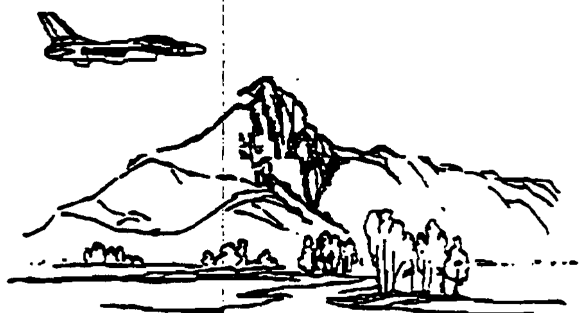
These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fees rate and the class of pollutants are subject to change by State, the Federal agencies, or both.

	Pollutant	tons/yr
F.	Particulate	4.48
G.	SO_2	15.96
H.	NO_X	18.98
I.	VOC	1.86

FAX COVER SHEET

RECEIVED
JAN 3 1 1995



From: Air Quality

Andreas Zekorn
Environmental Management Directorate
OO-ALC/EME
7274 Wardleigh Road
Hill AFB, UT 84056-5137

Tel: Commercial 801-777-0359
DSN 458-0359
Fax: Commercial 801-777-4306

Date: 31 Jan 95

To:
Name: **Arjun Ram**
Organization:
Division of Air Quality
Fax No.: **(801) 536-4099**

Message:

Hi Arjun

Here are the calculation for the boilers in Building 1590 and Building 1703. We have an decrease in emissions for the boilers in Building 1703 and almost the same emissions in Building 1590 so that we have over all a decrease in emissions for this NOI.

Andreas Z

ANDREAS ZEKORN

Total number of pages including cover sheet: 5

4.2.4-216

Boilers Building 1590

Heatinput	27,600,000.00 BTU/hr
Operating Hours	8760 hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	81.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	27600 SCF/hr
Consumption/yr	241,776,000 SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	3312.3	145.1	19583.9	14748.3	673.1
tons/yr	1.66	0.07	9.79	7.37	0.34

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048 lb/MMBTU
Calculation lb/hr	1.065 lb/hr
Calculation lb/yr	9332.7 lb/yr
Calculation tons/yr	4.67 tons/yr

Total emissions from both boilers

PM	6624.7 lb/yr	3.31 tons/yr +1.34
SOx	290.1 lb/yr	0.15 tons/yr
NOx	18665.5 lb/yr	9.33 tons/yr −3.77
CO	29496.7 lb/yr	14.75 tons/yr +5.96
HC	1346.2 lb/yr	0.67 tons/yr

+3.53 + SOx emissions increase due to increased #2 fuel oil consumption

Boilers Building 1590(Old Boilers)

Heatinput	16,450,000.00	BTU/hr
Operating Hours	8760	hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	140.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	16450	SCF/hr
Consumption/yr	144,102.000	SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1974.2	86.5	20174.3	8790.2	401.2
tons/yr	0.99	0.04	10.09	4.40	0.20

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048 lb/MMBTU
Calculation lb/hr	0.635 lb/hr
Calculation lb/yr	5562.4 lb/yr
Calculation tons/yr	2.78 tons/yr

Total emissions from both boilers

PM	3948.4 lb/yr	1.97 tons/yr
SOx	172.9 lb/yr	0.09 tons/yr
NOx	11124.9 lb/yr	5.56 tons/yr
CO	17580.4 lb/yr	8.79 tons/yr
HC	802.4 lb/yr	0.40 tons/yr

Boilers Building 1703

Heatinput	11,250,500.00	BTU/hr
Operating Hours	8760	hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	81.0	61.0	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	11250.5	SCF/hr
Consumption/yr	98,554,380	SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1350.2	59.1	7982.9	6011.8	274.4
tons/yr	0.68	0.03	3.99	3.01	0.14

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048	lb/MMBTU
Calculation lb/hr	0.434	lb/hr
Calculation lb/yr	3804.3	lb/yr
Calculation tons/yr	1.90	tons/yr

Total emissions from both boilers

PM	2700.4 lb/yr	1.35 tons/yr
SOx	118.3 lb/yr	0.06 tons/yr
NOx	7608.5 lb/yr	3.80 tons/yr
CO	12023.6 lb/yr	6.01 tons/yr
HC	548.8 lb/yr	0.27 tons/yr

