State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
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Dianne R. Nielson, Ph.D.
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Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

August 27, 1993

DAQE-0752-93

James R. Van Orman
Director of Environmental Management
DOO-ALC/EM
7276 Wardlegih Road
Hill Air Force Base, Utah 84056-5127

Re: Modified Approval Order for:
A. Replacement Boilers in Buildings 1624, 1904, 2104, 2203
B. Paint Spray Booth in Building 751
C. Carbon Brake Coating Process in Building 507
Davis County CDS A1 NA

Dear Mr. Van Orman:

The Division of Air Quality received a letter dated June 1, 1993, requesting that condition 4E of the Approval Order (AO) DAQE-492-92 be modified. Condition 4E required that the boiler stack be tested at 90%, 70%, and 50% of the boilers capacity. This condition was changed to required testing at 90% of the boilers capacity. The new condition is now numbered 6E. Also, the generators listed in DAQE-492-92 are now consolidated in a separate AO (DAQE 719-93). Therefore, they have been deleted from this AO. This air quality AO authorizes the project with the following conditions. 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 following:

A. The boilers located in Buildings 1624, 1904, 2104, and 2203

B. The paint spray booth located in Building 751

C. The carbon brake coating process located in Building 507

These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991, and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; January 8, 1992, and June 1, 1993.

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. 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. This AO shall replace the AO dated May 22, 1992 (DAQE-492-92).

4. The approved installations shall consist of the following equipment:

   A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

   B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel.

   C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

   D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

5. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

   A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

      1) NO_x - 40 ppm at 7% oxygen; 0.24 lb/hr
      2) CO - 100 ppm at 7% oxygen

   B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

   C. Exhaust stack for carbon brake coating in Building 507 - Phosphorous Oxides - 1.33 lb/hr

6. Stack testing to show compliance with the emission limitations of condition #5 shall be performed as specified below:

A. Emission Point	Pollutant	Testing	Retest Status
1. Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
	CO	*/**	**

2.	Carbon brake coating exhaust in Bldg 507	PO_x	*/**	**

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.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #6.A.1. The steam production or operating rate during testing shall be set at 90% ± 10% of the boilers capacity.

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The gas sample shall be drawn according to the instructions of the test instrument being used.

2. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #5, at any one of the operating rates specified in condition 6E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #5.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated, it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" shall be determined to be a violation of this AO.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for two years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

7. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%	
B.	400 hp Boiler	Building	1904	10%	
C.	250 hp Boiler	Building	2104	10%	4.2.4-492

D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth	Building	751	10%
F.	Carbon brake furnace	Building	507	0%

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 6-minute period shall not apply.

8. The emissions of VOC from paint spray booth in Building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the 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. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

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. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

9. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

10. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

11. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, 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.

13. 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 construction/installation if construction/installation is not completed. At that time, the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

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 from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC
6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

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

Sincerely,

Russell A. Roberts, Executive Secretary
Utah Air Quality Board

RAR:JR:sbq

cc: EPA Region VIII, Mike Owens

State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
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Reply to: State of Utah
Division of Air Quality
P.O. Box 144820
Salt Lake City, Utah 84114-4820

Memorandum To: Lynn Menlove, New Source Review Manager

From: Julie A. Rose, Engineering Technician

Subject: Modify Approval Order for HAFB (DAQE-492-92)

Date: August 16, 1993

==========

On June 1, 1993, James Van Orman of HAFB wrote a letter to DAQ requesting that AO DAQE-492-92 be modified. Condition 4E of this AO reads as follows:

4. Stack testing to show compliance with the emission limitations of condition #3 shall be performed as specified below:

   E. Operating Rate

   Each boiler stack shall be tested in accordance with the schedule in Condition #4.A.1. The steam production or operating rate during testing shall be set at the following rates for testing:

   1) 90% ± 10% of the boiler's capacity
   2) 70% ± 10%
   3) 50% ± 10%

In order to ramp the boilers to specified load levels and stabilize them for 5 minutes before commencing a test, HAFB has to add the by-pass exhaust ports and exhaust from 1,000 to 9,000 lbs of steam per hour. It takes approximately 3-4 hours per boiler to complete a test at the specified loads, during which time, the steam and energy is wasted and venting steam creates a very noisy atmosphere. This also does not constitute economical operation.

These boilers may run close to 90% load during the winter months; however, during the summer months, they may run at 40%-50% load or totally shut down.

HAFB is requesting that the operating rates in condition 4E be deleted to allow testing at the existing load conditions and firing rates.

I recommend that the condition 4E be changed to require testing at at least 90% of the boilers capacity. This will allow HAFB to operate at the boilers maximum capacity. The attached letter should be sent.

James R. Van Orman
Director of Environmental Management
OOALC/EM
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

Re: Modified Approval Order for:
A. Replacement Boilers in Buildings 1624, 1904, 2104, 2203
B. Paint Spray Booth in Building 751
C. Carbon Brake Coating Process in Building 507
Davis County CDS A1 NA

Dear Mr. Van Orman:

The Division of Air Quality received a letter dated June 1, 1993, requesting that condition 4E of the Approval Order (AO) DAQE-492-92 be modified. Condition 4E required that the boiler stack be tested at 90%, 70%, and 50% of the boilers capacity. This condition was changed to required testing at 90% of the boilers capacity. THe new condition is now numbered 6E. Also, the generators listed in DAQE-492-92 are now consolidated in a separate AO (DAQE 719-93). Therefore, they have been deleted from this AO. This air quality AO authorizes the project with the following conditions. 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 following:

   A. The boilers located in Buildings 1624, 1904, 2104, and 2203

   B. The paint spray booth located in Building 751

   C. The carbon brake coating process located in Building 507

   These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991, and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; January 8, 1992, and June 1, 1993.

   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. 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. This Approval Order shall replace the Approval Order dated May 22, 1992 (DAQE-492-92).

4. The approved installations shall consist of the following equipment:

   A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

   B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel

   C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

   D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

5. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

   A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

      1) NO_x - 40 ppm at 7% oxygen; 0.24 lb/hr
      2) CO - 100 ppm at 7% oxygen

   B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

   C. Exhaust stack for carbon brake coating in Building 507 - Phosphorous Oxides - 1.33 lb/hr

6. Stack testing to show compliance with the emission limitations of condition #5 shall be performed as specified below:

A. Emission Point	Pollutant	Testing	Retest Status
1. Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
	CO	*/**	**
2. Carbon brake coating			

exhaust in Bldg 507	PO_x	*/**	**

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.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #6.A.1. The steam production or operating rate during testing shall be set at 90% ± 10% of the boilers capacity.

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The gas sample shall be drawn according to the instructions of the test instrument being used.

2. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #5, at any one of the operating rates specified in condition 6E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #5.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair, shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" shall be determined to be a violation of this AO.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for two years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

7. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%

B.	400 hp Boiler	Building	1904	10%
C.	250 hp Boiler	Building	2104	10%
D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth	Building	751	10%
F.	Carbon brake furnace	Building	507	0%

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.

8. The emissions of VOC from paint spray booth in Building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R307-1-3.1, UAC. Compliance with the 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. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

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. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

9. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

10. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

11. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

12. All installations and facilities authorized by this AO shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UAC. R307-1-3.5, UAC addresses emission inventory reporting requirements. R307-1-4.7, 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.

13. 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 construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the operation and may revoke the AO in accordance with R307-1-3.1.5, UAC.

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 Utah Air Conservation Rules.

