



State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Norman H. Bangerter
Governor
Kenneth L. Alkema
Executive Director
F. Burnell Cordner
Director

1950 West North Temple
Salt Lake City, Utah
(801) 536-4000
(801) 536-4099 Fax

Reply to: State of Utah
Division of Air Quality
Department of Environmental Quality
Salt Lake City, Utah 84114-4820

DAQE-894-91

November 25, 1991

James Van Orman
Dept. of the Air Force
AFLC
HAFB, Utah 84056-5990

Re: Approval Order; Wording Change to Approval Order Dated June 22, 1988
Davis County CDS A1 NA

Dear Mr. Van Orman:

The above-referenced project has been evaluated and found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. A 30-day public comment period was held and all comments received were evaluated. The conditions of this Approval Order (AO) reflect any changes to the proposed conditions which resulted from the evaluation of the comments received. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install and operate the boilers in Building 260 according to the information submitted in the Notice of Intent dated June 22, 1988.

A copy of this AO shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of two Cleaver Brooks DL-36 boilers rated at 87.5 million BTU/hr each. The boiler installations shall be complete with Cleaver Brooks low-NO_x burner design.
3. This AO shall replace the AO dated June 22, 1988.

4.2.4-823

4. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
5. The combined total natural gas consumed for the two boilers shall not exceed 809.1 million standard cubic feet per 12-month period without prior approval from the Executive Secretary in accordance with R446-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production 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. Production/Consumption shall be determined by calculations based on meter readings and/or examination of fuel bills. The records shall be kept on a monthly basis.
6. The owner/operator shall use only natural gas as a primary fuel and No. 2 Fuel Oil as a backup fuel in the boilers approved by this AO. If any other fuel is to be used, an AO shall be required in accordance with R446-1-3.1, UAC.
7. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89 approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.
8. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A.	PM ₁₀	0.0053	lb per 10 ⁶ BTU heat input
B.	NO _x	0.10	
C.	CO	0.0038	
D.	VOC	0.004	

A stack test for any or all of the above pollutants shall be performed if directed by the Executive Secretary.

Notification

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be

Mr. Van Orman
November 25, 1991
Page 3

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.

PM₁₀

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using the method specified by the Executive Secretary.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM₁₀.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Sample Location

40 CFR 60, Appendix A, Method 1, if required by test method used

Volumetric flow rate

40 CFR 60, Appendix A, Method 2, if required by test method used

Nitrogen oxides

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

Volatile organic compounds

40 CFR 60, Appendix A, Method 25

Carbon monoxide

40 CFR 60, Appendix A, Method 10

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.

Source Operation

For a new source/emission point, the production rate during all compliance testing shall be no less than 90% of the production rate listed in this Approval Order. For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous 3 years.

9. All records referenced in this AO or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.
10. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.
11. The owner/operator of any new major source or major modification anywhere in Utah shall submit to the Executive Secretary an emergency plan within 60 days of the date of this AO. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). The values for the various levels are listed in R446-1-5, UAC. The emergency plan shall approved by the Executive Secretary.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, UAC.

Mr. Van Orman
November 25, 1991
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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 Utah Air Conservation Rules.

Annual emissions for these boilers are currently calculated at the following values:

- A. 2.02 tons/yr for Particulate
- B. 1.21 tons/yr for PM₁₀
- C. 0.24 tons/yr for SO₂
- D. 37.62 tons/yr for NO_x
- E. 1.50 tons/yr for VOC
- F. 14.16 tons/yr for CO

The annual emissions for the entire base are not quantified at this time. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UAC. They are not to be used for the purposes of determining compliance.

Sincerely,


F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:DJ:cl

cc: EPA Region VIII, Mike Owens
Davis County Health Department

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James Van Orman
Dept. of the Air Force
AFLC
HAFB, Utah 84056-5990

ENGINEER: Doug Jones
RE: AO of June 22, 1988 for 2 Boilers, Wording Change
Davis County, CDS A1 NA
DATE: November 6, 1991
NOTICE OF INTENT DATED: September 16, 1991
PLANT CONTACT: James Van Orman
PHONE NUMBER: (801) 777-7651
PLANT LOCATION: Hill Air Force Base, Building 260

FEES:

Filing Fee	\$00.00
Review Engineer - 3 hours at \$50.00/hour	\$150.00
Modeler - 0 hours at \$50.00/hour	\$000.00
Computer Usage Fee	\$000.00
Notice to Paper	000.00
Travel - 00 miles at \$0.23/mile	<u>\$000.00</u>
Total	\$150.00

APPROVALS:

Engineering Unit Manager JVP 11-15-91
Applicant Contact Made JVP

I. Description of Proposal

Hill Air Force Base has sent a Notice of Intent dated September 16, 1991 requesting modifications to an Approval Order issued June 22, 1988. This Approval Order allowed the use of two natural gas fired boilers. Condition #5 of the Approval Order allows 66.49×10^6 SCF per rolling 30-day period. The request is for a change in the volume of natural gas allowed to 136×10^6 per rolling 30 day period.

Hill Air Force Base is also asking for this volume of gas consumed per 30-day period be converted to the volume of gas consumed per rolling 12-month period at the same rate. There appears to be an error in the original Approval Order wording of the allowed natural gas consumed. The request is for the combined design capacity of the boilers; the Approval Order reflects approximately the design capacity of one boiler but does not state the consumption as that allowed for each boiler. There are no changes in the recommended Approval Order conditions.

II. Emission Summary

The total emissions for this source (the entire base) are not quantified at this time. There are no net emission decreases or increases represented by this Notice of Intent. The total emissions for these boilers are as follows.

Total Emissions from the Two Boilers

Particulate	2.02 tons/year
PM ₁₀	1.21
SO _x	0.24
NO _x	37.63
CO	14.16
VOC	1.21

III. Review of Rules and Regulations

A review of the rules and regulations is not required since the Notice of Intent represents a change in wording and not a change in operating parameters or emissions.

IV. BACT ANALYSIS

The BACT analysis was completed with the original review for the June 22, 1988 Approval Order. No changes to this review are being made.

V. Calculations

The request for 136×10^6 SCF is the number represented in the original Notice of Intent and the number used in the original calculations. No new calculations of emissions are necessary. If the proposed change in wording from a 30-day rolling total to a 12-month rolling total is accepted, then this number will not be represented in the Approval Order.

The original calculations were based on operation of the boilers 4300 hours per year for each boiler. Consumption of natural gas at these operating hours is equal to 809.1 million SCF for the combined consumption of both boilers. This number was used in the original calculations. No new calculations are necessary. The proposed change is to 809.1 million standard cubic feet per rolling 12-month period.

VI. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the boilers in Building 260 according to the information submitted in the Notice of Intent dated June 22, 1988.

A copy of this Approval Order shall be posted on site and shall be available to the employees who operate the air emission producing equipment. All employees who operate the air emission producing equipment shall receive instruction as to their responsibilities in operating the equipment in compliance with all of the relevant conditions.

2. The approved installations shall consist of two Cleaver Brooks DL-86 boilers rated at 87.5 million BTU/hr each. The boiler installations shall be complete with Cleaver Brooks low-NO_x burner design.
3. This Approval Order shall replace the Approval Order dated June 22, 1988.
4. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
5. The combined total natural gas consumed for the two boilers shall not exceed 809.1 million standard cubic feet per 12-month period without prior approval from the Executive Secretary in accordance with R446-1-3.1, UAC. Compliance with the annual limitation shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production 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. Production/Consumption shall be determined by calculations based on meter readings and/or examination of fuel bills. The records shall be kept on a monthly basis.
6. The owner/operator shall use only natural gas as a primary fuel and No. 2 Fuel Oil as a backup fuel in the boilers approved by this Approval Order. If any other fuel is to be used, an Approval Order shall be required in accordance with R446-1-3.1, UAC.
7. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4294-89 approved equivalent. The sulfur content shall be tested if directed by the Executive Secretary.
8. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A) Particulate	0.0053	lb per 10 ⁶ BTU heat input
B) NO _x	0.10	
C) CO	0.0038	
D) VOC	0.004	

The test methods used shall be as follows:

- A) Particulate - 40 CFR 60, Appendix A, Method 5
- B) NO_x - 40 CFR 60, Appendix A, Method 7

- C) CO - 40 CFR 60, Appendix A, Method 10
- D) VOC - 40 CFR 60, Appendix A, Method 25

The applicant shall provide a notification of the test date at least 45 days prior to the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to 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) approvable access shall be provided to the test location.