Boilers Building 1703(Old Boilers)

Heatinput	10,257,000	BTU/hr
Operating Hours	8760	hr/yr

Emission Factors

AP-42 Table 1.4-1 - 1.4-3 Low NOx Burner

Natural Gas

	PM	SOx	NOx	CO	HC
Industrial	13.7	0.6	140.0	~~61.0~~ 35	2.8

Emission factors in lbs/10^6 cu ft

Calculation

Consumption/hr	10257	SCF/hr
Consumption/yr	89,851,320	SCF/yr

Emissions

Natural Gas Industrial Boiler

	PM	SOx	NOx	CO	HC
lb/yr	1231.0	53.9	12579.2	5480.9	250.1
tons/yr	0.62	0.03	6.29	~~[illegible]~~ 1.57	0.13

NOx Emissions

Limit	40 ppm	Operation	8760 hr

Conversion ppm-lb/MMBTU	0.048	lb/MMBTU
Calculation lb/hr	0.396	lb/hr
Calculation lb/yr	3468.3	lb/yr
Calculation tons/yr	1.73	tons/yr

Total emissions from both boilers

PM	2461.9 lb/yr	1.23 tons/yr
SOx	107.8 lb/yr	0.05 tons/yr
NOx	6936.7 lb/yr	3.47 tons/yr
CO	10961.9 lb/yr	5.48 tons/yr
HC	500.3 lb/yr	0.25 tons/yr

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFMC)
HILL AIR FORCE BASE, UTAH

RECEIVED
DEC 27 1994
Air Quality

22 Dec 1994

OO-ALC/EM
7274 Wardleigh Road
Hill AFB UT 84056-5137

Mr. Russell A. Roberts
State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City Ut 84114-4820

Re: Notice of Intent to construct two replacement boilers in Building 1590 and two replacement boilers in Building1703

Dear Mr. Roberts

We submit this Notice of Intent to receive approval to begin construction of two replacement boilers in Building 1590 and two replacement boilers in Building 1703.

Description

Building 1590
Two of the four existing boilers in Building 1590 with AQUIS numbers 3524 and 3525 are to be replaced by two Low NOx Watertube Steam Boilers with a maximum steam capacity of 23,000 lbs/hr each. This converts to 27.6 MMBTU boiler heat input.

Conversion lb steam/hr to BTU/hr
23000 lb/hr x 1.2 x 10^3 = 27,600,000 BTU/hr *
* conversion factor according to AP 42 Appendix A

Both boilers run primarily with natural gas with #2 fuel oil as a backup fuel. Each boiler is connected to a stack as shown in Atch. 1.

Building 1703
Two existing boilers in Building 1703 are to be replaced with two Low NOx Wetback Fire Tube Boilers with a steam capacity of 8625 lbs/hr or a capacity of 250 hp.

Conversion hp to BTU/hr
250 hp x 45000 BTU/ hp hr = 11,250,500 BTU/hr *
* conversion factor according to AP 42 Appendix A

Both boilers run primarily with natural gas with #2 fuel oil as a backup fuel. Each boiler is connected to a stack as shown in Atch. 2.

Emissions

AP 42 Emission factors for natural gas combustion (Table 1.4-1 to 1.4-3)
(TTN Bulletinboard AP 42)

Emission factors (Low NOx Burner)	
Filterable PM	6.2 lb/10^6 ft^3
Condensible PM	7.5 lb/10^6 ft^3
Sulfur dioxide	0.6 lb/10^6 ft^3
Nitrogen oxides	81 lb/10^6 ft^3
Carbon monoxide	61 lb/10^6 ft^3
Total Organic Compounds	5.8 lb/10^6 ft^3

Total Particulate is the sum of the filterable PM and condensible PM. All PM emissions can be assumed to be less than 10 microns. Methane comprises 52 percent of organic compounds. The Non Methane VOC emission factor is: 2.784

Emissions for the boilers are calculated as follows:

Heat input		HHV natural gas		thermal effiency	operating hours		emission factors		emissions
BTU/hr	x	1/1000 SCF/BTU	x	0.80 x	8760 hrs/yr	x	lb/SCF	=	lb/yr