Annual emissions from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC

6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

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

Sincerely,

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

01 JUN 1993

Mr F. Burnell Cordner
Director, Division of Air Quality
1950 West North Temple
P O Box 144820
Salt Lake City, UT 84114-4820

Re: Request for Minor Modification of Approval Order DAQE-492-92, 22 May 92, Replacement Boilers Bldgs 1624,1904, 2104, and 2203

Dear Mr Cordner

Condition 4. E. of the referenced Approval Order specifies testing each boiler stack at 90 percent, 70 percent and 50 percent of the boiler load. In order to ramp the boilers to the specified load levels and stabilize them for 5 minutes before commencing a test, we will have to add the by-pass exhaust ports and exhaust from 1,000 to 9,000 lbs of steam per hour. It takes us approximately 3-4 hours per boiler to complete a test at the specified loads, during which time, the steam and energy is wasted and venting steam creates a very noisy atmosphere. This also does not constitute economical operation.

These boilers may run close to 90 percent load during the winter months; however, during the summer months, they may run at 40-50 percent load or totally shutdown.

We request the operating rates in condition 4. E. be deleted to allow testing at the existing load conditions and the firing rates. If you have any questions, please feel free to contact Jay Gupta at 777-0359.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

4.2.4-505

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-127-92

February 7, 1992

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

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and the Deseret News on February 14, 1992.

Please mail the invoice and affidavit of publication to the Utah State Department of Environmental Quality, Division of Air Quality, P.O. Box 16690, Salt Lake City, Utah 84114-4820.

Sincerely,

Cheery Love

Cheery Love
Office Technician
Division of Air Quality

MK:cl

Enclosure

4.2.4-506

NOTICE

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

1. Kim Heimsath
   Mountain Fuel
   180 East 100 South
   Salt Lake City, Utah 84139

   Twelve Natural Gas Fired IC Engines at Six Stations; One Natural Gas Fired Emergency Generator
   Six Locations, all new minor sources in attainment areas

The emissions from these sources can be summarized as follows:

A) There are no existing emissions at any of the proposed locations.

B) Controlled and uncontrolled emissions are equal at all locations.

C) The emissions of NO_x and CO are the only pollutants of concern. Emissions of NO_x and CO are less than 20 TPY each at all of the proposed locations. Emissions of all other pollutants are negligible.

2. James R. Van Orman
   Headquarters Ogden Air Logistics Center
   Hill Air Force Base, Utah 84056-5990

   Replacement Boilers in Buildings 1624, 1904, 2104, 2203
   Paint Spray Booth in Building 751
   Carbon Brake Coating in Building 507
   Emergency Generators in Buildings 1212 and 1213
   Davis County CDS A1 NA

The emissions from the sources listed in this NOI will be as follows:

Total emissions from the boilers in Buildings 1624, 1904, 2104, and 2203:

Current Emissions

Particulate	0.16 ton/12-month period
PM_{10}	0.14
SO_2	0.04
NO_x	5.00
CO	1.00
VOC	0.24

New Total Emissions

Particulate	0.25 ton/12-month period
PM_{10}	0.22
SO_2	0.05
NO_x	5.09
CO	1.68
VOC	0.51

Total emissions from the paint spray booth in Building 751:

VOC	0.04 ton/12-month period

Total emissions from the Carbon Brake Coating Process:

PO_x	1.32 ton/12-month period

Total emissions from the Emergency Generators in buildings 1212, and 1213:

New Total Emissions for 2 Generators

Particulate	0.08 ton/12-month period
PM_{10}	0.07
SO_2	0.08
NO_x	1.34
CO	0.28
VOC	0.10
Aldehydes	0.02

The generators will each be run a maximum of 100 hours per 12-month period (for maintenance). The above inventory is relevant to the proposed facilities only in this NOI and not to all of HAFB.

3. John Cuthbertson

LDS Hospital

325 8th Avenue

Salt Lake City, Utah 84143

Boiler Replacement

Salt Lake County CDS B NA

The emissions from this source will be as follows:

Existing Emissions (including coal burning)

Particulate	6.18 ton/yr
PM_{10}	6.18
SO_2	156.90
NO_x	74.20
CO	31.40
VOC non meth	0.37

Increased (Decreased) Emissions

Particulate	(5.05) ton/yr
PM_{10}	(5.05)
SO_2	(154.40)
NO_x	(53.70)
CO	(24.00)
VOC non meth	0.82

Total Emissions

Particulate	1.13 ton/yr
PM_{10}	1.13
SO_2	2.48
NO_x	20.50
CO	7.39
VOC non meth	1.19

The engineering evaluations and air quality impact analyses have been completed and no adverse air quality impacts are expected. It is the intent of the Executive Secretary to approve the construction projects.

The construction proposal and estimates of the effect on local air quality are available for public inspection and comment at the Division of Air Quality, Utah State Department of Environmental Quality, 1950 West North Temple, Salt Lake City, Utah 84116-0690. Written comments received by the Division, at the same address on or before March 14, 1992 will be considered in making the final decision on the approval/disapproval of the proposed construction.

If anyone so requests to the Executive Secretary in writing, within 15 days of publication of the Notice, a hearing will be held to explain the project and technical rationale for proposed action. A hearing will be scheduled as close as practicable to the proposed project location. Comments obtained during a hearing will be evaluated and considered by the Executive Secretary before making a final decision on the approval/disapproval of the projects.

Date of Notice: February 14, 1992

UTAH DIVISION OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

James R. Van Orman
Director of Environmental Management
Headquarters Ogden Air Logistics Center
Hill Air Force Base, Utah 84056-5990

ENGINEER:	Nando Meli Jr.
RE:	Replacement Boilers in Buildings 1624, 1904, 2104, 2203 Paint Spray Booth in Building 751 Carbon Brake Coating in Building 507 Emergency Generators in Buildings 1212 and 1213 Davis County CDS A1 NA
DATE:	January 21, 1992
NOTICE OF INTENT DATED:	July 30, 1991
PLANT CONTACT:	Jay Gupta
PHONE NUMBER:	(801) 777-6742
PLANT LOCATION:	Hill Air Force Base, Davis County

FEES:

Filing Fee	$1500.00
Computer Usage Fee	$000.00
Notice to Paper	$00.00
Travel - 00 miles at $0.23/mile	$000.00
Total	$1500.00

APPROVALS:

Engineering Unit Manager DC 1-21-92

Applicant Contact Made MM 1-22-92

I. DESCRIPTION OF PROPOSAL

A. Replacement Boilers

Buildings 1624, 1904, 2104, and 2203 each have two existing boilers. One is 200 HP and the other one is 150 HP. An energy study has shown that if the larger boiler (200 HP) was to fail, then the mission essential load could not be entirely supplied by the smaller (150 HP) boiler. There will be no change to the 200 HP boilers.

HAFB proposes to replace the 150 HP boilers with new 250 HP boilers in Buildings 1624, 2104, and 2203. In Building 1904, the 150 HP boiler will be replaced with an existing 400 HP boiler which is presently idle. The new boilers will be Kewanee Classic III, 150 PSI, packaged scotch design firetube boilers or approved equal, capable of firing gas or oil.