- 9. All records referenced in this Approval Order or in an applicable NSPS or NESHAPS, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request.
- 10. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R446-1-3.5 and 4.7, UAC. R446-1-3.5, UAC addresses emission inventory reporting requirements. R446-1-4.7, UAC addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess emissions shall be reported to the Executive Secretary for each calendar year no later than January 31 of the following year.
- 11. The owner/operator of any new major source or major modification anywhere in Utah shall submit to the Executive Secretary an emergency plan within 60 days of the date of this Approval Order. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). The values for the various levels are listed in R446-1-5, UAC. The emergency plan shall approved by the Executive Secretary.

Any future modifications to the equipment approved by this order must also be approved in accordance with R446-1-3.1.1, 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 these boilers are currently calculated at the following values:

- A. 2.02 tons/yr for Particulate
- B. 1.21 tons/yr for PM₁₀
- C. 0.24 tons/yr for SO₂
- D. 37.62 tons/yr for NO_x
- E. 1.50 tons/yr for VOC
- F. 14.16 tons/yr for CO

The annual emissions for the entire base are not quantified at this time. These calculations are for the purposes of determining the applicability of PSD and nonattainment area major source requirements of the UAC. They are not to be used for the purposes of determining compliance.

DOUG\WP\HILLCHG.AO



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5990

RECEIVED
SEP 17 1991

AIR QUALITY

16 SEP 1991

Mr Don Robinson
Chief, Permit Section
Department of Environmental Quality
Division of Air Quality
1950 W North Temple
Salt Lake City, Utah 84114-4820

RE: Boiler Numbers 8 & 9, Building 260
Request for Amendment to A. O. Dated 22 June 88, BAQE-256-88

Dear Mr Robinson

In our 4 Sep 91 meeting regarding 30 day rolling average for the natural gas consumption for the two boilers, we request that the condition 5 of the permit be modified to allow for 136×10^6 SCF per 30 days of natural gas firing rate at design value. Additionally, we request that the rolling average period be revised to a 12 month period.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management



Norman H. Bangerter
Governor

Suzanne Dandoy, M.D., M.P.H.
Executive Director

BAQE-252-88

April 27, 1988

Newspaper Agency
Salt Lake Tribune
Legal Advertising Department
157 Regent Street
Salt Lake City, Utah 84111

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on May 6, 1988.

Please mail the invoice and affidavit of publication to the Utah State Department of Health, Division of Environmental Health, Bureau of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84116-0690.

Sincerely,

Sheri Holloway
Engineering Section
Bureau of Air Quality

4.2.4-833

NOTICE

The following notices of intent to construct, submitted in accordance with Section 3.1, Utah Air Conservation Regulations, have been received for consideration by the Executive Secretary, Utah Air Conservation Committee:

1. Crossroads Refining, Inc., Precious Metals Refining, Salt Lake County.
2. Hill Air Force Base, Two Replacement Boilers in Boilerhouse 260, Davis County; 50 KW Diesel Generator in Building 800, Davis County; 150 KW Diesel Generator in Building 887.
3. Johnson Matthey, Increase Gold Production, Salt Lake County.
4. Genwal Coal Company, Temporary Crusher, Emery County.
5. Ashley Valley Engineering, Escalante Cogeneration Plant, Garfield County.
6. J&J Mill and Lumber, Concrete Block Plant, Washington County.

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. No Prevention of Significant Deterioration (PSD) increment will be consumed by these proposals. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposals and estimates of the effect on local air quality are available for public inspection and comment at the Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City, Utah 84116-0700. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before June 4, 1988

will be considered in making the final decision on the approval or disapproval of the proposed construction.

If anyone so requests within 15 days of publication of notice, a hearing will be held in the area of the proposed construction, installation, modification, relocation or establishment.