Air emissions from two replacement boilers in Building 1590 are each:

Particulate	3312.3 lb/yr
Sulfur dioxide	145.1 lb/yr
Carbon monoxide	14748.3 lb/yr
VOC Nonmethane	673.1 lb/yr

As a Low NOx Burner is to be installed, the emission limit is 40 ppm NOx (corrected to 3% Oxygen). The calculations for NOx are as follows:

Conversion ppm to lb/MMBTU
40 ppm / 829 = 0.048 lb/MMBTU

Calculation of hourly emissions:
0.048 lb/MMBTU * 27.6 MMBTU/hr * 0.80 [a)] = 1.065 lb/hr
[a)]Thermal effiency is 80 %

Potential to emit for NOx is:
1.065 lb/hr * 8760 hr/yr = 9332.7 lb/yr
= 4.67 tons/yr

Total emissions from both boilers in Building 1590 are:

Particulate	6624.7 lb/yr	3.31 tons/yr
Sulfur dioxide	290.1 lb/yr	0.15 tons/yr
Carbon monoxide	29496.7 lb/yr	14.75 tons/yr
VOC Nonmethane	1346.2 lb/yr	0.67 tons/yr
NOx	~~18665.4~~ lb/yr [illegible]	~~9.33~~ tons/yr [illegible] tons/yr

With installation of two Low NOx burners in Building 1590 we will reduce NOx emissions by 53%.

Building 1703

Emission factors and calculation methods are the same as for Building 1590.

0.048 lb/MMBTU * 11.3 MMBTU/hr * 0.80 = 0.434 lb/hr

Both boilers in Building 1703 will run 8760 hr/yr.

0.434 lb/hr * 8760 hr/yr	= 3801.1 lb/yr	
	= 1.90 tons/yr	

Total emissions from both boilers in Building 1703 are:

Particulate	2700.4 lb/yr	1.35 tons/yr
Sulfur dioxide	118.3 lb/yr	0.06 tons/yr
Carbon monoxide	12023.6 lb/yr	6.01 tons/yr
VOC Nonmethane	548.8 lb/yr	0.27 tons/yr
NOx	~~7608~~.5 lb/yr	3.~~80~~ tons/yr

With installation of two Low NOx burners in Building 1703 we will reduce NOx emissions by 70%.

Air cleaning devices
No additional air cleaning devices will be installed.

Location
UTM coordinates are not available for Building 1590 and 1703.
Longitude and latitude for the Buildings are:

	Building 1590	Building 1703
Longitude	112:00:32.38	112:01:19.66
Latitude	41:07:55.70	41:08:31.87

Operating Schedule
Both boilers in Building 1703 will run 8760 hours per year. The two boilers in Building 1590 will be shut down in summer.

Construction Schedule
The construction is scheduled for all boilers as follows:

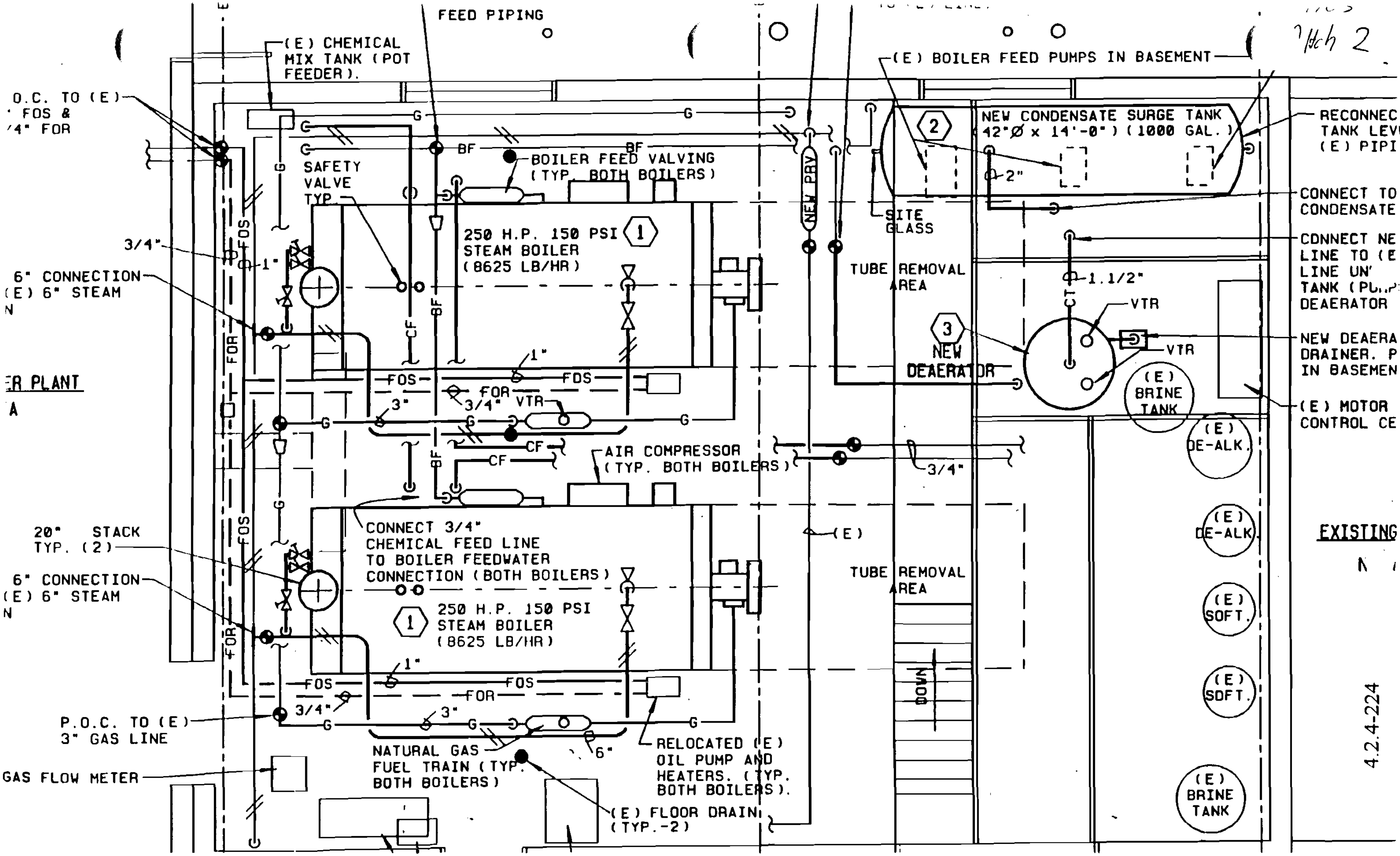
Start construction:	February 1995
End construction:	October 1995
Start up boiler:	October 1995

If you have any questions, please call Mr. Andreas Zekorn at 777-0359.