Gas will be used as the primary fuel with #2 oil being used as the back-up fuel. Boiler data and dimensions are shown in Attachment #1 of the NOI. Design criteria for the boilers are as follows:

Data for each 250 hp Boiler

Boiler rating (each)	250 HP, three boilers required
Primary fuel	Natural Gas
Bask-up Fuel	#2 Oil
Steam Rate	8,625 lbs/hr
Total heat input	10.45 MM BTU/hr
Total heat output	8.37 MM BTU/hr
Thermal efficiency	80%
Fuel firing rate	Gas (1000 BTU/SCF) 174.16 SCFM 10,450 SCFH
	#2 Fuel Oil 140,000 BTU/Gal 74.4 GPH
Estimated stack gas volume	gas firing 4270 ACFM oil firing 4345
Flue gas temperature	465° F

Data for 400 hp Boiler

Boiler rating	400 HP
Primary fuel	Natural Gas
Bask-up Fuel	#2 Oil
Total heat input	16.74 MM BTU/hr
Thermal efficiency	80%
Fuel firing rate	Gas (1000 BTU/SCF) 18,414 SCFH
	#2 Fuel Oil 140,000 BTU/Gal 131.5 GPH

B. Paint Spray Booth

A small bench type paint spray booth measuring approximately 5'W x 7'H x 6'D, complete with paint arrestor filters, exhaust plenum, and a fan will be used to paint small aircraft instruments.

Paint usage in very small quantities (20-25 gallons per year) and very low VOC content will be used (less than 3.5 lbs VOC/gallon). At a face velocity of 150 feet per minute, exhaust volumetric flow rate in estimated to be 3500 SCFM. Vendor data on paint spray booth is Attachment 2 of the NOI.

C. Carbon Brake Coating

An existing electric furnace, not being used at the present time, will be used for baking Bendix P-11 coating on aircraft carbon discs in Building 507. The furnace measures approximately 3' x 3' x 6' deep. Six SCFM continuous nitrogen purge will be used. A small vent pipe will exhaust vapors to the atmosphere. P-11 coating decomposes on heating to form phosphorous oxides.

D. Emergency Generators

Two emergency generators (with a capacities of 200 KW and 125 KW) will be installed in Buildings 1212 and 1213. They will serve as a back-up power source to equipment in these buildings. A 1900 gallon above ground diesel fuel tank will be used as a fuel source.

II. EMISSION SUMMARY

The emissions from the sources listed in this NOI will be as follows:

Total emissions from the boilers in Buildings 1624, 1904, 2104, and 2203:

Current Emissions

Particulate	0.16 ton/12-month period
PM_{10}	0.14
SO_2	0.04
NO_x	5.00
CO	1.00
VOC	0.24

New Total Emissions

Particulate	0.25 ton/12-month period
PM_{10}	0.22
SO_2	0.05
NO_x	5.09
CO	1.68
VOC	0.51

Total emissions from the paint spray booth in Building 751:

VOC	0.04 ton/12-month period

Total emissions from the Carbon Brake Coating Process:

PO_x	1.32 ton/12-month period

Total emissions from the Emergency Generators in buildings 1212, and 1213:

New Total Emissions for 2 Generators

Particulate	0.08 ton/12-month period
PM_{10}	0.07
SO_2	0.08
NO_x	1.34
CO	0.28
VOC	0.10
Aldehydes	0.02

The generators will each be run a maximum of 100 hours per 12-month period. The above inventory is relevant to the proposed facilities only in this NOI and not to the entire HAFB. The total inventory for HAFB is not currently available.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required at all emission points. The following is a description of the pollution control equipment proposed and the recommendation of the Engineering Section:

Boiler Replacements

The emission points under review in this area are the boiler stacks. The Engineering Section recommends the following limitations as BACT for the new boilers:

A. NO_x - 40 ppm at 7% oxygen (measured as NO_2)

B. CO - 100 ppm at 7% oxygen

C. 10% opacity

The proposed Low-NOx natural gas fired boilers in buildings 1624, 2104, and 2203 are designed to meet these limitations. No other options were considered.

A cost analysis was done on retrofitting the proposed 400 hp boiler in building 1904 with a low NO_x burner. After reveiwing the cost analysis it was determined that it would not be cost effective to equip the boiler with a low NO_x burner.

Paint Spray Booth

The emissions from the paint spray booth will be controlled by using a paint arrestor filters with an opacity limit of 10%. A low VOC compliant paint, 3.5 lbs VOC/gallon or less, and a limit on the total VOCs is being recommended as BACT at this facility. The Engineering Section recommends the following limits as BACT:

A. 10% opacity

B. VOC emissions from booth limited to 0.04 ton/yr

Carbon Brake Coating

Hill AFB has indicated in their NOI that there will be no controls on the emissions to the atmosphere from the carbon brake coating process in Building 507.

Screening type modeling was submitted by HAFB that indicated the emission concentration would be 0.011 mg PO_x/m^3 at the property line, located 150 meters from Building 507. The Threshold Limit Value for phosphoric acid is 1 mg/m^3. This value was divided by 100 to give an acceptable limit value for a unhealthy person of 0.010 mg/m^3. Due to the conservative nature of modeling, the Engineering Section recommends that this process be accepted with no controls on the emissions with 0% opacity as BACT.

Emergency Generators

The NOI indicated that there would be no controls on the emissions from the emergency generators. The Engineering Section knows of no controls at this time for small diesel engines. A limitation on the number of hours of operation and fuel quality is the best current control for this type of source.

The Engineering Section recommends that BACT for the generators be the following:

A. 20% opacity

B. Sulfur content of diesel fuel that is equal to or less than the sulfur content of on-highway diesel fuel

C. Annual hours of operation for maintenance not to exceed to 100 per generator

IV. APPLICABILITY OF FEDERAL REGULATIONS AND UTAH AIR CONSERVATION RULES

This Notice of Intent is for a minor modification to an existing major source. 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 Notice of Intent:

1. R446-1-3.1, UAC - Notice of intent required for a modified source. This rule applies.

2. R446-1-3.1.5, UAC - Continuous program of construction required to begin within eighteen months of Approval Order date. If a continuous program of construction is not proceeding, the Executive Secretary may revoke the Approval Order.

3. R-446-1-3.1.7 (A), UAC - Notice of Intent not required for fuel burning equipment with a rated capacity of less than 5×10^6 BTU per hour using no other fuel than natural gas. A Notice of Intent is required because the boilers have a capacity greater than 5×10^6 BTU per hour, and they will use #2 fuel oil as a back-up fuel.

4. R-446-1-3.1.7 (F), UAC - Notice of Intent not required for the use of certain compounds which are not photochemically reactive. This list includes 1,1,1-trichloroethane. However, if the source is emitting more than 10 tons/yr of any compound, a Notice of Intent must be filed. This rule applies.

5. R-446-1-3.1.8 (A), UAC - Application of best available control technology (BACT) required at all emission points. This rule applies.

6. R-446-1-3.1.8 (D), UAC - Enforceable offset of 1:1 required for new sources or modifications which would produce an emission increase greater than or equal to 25.00 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 impacts these three counties as defined in the rule. The effective date is November 15, 1990. The sources listed in this NOI produce a combined emission rate that is less than 25.00 tons per year. No offset is required.

7. R-446-1-3.1.9, UAC - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this rule does not apply.

8. R-446-1-3.1.12, 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. This rule does not apply as there are no replacement burners. However, BACT requires the low-NOx burners on the new boilers that have been proposed.

9. R-446-1-3.2.1, UAC - Particulate emission limitations for existing sources which 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. The sources listed in Weber

County are as follows:

A. Farmers Grain Coop
B. Fife Rock Products
C. Interpace Corporation
D. Parsons Asphalt Plant
E. Pillsbury Company
F. Teledyne Incinerator
G. Gibbons and Reed Asphalt

This source is not listed in the SIP. Therefore, this rule does not apply.

10. R-446-1-3.3.2, UAC - 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 represents a minor modification to an existing major source. Therefore, this rule does not apply.

11. R-446-1-3.5, UAC - Emission inventory reporting requirements. This rule requires any source which 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. HAFB must comply with this rule.