Date of Notice: May 6, 1988

DK/sh

7226Q

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW FOR:

Mr. Thayne Judd
Department of the Air Force
Environmental Management Office
Hill Air Force Base, Utah 84056

Re: Two Replacement Boilers in Boilerhouse 260
Davis County, CDS A1

Date: April 18, 1988 *JR*

Notice of Intent Dated: February 23, 1988

Plant Contact: Jay Gupta

Phone Number: (801) 777-6742

Plant Location: Hill Air Force, Utah

Filing Fee	_____	= \$ 100.00
Review Engineer - total hours	11.5 _____ (\$22.08/hr)	= \$ 253.92
Modeler - total hours	_____ (\$18.07/hr)	= \$.
Computer time - total hours	_____	= \$.
Notice To Paper	_____	= \$ 24.00
Travel - total miles	_____ (\$ 0.23/mile)	= \$.
		Total = \$ 377.92

Approved by Engineering Unit Manager *JR 4-18-88*

Approved by Technical Evaluation Section Manager *MK 4/26/88*

1350q

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base (HAFB) has filed a notice of intent dated February 23, 1988 in which they propose to replace two existing old boilers with two new packaged steam boilers. The existing boilers are rated at 40,000 LB/HR. The new boilers are rated at 70,000 LB/HR.

The packaged steam boilers will be Cleaver Brooks Model DL-86 complete with waterwall tubes, furnace section, boiler convection section, "CB" burner, lower drum, upper steam drum, soot blowers, and all associated piping, controls, safety interlocks, pressure relief valves, outlet dampers, and stack. At 100% load, each boiler will be capable of delivering 70,000 LB/HR of steam at an operating pressure of 125 psig and steam quality of 99.5%. Each unit will be designed to fire natural gas as the primary fuel with No. 2 fuel oil as a backup. At full load, the heat input per unit will be 87.5 million BTU per hour with an efficiency of 80.03%.

There are currently eight boilers in Building 260. The average load factor is 70-75%. The two new boilers are scheduled to become operative in summer 1988.

II. EMISSION SUMMARY

The steam demand varies considerably over the year. For this reason boilers are cycled up and down. There will be an emission increase as a result of the installation of these two new boilers.

Emissions of The Two Existing Boilers Being Replaced

Particulate	0.184 Ton/Yr
PM ₁₀	0.110 Ton/Yr
SO ₂	0.022 Ton/Yr
NO _x	5.148 Ton/Yr
CO	1.287 Ton/Yr
VOC	0.103 Ton/Yr
Methane	0.110 Ton/Yr

Emissions of The Two Proposed New Boilers

Particulate	2.023 Ton/Yr
PM ₁₀	1.214 Ton/Yr
SO ₂	0.243 Ton/Yr
NO _x	37.625 Ton/Yr
CO	14.160 Ton/Yr
VOC	1.505 Ton/Yr
Methane	1.214 Ton/Yr

Proposed Emission Increase at Building 260

Particulate	1.839 Ton/Yr
PM ₁₀	1.103 Ton/Yr

SO ₂	0.221 Ton/Yr
NO _x	32.477 Ton/Yr
CO	12.873 Ton/Yr
VOC	1.402 Ton/Yr
Methane	1.103 Ton/Yr

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The recommended best available control technology (BACT) for the generation of heat for production of steam for process use and space heat is to use boilers which are fired on natural gas and equipped with low NO_x burners. There are other options. The options for the generation of process steam are combustion of:

1. Natural gas
2. No. 2 fuel oil
3. No. 5 fuel oil
4. Coal

The emission factors in AP-42 show that natural gas has the lowest emission rate per unit of heat. The gas burners will be low NO_x design burners. The Cleaver Brooks low NO_x burners reduce NO_x emissions as much as 43%. All other sources of heat will have higher emissions than the proposed heat generation method.

The proposed natural gas fired Cleaver Brooks Model DL-86 boilers with CB Industrial Burners for low NO_x firing are recommended as having applied BACT.

IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

This notice of intent is for a modification to an existing major source. It is not a new major source or a major modification. The following federal and state regulations have been examined to determine their applicability to this notice of intent:

1. Section 3.1.1, UACR - Notice of intent required for a modified source. This regulation applies.
2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.
3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.
4. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation (existing boilers, 20% opacity limitation).

However, any new emission points at HAFB will not be subject to this regulation.

5. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which 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 regulation will not apply.
6. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation.
7. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. This source does not qualify as a new major source or a major modification under PSD rules. Therefore, this regulation does not apply.
8. Section 3.8, UACR - Stack height rule. This regulation 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 51.1. A de minimus height of 65 meters (213.2 feet) is allowed. This source has no stacks which exceed 65 meters in height. It is in compliance with this regulation.
9. Section 3.11, UACR - Visibility screening analysis requirements. This regulation 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 source is not a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.
10. Section 4.1.2, UACR - 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, the 20% opacity limitation applies.
11. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.
12. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This emission point burns oil as a backup fuel. The limitation is 0.85 LB of sulfur per 10^6 BTU heat input.

13. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.
14. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. This process is not covered in this regulation.
15. Section 5, UACR - Emergency episode requirements. This regulation applies.
16. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.
17. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for this industrial process.
18. National Ambient Air Quality Standards (NAAQS) - This source is located in Davis County which is a nonattainment area for ozone. The Bureau of Air Quality guidelines do not call for this source to be modeled for ozone. Therefore, it is very unlikely that any new violation of the NAAQS for ozone will occur.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install the two Cleaver Brooks Model DL-86 natural gas fired boilers (these are replacement boilers) according to the information submitted in the notice of intent dated February 23, 1988.
2. All installations and facilities authorized by this approval order shall be adequately and properly maintained.
3. Visible emissions from any point or fugitive emission source associated with the installation or control facilities shall not exceed 20% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
4. The sulfur content of any fuel oil burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested only if directed by the Executive Secretary.
5. Natural gas consumption for the two new Cleaver Brooks boilers shall not exceed a total of 66.49×10^6 SCF per 30-day period (based on a 30-day rolling average) without prior approval in accordance with Section 3.1, UACR. Records of consumption shall be kept for all periods when the plant is in operation. Records of consumption shall be made available to the Executive Secretary upon

request, and shall include a period of two years ending with the date of the request. Consumption shall be determined by calculations based on meter records and/or fuel bills.

6. The boiler stacks shall be stack tested if directed by the Executive Secretary. The emission rate for each boiler stack shall not exceed any of the following values:

- A. Particulate - 0.0053 Lb per 10^6 BTU heat input
- B. NO_x - 0.10 Lb per 10^6 BTU heat input
- C. CO - 0.0038 Lb per 10^6 BTU heat input
- D. VOC (nonmethane) - 0.004 Lb per 10^6 BTU heat input

The test methods used shall be as follows:

- A. Particulate - 40 CFR 60, Appendix A, Method 5
- B. NO_x - 40 CFR 60, Appendix A, Method 7
- C. CO - 40 CFR 60, Appendix A, Method 10
- D. VOC - 40 CFR 60, Appendix A, Method 25

A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stack need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 1 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

7. The owner/operator shall use only natural gas as a fuel in the boilers. If any other fuel is to be used, an approval order shall be required in accordance with Section 3.1, UACR. Diesel fuel may be used only as an emergency backup fuel.
8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

Any future modifications to the equipment approved by this order must also be approved in accordance with Section 3.1.1, UACR.

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 Regulations.

2

CONTROLLED ANNUAL EMISSION RATE ESTIMATE RLP

SOURCE: TWO BOILER CHANGE-OUT, EMISSIONS INCREASE

FILE: HAFB260

COMPANY NAME: HILL AFB, BLDG. 260, BOILERS 8 & 9

LOCATION: LAYTON, UT

DATE: 01-APR-1988 01:30:13 PM

TOTAL ANNUAL EMISSIONS ESTIMATE IN TONS PER YEAR

TSP	1.839	TON/YR
PM-10	1.103	TON/YR
SOX	0.221	TON/YR
NOX	32.477	TON/YR
CO	12.573	TON/YR
VOC and METHANE	1.402	TON/YR
VOC METHANE	1.103	TON/YR

LIST

2 EXISTING BOILERS

MINUS

2 PROPOSED BOILERS

GIVES INCREASES LISTED ABOVE

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: 2 INDUSTRIAL BOILERS

COMPANY NAME: WALK AFB, BLDG. 260, BOILERS 8 & 9

FILE: T1

LOCATION: LAYTON, UT

DATE: 01-APR-1988

TIME: 11:43:07 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

(EMISSION FACTOR)(GAS CONSUMPTION)(1 TON/2000 LBS)

TOTAL PARTICULATE	0.184 TONS/YR
PM-10	0.110 TONS/YR
SOx	0.022 TONS/YR
NOx	5.148 TONS/YR
CO	1.287 TONS/YR
VOC, non-METH.	0.103 TONS/YR
VOC, METH.	0.110 TONS/YR

AP-42 FOURTH EDITION, SEPT. 1985 VOLUME 1

SECTION 1 EXTERNAL COMBUSTION SOURCES

1.4 NATURAL GAS COMBUSTION

TABLE 1.4-1 INDUSTRIAL BOILERS (10 - 100 MILLION BTU/HR)