Sincerely

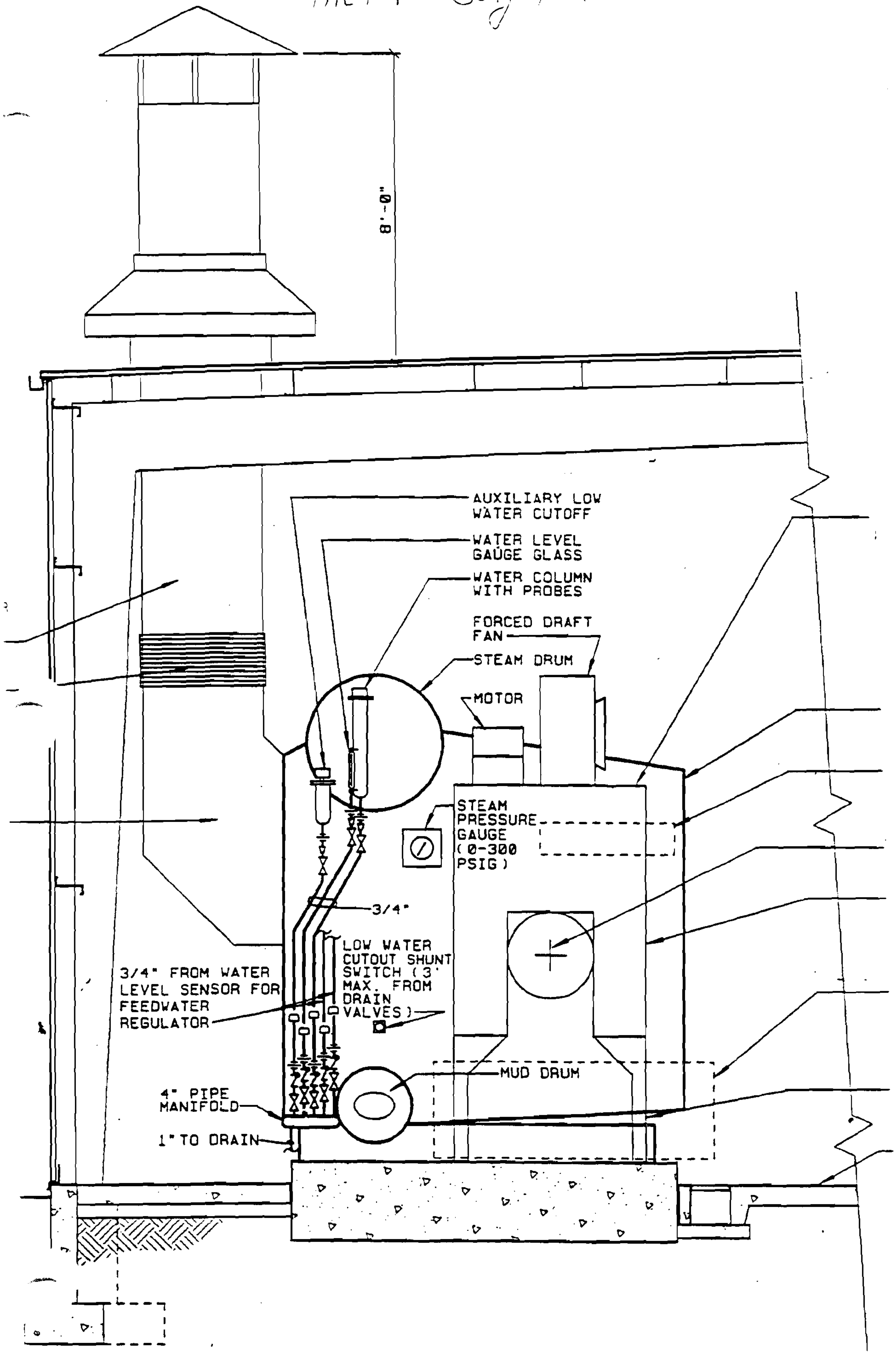
W. ROBERT JAMES
Acting Director of Environmental Management

Attachments:
1. Plan of boiler in Bldg 1590
2. Plan of boilers in Bldg 1703



FEED PIPING
(E) CHEMICAL MIX TANK (POT FEEDER).
(E) BOILER FEED PUMPS IN BASEMENT
NEW CONDENSATE SURGE TANK 42"Ø x 14'-0" (1000 GAL.)
RECONNEC TANK LEV (E) PIPI
CONNECT TO CONDENSATE
CONNECT NE LINE TO (E LINE UN TANK (PU DEAERATOR
NEW DEAERA DRAINER. P IN BASEMEN
(E) MOTOR CONTROL CE
O.C. TO (E) FOS & /4" FOR
SAFETY VALVE TYP.
BOILER FEED VALVING (TYP. BOTH BOILERS)
250 H.P. 150 PSI STEAM BOILER (8625 LB/HR)
NEW PRV
SITE GLASS
TUBE REMOVAL AREA
NEW DEAERATOR
VTR
1.1/2"
2"
6" CONNECTION (E) 6" STEAM
3/4"
1"
3"
FOS
FOR
G
BF
CF
CT
(E) BRINE TANK
(E) DE-ALK.
(E) SOFT.
AIR COMPRESSOR (TYP. BOTH BOILERS)
CONNECT 3/4" CHEMICAL FEED LINE TO BOILER FEEDWATER CONNECTION (BOTH BOILERS)
20" STACK TYP. (2)
(E)
EXISTING
P.O.C. TO (E) 3" GAS LINE
GAS FLOW METER
NATURAL GAS FUEL TRAIN (TYP. BOTH BOILERS)
RELOCATED (E) OIL PUMP AND HEATERS. (TYP. BOTH BOILERS).
(E) FLOOR DRAIN (TYP.-2)
6"
DOWN
4.2.4-224
Att 2

Atch 1 Bldg 1-90



BOILER ELEVATION

6