12. R-446-1-3.6.3, 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
A. Class I areas
1) 5 ug/m^3 (annual)
2) 10 ug/m^3 (24 hour)
B. Class II areas
1) 19 ug/m^3 (annual)
2) 37 ug/m^3 (24 hour)

SO_2
A. Class I areas
1) 2 ug/m^3 (annual)
2) 5 ug/m^3 (24 hour)
3) 25 ug/m^3 (3 hour)
B. Class II areas
1) 20 ug/m^3 (annual)
2) 91 ug/m^3 (24 hour)
3) 512 ug/m^3 (3 hour)

NO_x
A. Class I areas - 2.5 ug/m^3 (annual)
B. Class II areas - 25 ug/m^3 (annual)

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. This source is located in a nonattainment area.

13. R-446-1-3.6.5 (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. R446-1-3.6.6 UAC - Increment violations. This rule requires the UACB to promulgate a plan and implement rules to eliminate any PSD increment violations which occur in the state. No known violations have yet occurred.

15. R-446-1-3.8, 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. The sources listed in this NOI have no stacks which exceed 65 meters in height. It is in compliance with this rule.

16. R-446-1-3.11, 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 Notice of Intent does not represent a new major source or a major modification under UACR rules. Therefore, this rule does not apply.

17. R-446-1-4.1.2, 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, some points, which are subject to NSPS or BACT, will have to meet more stringent opacity limitations as follows:

    A. Boilers, Building 1624 - 10% opacity

    B. Boilers, Building 1904 - 10% opacity

    C. Boilers, Building 2104 - 10% opacity

    D. Boilers, Building 2203 - 10% opacity

    E. Paint spray booth, Building 751 - 10% opacity

    F. Carbon brake furnace, Building 507 - 0% opacity

    G. Emergency generator, Building 1212 - 20% opacity

    H. Emergency generator, Building 1213 - 20% opacity

    An opacity of 0% is recommended for the carbon brake coating exhaust stack located in Building 507 due to the toxicity of the PO_x emissions.

18. R-446-1-4.1.9, UAC - EPA Method 9 to be used for visible emission observations. This rule applies.

19. R-446-1-4.2.1, UAC - Sulfur content limitations in oil and coal used for combustion. This source burns natural gas as a primary fuel source, and uses #2 fuel oil as a back up fuel source for its boilers. The emergency generators will use diesel fuel. The limitation in the rule is 0.85 pounds of sulfur per 10^6 BTU heat input. The proposed fuel oil will be limited to 0.50% by weight sulfur and the engine fuel will be recommended as "on-highway" grade fuel.

20. R-446-1-4.7, UAC - Unavoidable breakdown reporting requirements. This rule applies. Section 4.7.1 discusses reporting requirements. A breakdown for any period longer than 2 hours must be reported to the Executive Secretary within 3 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 7 calendar days. The report shall include the estimated quantity of pollutants (total and excess). Section 4.7.2 discusses penalties.

21. R-446-1-4.9, UAC - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone constructed in 1980 or earlier. This rule does not apply to the paint spray booth at Hill AFB in building 751 because the booth is new. However, the rule may have been used as a guidance document in determining BACT for the spray booth.

22. R-446-1-5, UAC - Emergency episode requirements. This rule applies.

23. R-446-1-7, UAC - Air Pollution Episode Plan - This plan provides the basis for taking action to prevent air pollutant concentrations from reaching levels which could endanger the public health, or to abate such concentrations should they occur. All sources in a nonattainment area or impacting a nonattainment area must submit a plan outlining what they will do in an emergency episode. This regulation applies to Salt Lake, Davis, and Utah Counties. This rule applies.

24. New Source Performance Standards (NSPS) - There are no NSPS for any of the proposed industrial process.

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 source is located in Davis County, which is a nonattainment area for ozone. The Division of Air Quality guidelines do not call for this source to be modeled for any pollutant. However, modeling was done for PO_x. The Division has found through experience that, because of the small quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small size is very unlikely to cause a new violation of the NAAQS or make a significant contribution to the existing violation for ozone.

    Screening type modeling was submitted, on the carbon brake coating process in bldg. 507, by HAFB that indicated the emission concentration would be 0.011 mg PO_x/m^3 at the property line, located 150 meters from the building. The Threshold Limit Value for phosphoric acid is 1 mg/m^3. This value was divided by 100 to give an acceptable limit value for a unhealthy person of 0.010 mg/m^3. Due to the conservative nature of modeling, the Engineering Section recommends that this process be accepted with no controls on the emissions with 0% opacity as BACT.

27. 40 CFR 60.14, Definition of Modification - Any physical or operational change to an existing facility which 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 alternative fuel or raw material if, prior to 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 Notice of Intent is a minor modification.

28. 40 CFR 60.15, Definition of Reconstruction - 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 Notice of Intent is not a reconstruction.

29. R-446-1-1.89, Definition of Major Modification - It means any physical change in or change 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 Notice of Intent is not a major modification.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install and operate the following:

A. The boilers located in Buildings 1624, 1904, 2104, and 2203

B. The paint spray booth located in Building 751

C. The carbon brake coating process located in Building 507

D. The emergency generators located in Buildings 1212 and 1213

These shall all be operated according to the information submitted in the Notice of Intent dated April 24, 1991 and additional information submitted to the Executive Secretary dated July 30, 1991; December 26, 1991; and January 8, 1992.

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 the following equipment:

A. Replacement boilers located in Buildings 1624, 2104, and 2203, rated at 250 HP - The boilers shall be equipped with low-NO_x burners using natural gas as the primary fuel, with #2 fuel oil being used as the back-up fuel.

B. Placing of an existing 400 HP boiler in Building 1904 using natural gas as the primary fuel with #2 fuel oil being used as the back-up fuel

C. A paint spray booth equipped with paint arrestor filters located in Building 751 and using low VOC compliance paint.

D. An existing electric furnace to be used for baking Bendix P-11 coating on carbon brake disks in Building 507.

E. Two emergency generators located in:

a) Building 1212 - generator rated at 200 KW

b) Building 1213 - generator rated at 125 KW

3. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A. Exhaust stacks for 250 HP replacement boilers in Buildings 1624, 2104, and 2203:

1) NO_x - 40 ppmdv at 7% oxygen; 0.24 lb/hr

2) CO - 100 ppmdv at 7% oxygen

B. Exhaust stack for 400 HP replacement boiler in Building 1904, - NO_x - 1.84 lb/hr

C. Exhaust stack for carbon brake coating in Building 507 - PO_x - 1.33 lb/hr

4. Stack testing to show compliance with the emission limitations of condition #3 shall be performed as specified below:

A. Emission Point	Pollutant	Testing Status	Retest
1. Boiler exhaust stacks in Bldgs 1624, 1904, 2104, and 2203	NO_x	§	***
	CO	*	*
2. Carbon brake coating exhaust in Bldg 507	PO_x	*/**	**

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 R446-1-3.4.1, UAC. The source shall be tested if directed by the Executive Secretary.

** The testing method shall be submitted to the Executive Secretary for approval before the testing is performed. The source shall be tested if directed by the Executive Secretary.

§ The stack shall be tested for NO_x emissions compliance within 30 days of startup using a portable testing instrument approved by the Executive Secretary.

*** The boiler stack shall be retested every 30 boiler operating days ± 10 days. The maximum time between tests shall be 35 boiler operating days.

C. Test Procedure

Boiler stack emissions testing shall be performed by the following procedure or an approved equivalent. Equivalency shall be determined by the Executive Secretary and approved prior to tests being conducted.

D. Sample Port

A sampling port shall be installed in each boiler exhaust

stack in accordance with 40 CFR 60, Appendix A, Method #1 or as approved by the Executive Secretary. The sample port shall be safely accessible to the tester, operator, or inspector in accordance with OSHA standards.