EMISSION FACTOR IN LBS/MILLION CUBIC FEET OF GAS COMBUSTED

PARTICULATE	BAG DEFAULT VALUE	5.0 LBS/MCF
PM10	NEDS SOURCE CLASSIFICATION CODES ..	3.0 LBS/MCF
SO2	SULFUR CONT. = 2000 GR/1ES SCF ...	0.6 LBS/MCF
NOX	140.0 LBS/MCF
CO	35.0 LBS/MCF
NON METHANE VOC	2.8 LBS/MCF
METHANE	3.0 LBS/MCF

GAS CONSUMPTION IN MILLION CUBIC FT. / YR FROM

(FUEL CONSUMPTION)(ANNUAL OPERATION)/(FUEL HEAT VALUE)

FROM GAS CONSUMPTION RECORDS	73.5 MCF/YR
HOURLY BOILER FUEL CONSUMPTION: NOI INFO.....	100.00 MMBTU/HR
HOURS/YR OPERATION SCHEDULE: NOI INFORMATION.....	683.7 HR/YR
FUEL HEAT CONTENT.....	930.0 BTU/CU FT

4

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: 2 PROPOSED BOILERS

COMPANY NAME: HILL AFB, BLDG. 260, BOILERS 8 & 9

FILE: T2

LOCATION: LAYTON, UT

DATE: 01-APR-1988

TIME: 11:43:07 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

(EMISSION FACTOR)(GAS CONSUMPTION)(1 TON/2000 LBS)

TOTAL PARTICULATE	2.023 TONS/YR
PM-10	1.214 TONS/YR
SOx	0.243 TONS/YR
NOx	37.625 TONS/YR
CO	14.160 TONS/YR
VOC, non-METH	1.505 TONS/YR
VOC, METH	1.214 TONS/YR

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1

SECTION 1 EXTERNAL COMBUSTION SOURCES

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TABLE 1.4-1 INDUSTRIAL BOILERS (10 - 100 MILLION BTU/HR)

EMISSION FACTOR IN LBS/MILLION CUBIC FEET OF GAS COMBUSTED

PARTICULATE	BAG DEFAULT VALUE	5.0 LBS/MCF
PM10	NEDS SOURCE CLASSIFICATION CODES	3.0 LBS/MCF
SO2	SULFUR CONT. = 2000 GR/1E6 SCF	0.6 LBS/MCF
NOX	NOI INFO.	93.0 LBS/MCF
CO		35.0 LBS/MCF
NON METHANE VOC	NOI INFO.	3.7 LBS/MCF
METHANE		3.0 LBS/MCF

GAS CONSUMPTION IN MILLION CUBIC FT. / YR FROM

(FUEL CONSUMPTION)(ANNUAL OPERATION)/(FUEL HEAT VALUE)

APPROVAL ORDER CONDITION	809.1 MCF/YR
HOURLY BOILER FUEL CONSUMPTION: NOI INFO.	175.00 MMBTU/HR
HOURS/YR OPERATION SCHEDULE: NOI INFORMATION	4,300.0 HR/YR
FUEL HEAT CONTENT	930.0 BTU/CU FT



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

FEB 23 1988

Mr F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee
Bureau of Air Quality
288 North 1460 West
PO Box 16690
Salt Lake City UT 84116-0690

Re: Notice of Intent to Construct

Dear Mr Cordner

In compliance with section 3.1 of the State Air Conservation Regulations, attached are three Notices of Intent to Construct for projects at Hill AFB.

If this office can provide additional information, please feel free to contact Jay Gupta at 777-6742.

Sincerely

A handwritten signature in black ink, appearing to read "Thayne H. Judd", is written over the typed name.

THAYNE H. JUDD, Col, USAF
Chief, Environmental Mgt Office

1 Atch
Notices of Intent to Construct (3)

RECEIVED
AIR QUALITY
FEB 29 1988

4.2.4-845

NOTICE OF INTENT TO CONSTRUCT
 REPLACE EXISTING BOILERS #8 & #9, BLDG 260
 HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

Hill AFB proposes to replace two existing old boilers each rated at 40,000 lbs/hr steam with two new packaged steam boilers each rated at 70,000 lbs/hr steam. The packaged steam boilers will be Cleaver Brooks Model DL-86 complete with waterwall tubes, furnace section, boiler convection section, "CB" burner, lower drum, upper steam drum, soot blowers and all associated piping, controls, safety interlocks, pressure relief valves, outlet damper and stack. At 100% load, each boiler will be capable of delivering 70,000 lbs/hr of steam at an operating pressure of 125 psig and steam quality of 99.5%. Each unit will be designed to fire natural gas as the primary fuel with #2 fuel oil as a back up fuel. At full load, the total heat input to each unit will be 87.5 million BTU/hr with unit efficiency of 80.03%.

2. POLLUTANT EMISSIONS: At present, boiler house in building 260 houses 8 boilers. Because both boiler load and steam demand vary considerably, boilers are often cycled to meet varying process and heating steam requirements. For instance, some boilers may be shut down completely for several months during the summer due to low heating steam demand while in winter months continuous operation may be required to meet increasing heating steam demand. Due to cyclic nature of operation, it is fairly accurate to assume an average load factor of 70-75% to reflect emissions averaged over the entire year. Additionally, since existing boilers are being replaced with new boilers of larger capacity, only incremental emissions represent the net increase in emissions from this project. Emissions from existing boilers are estimated based on calendar year 1987 average fuel consumption, operating hours and using the EPA publication, AP-42, Emission Factors. Emissions from the replacement boilers are estimated using Cleaver Brooks Stack Emission Data. These emissions are representative of Cleaver Brooks CB burners and industrial burners and is a compilation of the results of laboratory and field tests.

(i) Emissions From Existing Boilers:

Total gas consumption 73,536,000 CU FT/YR

Emission Factors: AP-42, Vol 1, 4 Ed, Table 1.4-1

<u>POLLUTANT</u>	<u>FUEL</u>	<u>E. F.</u>	<u>EMISSIONS</u>	
	<u>1X10⁶ CU FT</u>	<u>LB/10⁶ CU FT</u>	<u>LB/YR</u>	<u>TONS/YR</u>
Particulate	73.536	3	220.6	0.1
SOX	73.536	0.6	44.1	0.02
NOX	73.536	140	10,295	5.14
HC	73.536	5.8	426.5	0.21
CO	73.536	35	2,573.8	1.29

(ii) Emissions From New Boilers:

Data (ea. boiler):

Primary fuel: Natural gas
Approximate heating value: 930 BTU/SCF
Approximate operating hours: 4,300

		<u>100% Load</u>	<u>75% Load</u>	<u>50% Load</u>
Steam Flow	Lbs/Hr	70,000	52,500	35,000
Total Heat Input	MBTU/HR	87.5	64.9	43.0
Fuel Fired	SCFM	1,570	1,164	772
Excess Air	%	10	10	10
Flue Gas Temp	°F	485	435	400
Flue Gas to Stack	Lbs/Hr	74,795	55,437	36,768
	ACFM	28,575	20,060	12,784
	SCFM	15,748	11,672	7,741

Emissions (two boilers):

<u>Pollutant</u>	<u>E.F.</u> <u>Lb/10⁶ BTU</u>	<u>PPM</u>	<u>100% Load</u>	<u>Emissions (tons/yr)</u>	
				<u>75% Load</u>	<u>50% Load</u>
Particulates	0.01	-	3.76	2.8	1.85
NOX	0.10	85	37.6	27.9	18.5
HC	0.004	10	1.5	1.1	.74
SOX	NA	-	-	-	-

Based on average load factor of 75%,
Net increase in NOX emissions = 27.9 - 5.1
= 22.8 tons NOX/Yr

3. AIR CLEANING DEVICES

Cleaver Brooks standard low NOX burner design is the Best Available Control Technology (BACT) for control of nitrogen oxides (NOX) from boiler stacks. Recent developments and modifications of burner design has resulted in NOX reduction of as much as 43%, i.e., 85 ppm compared with 150 ppm NOX emissions from these burners a few years ago.

4. EMISSION POINTS: Each boiler will discharge approximately 12,000 SCFM via 42" diameter stack. Point of discharge will be about 30' above ground.

5. SAMPLE POINTS: No sampling points are anticipated.

6. OPERATING SCHEDULE: New boilers are scheduled to go into operation this summer. Their operation will be cyclic as explained above.