E. Operating Rate

Each boiler stack shall be tested in accordance with the schedule in Condition #4.A.1. The steam production or operating rate during testing shall be performed under the following three operating rates:

1) 90% ±10% of the boiler's capacity

2) 70% ±10%

3) 50% ±10%

F. Test Instrument

The test procedure shall be conducted using a portable testing instrument approved by the Executive Secretary. The testing instrument shall be calibrated on site with a suitable NBS referenced or traceable calibration gas in accordance with the instruction of the test instrument.

G. Test Procedure

The test shall be conducted in the following manner:

1. The boiler shall be:

   a) ramped to the designated production rate in Condition 4.E,

   b) allowed to stabilize for a minimum of 5 minutes.

2. The gas sample shall be drawn according to the instructions of the test instrument being used.

3. The sample value shall be determined from the test instrument, appropriate calculations made, and the data recorded.

H. Failed Boiler Status

If the boiler is unable to attain the emission limitation in condition #3, at any one of the operating rates specified in condition 4E, the boiler shall be assigned to a lower position on the "use priority list" (used as standby where possible) until the unit has been repaired or maintenance performed and a successful retest completed.

Maintenance and repairs of any boiler that fails the periodical test shall be performed within 15 days or the boiler shall be idled.

If a boiler, that has failed a test, is repaired and a successful retest completed according to the limitations of Condition #3.A within 15 days, the boiler shall be determined to not have been in violation.

A boiler that fails the retest after repair, shall be idled until further repairs are made and a successful retest completed. If the boiler demand requires the boiler to be operated it shall be base loaded at the rate that will result in the lowest emissions rate possible until the boiler can be repaired and shown in compliance by the above test.

Operating a boiler that has failed the above "retest after repair" may be determined to be a violation of this Approval Order.

I. Reports

A copy of all test reports containing the test results, any calculations required, and the test instrument calibration data shall be retained by the owner/operator for 2 years. The reports shall be made available to the Executive Secretary or his agent upon request. An annual summary report of all the test results with a copy of the periodical reports shall be submitted to the Executive Secretary no later than January 31 of each year for the previous calendar year.

5. Visible emissions from the following emission points shall not exceed the following values:

A.	250 hp Boiler	Building	1624	10%
B.	400 hp Boiler	Building	1904	10%
C.	250 hp Boiler	Building	2104	10%
D.	250 hp Boiler	Building	2203	10%
E.	Paint spray booth,	Building	751	10%
F.	Carbon brake furnace,	Building	507	0%
G.	200 kw Emergency generator	Building	1212	20%
H.	150 kw Emergency generator	Building	1213	20%

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.

6. The emissions of VOC from building 751 shall not exceed 0.040 tons per 12-month period without prior approval in accordance with R446-1-3.1, UAC. Compliance with the 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. The emissions of VOC from the spray booth shall be determined by maintaining a record of paints and thinners used. The record shall include the following data for each item used:

A. Name of paint or thinner
B. Weight in pounds per gallon
C. Percent VOC by weight
D. Amount used on a daily basis

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. VOC emissions shall be determined by the following manner:

VOC = (% Volatile by Weight / 100) * (Density lb/gal) * (Gallons Consumed) / (2,000 lb/ton)

The VOC content in pounds for each individual item or surface coating used shall be calculated, and then the total of all items shall be summed, such that the cumulative total shall not exceed the 0.04 tons per 12 month period as specified.

7. The emergency generators in Buildings 1212 and 1213 shall be limited to 100 hours of maintenance operation per engine per 12-month period. If excess hours of operation are used because of emergency conditions, the Executive Secretary shall be notified.

Compliance with the 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 hours of operation shall be kept for all periods when the plant is in operation. Records of hours of operation 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. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

8. The owner/operator shall use only natural gas as a primary fuel and #2 fuel oil as a backup fuel in the replacement boilers located in Buildings 1624, 1904, 2104, and 2203. If any other fuel is to be used, an Approval Order shall be required in accordance with R446-1-3.1, UAC.

9. The sulfur content of any fuel oil burned shall not exceed 0.5% by weight. The sulfur content of any fuel oil or diesel fuel shall be tested if directed by the Executive Secretary.

10. The paint spray booth shall be equipped with a set of paint arrestor particulate filters or equivalent to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere. Equivalency shall be determined by the Executive Secretary.

11. 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.

12. 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 construction/installation if construction/installation is not completed. At that time the Executive Secretary shall require documentation of the continuous construction/installation of the

operation and may revoke the Approval Order in accordance with R446-1-3.1.5, UAC.

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 from the source listed in this NOI are currently calculated at the following values:

A. Total annual emissions for each of the 250 hp boilers located in Buildings 1624, 2104, and 2203 are the following values:

1) 0.06 tons/yr for Particulate
2) 0.056 tons/yr for PM_{10}
3) 0.01 tons/yr for SO_2
4) 0.47 tons/yr for NO_x
5) 0.13 tons/yr for VOC
6) 0.46 tons/yr for CO

B. Total annual emissions for the 400 hp boiler located in building 1904 are the following values:

1) 0.11 tons/yr for Particulate
2) 0.10 tons/yr for PM_{10}
3) 0.02 tons/yr for SO_2
4) 3.68 tons/yr for NO_x
5) 0.22 tons/yr for VOC
6) 0.73 tons/yr for CO

C. Total annual emissions for the paint booth located in building 751 is 0.04 tons/yr for VOC.

D. Total annual emissions for the carbon brake coating process located in building 507 is 1.32 tons/yr for PO_x.

E. Total annual emissions, based on 100 hr/yr operation, for each emergency generator located in buildings 1212, and 1213 are the following values:

1) 0.04 tons/yr for Particulate
2) 0.04 tons/yr for PM_{10}
3) 0.04 tons/yr for SO_2
4) 0.67 tons/yr for NO_x
5) 0.05 tons/yr for VOC
6) 0.14 tons/yr for CO
7) 0.01 tons/yr for Aldehydes

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.

NANDO\WP\HAFB-GB.EN1

MEMORANDUM

To: Hill Air Force file, Engineering Section, DAQ

FROM: Nando Meli Jr., Environmental Health Engineer

SUBJECT: Justification for the use of an existing 400 hp boiler in building 1904.

DATE: January 15, 1992

Hill Air Force Base submitted some information dated January 8, 1992 to substantiate their claim for using an existing 400 hp boiler. In building 1904 they are replacing a 150 hp boiler with an existing boiler and burner. The letter provides some information as to the cost effectiveness of using the existing burner and not a low NO_x burner. Carl Broadhead talked to a manufacturer representative and came up with the following information:

Cost of low NO_x burner	$45,000.00
Cost for installation and chamber modificataion	25,000.00
Total cost	70,000.00

Using Hill A.F. Base information to get a cost analysis for the amount per year for NO_x reduction:

Annualized capital cost assuming 20 year life at 8% rate =

$70,000.00 x capital recovery factor =

70,000.00 x 0.1019 =

$ 7,133.00/year for 20 years

NO_x emissions with existing burner = 3.68 tons/yr

NO_x emissions with low NO_x burner = 1.67 tons/yr

NO_x reduction = 2.01 tons/yr

$$\$/\text{ton of } NO_x \text{ reduction} = \frac{\$\ 7,133.00/\text{year}}{2.01 \text{ tons/year}}$$

$$= \$3556.00/\text{ton}$$

It would not be cost effective to require the use of a low NO_x burner in building 1904. Therefore, the Engineering section recomends that the existing boiler be used without a low NO_x burner.

==========

Calculations of Total Emissions for boilers in Bldgs 1624, 1404, 2104, and 2203

Emission data submitted in NOI for 250 HP Boilers

TSP	0.03 lb/Hr	0.06 Ton/yr
SO_x	0.005	0.01
VOC	0.07	0.13
CO	0.23	0.46

Emission data Calculated

40 ppm = 0.24 lb/hr or 0.47 ton/yr at 4000 hr/yr

PM_{10} = 90% of TSP $0.9\left(0.06 \frac{tn}{hr}\right) = 0.056$ tn/yr

$0.9(0.03$ lb/hr$) = 0.027$ lb/hr

Emissions for 3 - 250 Hp and 1 - 400 Hp boilers

TSP = $3(0.06) + 1(0.11) = 0.29$ ton/yr

PM_{10} = $0.9(0.29) = 0.26$ tn/yr

SO_x $3(0.01) + 1(0.02) = 0.05$ tn/yr

NO_x $3(0.47) + 1(3.68) = 5.09$ tn/yr

CO $3(0.46) + 1(0.73) = 2.11$ tn/yr

VOC $3(0.13) + 1(0.22) = 0.61$ tn/yr

Emissions for Carbon brake coating process in Bldg 507

data sent after NOI received

$0.167 \frac{gm}{sec} \quad \frac{1 lb}{453.59 gm} \quad \frac{3600 sec}{hr} = 1.33$ lb/hr

Conversion of ppm to tons/yr NO_x

$$40\ ppm\ \frac{1}{10^6}\ \frac{1\ gm\ mole\ wt}{22.414\ liters}\ \frac{1000\ liters}{m^3}\ \frac{10^6\ \mu g}{g} = 1784.6$$

$$1784.6\ \frac{gm\ mole\ wt}{gm}\ \frac{\mu g}{m^3}\ \frac{40\ gm\ NO_2}{gm\ mole\ wt} = 82{,}092\ \frac{\mu g}{m^3}\quad 760^{mm}\ 0^{\circ}C$$

$$82{,}092\ \frac{\mu g}{m^3}\left(\frac{460^{\circ}F}{460+465}\right)\left(\frac{25.5"\ Hg}{29.9"\ Hg}\right) = 34{,}816.6\ \frac{\mu g}{m^3}$$

$$34{,}816.6 \times 10^{-6}\ \frac{g}{m^3}\ \frac{2.21\ lb}{1000\ g}\ \frac{ton}{2000\ lb}\ \frac{m^3}{35.314\ ft^3}$$

$$= 1.089435 \times 10^{-4}\ \frac{ton}{ft^3}$$

$$1.089435 \times 10^{-4}\ \frac{ton}{ft^3}\ 1810.48\ scfm = 1.9729 \times 10^{-1}\ ton/min$$

$$4270\ Acfm\left(\frac{460^{\circ}R}{460+465}\right)\left(\frac{25.5"\ Hg}{29.9"\ Hg}\right) = 1810.48\ scfm$$

$$1.9729 \times 10^{-1}\ \frac{ton}{min}\ \frac{60\ min}{hr}\ \frac{4000\ hr}{yr} = 0.47\ \frac{ton}{yr}\ NO_x$$

$$1.9729 \times 10^{-1}\ \frac{ton}{min}\ \frac{60\ min}{hr}\ \frac{2000\ lb}{ton} = 0.24\ \frac{lb}{hr}$$

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
◂Phenol [108-95-2] — Skin (1987)	5	19	—	—
Phenothiazine [92-84-2] — Skin (1986)	—	5	—	—
▪N-Phenyl-beta-naphthylamine [135-88-6] (1979)	A2	A2	—	—
‡p-Phenylenediamine [106-50-3] (— Skin)	—	0.1	—	—
Phenyl ether [101-84-8], vapor (1976)	1	7.0	2	14
Phenylethylene, *see* Styrene, monomer				
••Phenyl glycidyl ether (PGE) [122-60-1] (1982)	1	6.1	—	—
‡••Phenylhydrazine [100-63-0] — Skin	(5,A2)	(22,A2)	(10,A2)	(44,A2)
•Phenyl mercaptan [108-98-5] (1978)	0.5	2.3	—	—
Phenylphosphine [638-21-1] (1977)	C 0.05	C 0.23	—	—
Phorate [298-02-2] — Skin (1976)	—	0.05	—	0.2
Phosdrin, *see* Mevinphos				
Phosgene [75-44-5] (1978)	0.1	0.40	—	—
Phosphine [7803-51-2] (1976)	0.3	0.42	1	1.4
Phosphoric acid [7664-38-2] (1976)	—	1	—	3
Phosphorus (yellow) [7723-14-0] (1986)	—	0.1	—	—
‡Phosphorus oxychloride [10025-87-3]	0.1	0.63	(0.5)	(3.1)
Phosphorus pentachloride [10026-13-8] (1980)	0.1	0.85	—	—
Phosphorus pentasulfide [1314-80-3] (1976)	—	1	—	3
Phosphorus trichloride [7719-12-2] (1982)	0.2	1.1	0.5	2.8
Phthalic anhydride [85-44-9] (1987)	1	6.1	—	—
m-Phthalodinitrile [626-17-5] (1977)	—	5	—	—
‡Picloram [1918-02-1]	—	10	—	(20)
‡Picric acid [88-89-1] — Skin	—	0.1	—	(0.3)
Pindone [83-26-1] (1987)	—	0.1	—	—
Piperazine dihydrochloride [142-64-3] (1982)	—	5	—	—
2-Pivalyl-1,3-indandione, *see* Pindone				

Substance [CAS #]	ADOPTED VALUES TWA ppm[a]	TWA mg/m³[b]	STEL ppm[a]	STEL mg/m³[b]
Plaster of Paris, *see* Calcium sulfate				
Platinum [7440-06-4] Metal (1981)	—	1	—	—
Soluble salts, as Pt (1981)	—	0.002	—	—
Polychlorobiphenyls, *see* Chlorodiphenyls				
Polytetrafluoroethylene decomposition products (1972)	—	B1	—	—
Portland cement (1986)	—	10[c]	—	—
Potassium hydroxide [1310-58-3] (1977)	—	C 2	—	—
•Propane [74-98-6] (1981)	—[d]	—	—	—
•Propane sultone [1120-71-4] (1977)	A2	A2	—	—
Propargyl alcohol [107-19-7] — Skin (1987)	1	2.3	—	—
▪β-Propiolactone [57-57-8] (1987)	0.5,A2	1.5,A2	—	—
‡Propionic acid [79-09-4]	10	30	(15)	(45)
Propoxur [114-26-1] (1987)	—	0.5	—	—
n-Propyl acetate [109-60-4] (1976)	200	835	250	1040
n-Propyl alcohol [71-23-8] — Skin (1976)	200	492	250	615
Propylene [115-07-1] (1976)	—[d]	—	—	—
Propylene dichloride [78-87-5] (1976)	75	347	110	509
◂Propylene glycol dinitrate [6423-43-4] — Skin (1985)	0.05	0.34	—	—
Propylene glycol monomethyl ether [107-98-2] (1976)	100	369	150	553

(d) Simple asphyxiant; see definition in the "Introduction to the Chemical Substances."
(c) The value is for total dust containing no asbestos and < 1% crystalline silica.
Capital letters A & B refer to Appendices; C denotes ceiling limit.
( ) Adopted values enclosed are on the Notice of Intended Changes list. Consult it for current proposal for change.
◂ Identifies substances for which there are also BEIs (*see* BEI section). Substances identified in the BEI documentations for methemoglobin inducers (for which methemoglobin is the principle toxicity) and organophosphorus cholinesterase inhibitors are part of this notation.
▪ Substance identified by other sources as a suspected or confirmed human carcinogen. See the compliation in the Appendix to the Documentation of TLVs, pp. A-5(86)–A-9(86).
• Substance for which OSHA and/or NIOSH has a Permissible Exposure Limit (PEL) or a Recommended Exposure Limit (REL) lower than the TLV.
‡ See Notice of Intended Changes.

HAFB

1904 age 1974

5-6 yrs Bldg 1132

storage 8-10 yrs Bldg 2025

$70,000 mo mod

100,000 ~$110,000 w/ mod

cost Benefit

NO_x 74,00 lb/yr 4000 hrs

LO NO_x 30 ppm ~~25,44 lb~~

4800 lb/yr

$11,200/yr cost $4 667 / ton

Jay Gupta Called

2:00 pm 20 Dec 91

MEMORANDUM

To: Hill Air Force file, Engineering Section, DAQ

FROM: Nando Meli Jr., Environmental Health Engineer

SUBJECT: Justification for the use of an existing 400 hp boiler in building 1904.

DATE: January 15, 1992

Hill Air Force Base submitted some information dated January 8, 1992 to substantiate their claim for using an existing 400 hp boiler. In building 1904 they are replacing a 150 hp boiler with an existing boiler and burner. The letter provides some information as to the cost effectiveness of using the existing burner and not a low NO_x burner. Carl Broadhead talked to a manufacturer representative and came up with the following information:

Cost of low NO_x burner	$45,000.00
Cost for installation and chamber modificataion	25,000.00
Total cost	70,000.00

Using Hill A.F. Base information to get a cost analysis for the amount per year for NO_x reduction:

Annualized capital cost assuming 20 year life at 8% rate =

$70,000.00 x capital recovery factor =

70,000.00 x 0.1019 =

$ 7,133.00/year for 20 years

NO_x emissions with existing burner = 3.68 tons/yr

NO_x emissions with low NO_x burner = 1.67 tons/yr

NO_x reduction = 2.01 tons/yr

$$\$/\text{ton of } NO_x \text{ reduction} = \frac{\$\ 7,133.00/\text{year}}{2.01\ \text{tons/year}}$$

$$= \$3556.00/\text{ton}$$

It would not be cost effective to require the use of a low NO_x burner in building 1904. Therefore, the Engineering section recomends that the existing boiler be used without a low NO_x burner.

==========

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

RECEIVED
JAN 09 1992

8 January 1992

Mr F. Burnell Cordner, Executive Secretary
Department of Environmental Quality
Division of Air Quality
1950 West North Temple
Salt Lake City UT 84114-4820

Re: Our NOI, 24 Apr 91, with Supplement, 30 Jul 91
Boilers-Bldgs 2203, 1624, 2104, 1904; Paint Booth-Bldg 752; Carbon Brake-Bldg 507; Emergency Generators-Bldgs 1212, 1213; Additional Info: BACT Boiler-Bldg 1904

Dear Mr Cordner

Per telephone request from your staff member Mr Nando Meli, we have provided the BACT and cost/benefit analysis for retrofitting the proposed old boiler in Bldg 1904 with a new low NOX burner as follows:

Bldg 1904 currently has two boilers which are grandfathered. These are 250 and 400 HP respectively. In the event that the 400 HP boiler goes down, it will be necessary for us to fire the proposed 400 HP boiler to meet the area's steam demand.

This existing boiler has a 1974 manufacturing date. This boiler was operated in Bldg 1132 for a period of 6-8 years and, since then, has been in storage near Bldg 2025 for the last 8-10 years. Since the boiler is so very old, we do not know the combustion chamber modifications that may be required before the boiler can be retrofitted with a new low NOX burner technology.

Based on a quotation from Burner & Energy Systems, Placentia, CA, approximate cost of a new low-NOX combination burner = $45,000
installation costs = $20,000
Estimated cost of combustion chamber modifications = $50,000
Total capital cost = $115,000

Annualized capital cost assuming 20-year life at 8% rate =
= $115,000 x capital recovery factor
= $115,000 x 0.1019
= $ 11,718

Estimated annual maintenance cost for the new burner and controls, say $ 5,000/yr
Total annual cost = $ 16,718

NOX emissions with the existing burner
(our supplement, 30 Jul 91) = 3.68 tons/yr gas firing
= 5.26 tons/yr oil firing

NOX emissions with new low-NOX burner = 30 ppm - new boiler
40 ppm - retrofit boiler

From Burner and Energy systems graph,
using 40 ppm @ 3% O_2 or
15% excess = 0.5 lb NOX/10^6 BTU

Total heat input = 16.74 mm BTU/hr

Hours of operation = 4,000 hrs.yr

$$\text{NOX emissions} = 0.05 \frac{\text{lb NOX}}{\text{MM BTU}} \times 16.74 \frac{\text{MM BTU}}{\text{hr}} \times 4{,}000 \frac{\text{hrs}}{\text{yr}} \times \frac{\text{ton}}{2{,}000 \text{ lbs}}$$

$$= 1.674 \text{ ton NOX/yr}$$

NOX reduction = 3.68 - 1.674 = 2.0 tons/yr

$$\$/\text{ton pollutant} = \frac{\$16{,}718}{2} = \$8{,}359/\text{ton pollutant}$$

Based on the above analysis, it will cost approximately $8,300 to abate a ton of NOX. The proposed boiler is almost 18 years old. Based on this analysis, and bearing in mind the age of the boiler, we request a determination whether or not we need to retrofit this boiler with a new low-NOX burner. Please note that if the current burner becomes inoperable, we will replace it with a new low-NOX burner. We request expeditious review of this NOI.

If you need additional information, please feel free to contact Jay Gupta at 777-4618.

Sincerely

LYNN S. HILL
Ch, Environmental Compliance Div
Environmental Management Directorate

FAX FOR — ✓
NANDO MELI

ADVANCE COPY —
SIGNED COPY TO FOLLOW
NEXT WK.

JAY GUPTA 12/26/91
HILL AFB.

Mr F. Burnell Cordner, Executive Secretary
Dept. of Environmental Quality
Division of Air Quality
1950 W. North Temple
SLC, UT 84114-4820

Re: Our NOI 24 Apr 91 with Supplement 30 Jul 91
Boilers Bldgs. 2203,1624,2104,1904, Paint Booth Bldg751, Carbon Brake Bldg 507, Emergency Generators Bldgs 1212,1213
Additional Information: BACT Boiler, Bldg 1904

Dear Mr Cordner:

Per telephone request from your staff member Mr Nando Meli, we provide the BACT and cost/benefit analysis for retrofitting the proposed old boiler in Bldg 1904 with a new low NOx burner, as follows:

Bldg 1904 currently has two boilers which are grandfathered. These are 250 and 400HP respectively. In the event that 400HP boiler goes down, it will be necessary for us to fire the proposed 400HP boiler to meet the area's steam demand.

This existing boiler has 1974 manufacturing date. This boiler was operated in Bldg 1132 for a period of 6-8 years and, since then, has been in storage near Bldg 2025 for the last 8-10 years. Since the boiler is so very old, we do not know the combustion chamber modifications that may be required before the boiler can be retrofitted with a new low NOx burner technology.

Based on a quotation from Burner & Energy Systems, Placentia, Ca.
Approx cost of a new low NOx combination burner =$45,000.
Installation cost =$20,000.
Estimated cost of combustion chamber modifications=$50,000.
Total capital cost =$115,000.
Annualized capital cost assuming 20 year life & 8% rate,
=$115,000.XCapital Recovery Factor
=$115,000.X0.1019
=$11,718.

4.2.4-534

Estimated annual maintenance cost for the new burner and controls, say $5,000./Yr
Total annual cost =$16,718.
NOx emissions with the existing burner (our supplement 30 Jul 91)
=3.68 Tons/yr Gas firing
=5.26 Tons/yr Oil firing
Note: Oil firing serves only as a back-up.
NOx emissions with new low NOx burner 30PPM-New boiler
40PPM-Retrofit boiler
From Burner & Energy Systems graph,
40PPM at 3% O2 or 15% excess air =0.05 Lb NOx/MM Btu
Total heat input =16.74 MM Btu
Hours of operation =4,000 Hrs/yr
NOx emissions = .05 Lb NOx/MM Btu X 16.74 MM Btu/Hr X 4,000 Hrs/yr X Ton/2,000 Lbs
= 1.674 Ton/yr
NOx reduction = 3.68-1.674=2.0 Ton/yr
$/Ton pollutant = $16,718./2=$8,359./Ton pollutant

Based on the above analysis, it will cost approximately $8300. to abate a ton of NOx. The proposed boiler is almost 18 years old. Based on this analysis and bearing in mind the age of the boiler, we request a determination whether or not we need to retrofit this boiler with a new low NOx burner. Please note that if the existing burner becomes inoperational, we will replace it with a new low NOx burner. We request an expeditious review of this NOI.
If you have any questions, please feel free to contact Jay Gupta at 777-4618.

Sincerely

Bob Van Orman
Director, Environmental Management

FAX TO: NANDO MELI

10-15-91

FROM: JAY GUPTA, HILL AIR FORCE BASE, UT.

REF: NOI 24 APR 91

THERE IS NO INVERSION
ATMOSPHERIC STABILITY PARAMETER IS .5
SPILL SITE ROUGHNESS LENGTH IS 50 CM

THIS IS A GAS RELEASE
HEIGHT OF LEAK ABOVE GROUND IS 6 M
EMISSION RATE IS .01 KG/MIN
CHEMICAL IS STILL LEAKING
CONCENTRATION AVERAGING TIME IS 15 MIN
ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT ABOVE GROUND IS 0 M
DOWNWIND DISTANCE IS 150 M
CROSSWIND DISTANCE IS 0 M

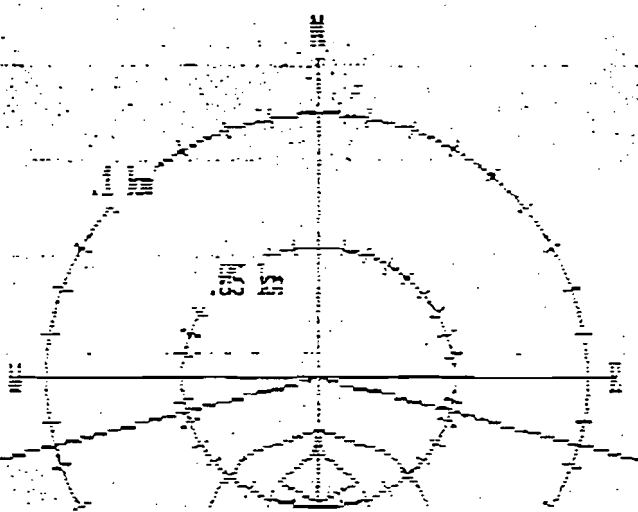
THE CONCENTRATION IS .002 PPM(.006 MG M-3)

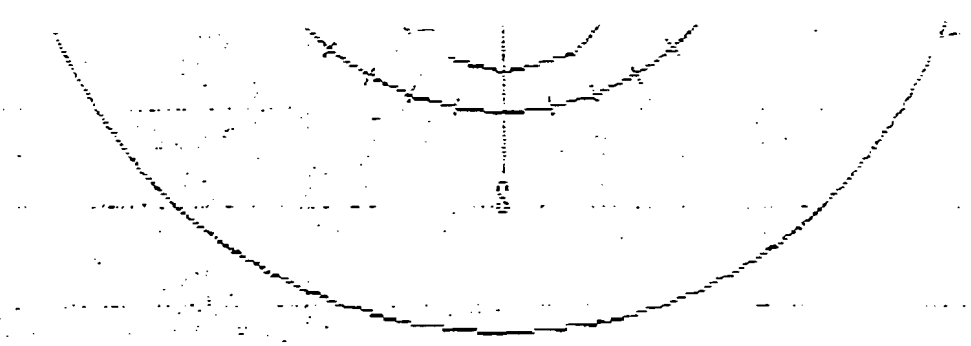
ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 182 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 87 M
THE MAXIMUM DISTANCE FOR .02 PPM IS 62 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 48 M

ELAPSED TIME SINCE START OF SPILL IS 60 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 182 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 87 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 48 M
.05 PPM IS TOO HIGH





USAF TOXIC CHEMICAL DISPERSION MODEL

AFTOX

Hill AFB

DATE: 10-11-1991
TIME: 12:00 LST

CONTINUOUS RELEASE
CHEMICAL = Phosphoric Oxides
MOLECULAR WEIGHT = 63

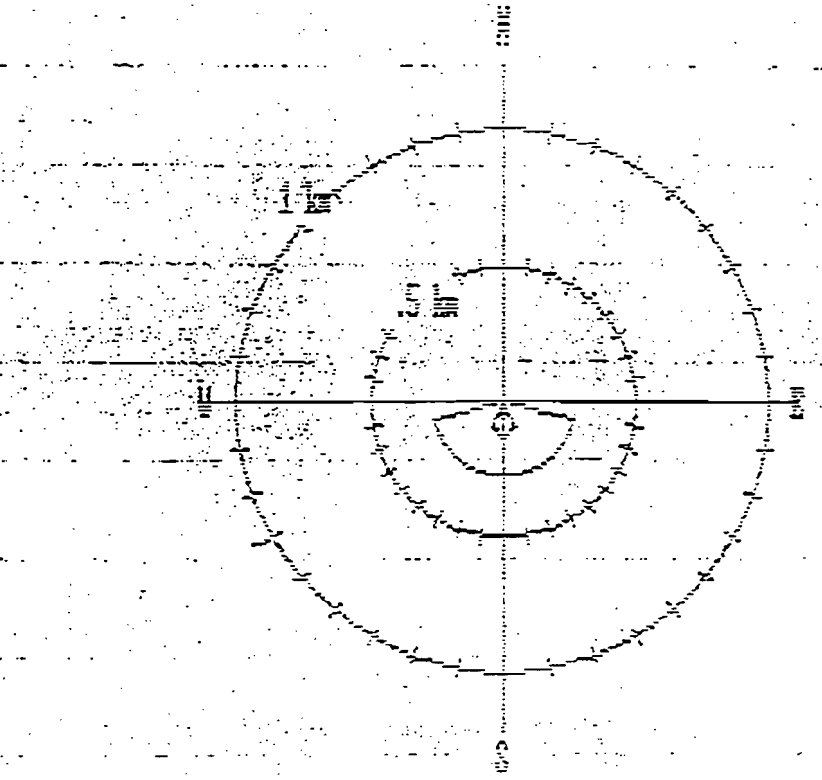
TEMPERATURE = 22 C
WIND DIRECTION = 0
WIND SPEED = 3 M/S
SUN ELEVATION ANGLE IS 42 DEGREES
CLOUD COVER IS 2 EIGHTHS
CLOUD TYPE IS MIDDLE (Ac, As, Sc, Cu)
GROUND IS DRY
THERE IS NO INVERSION
ATMOSPHERIC STABILITY PARAMETER IS .5
SPILL SITE ROUGHNESS LENGTH IS 10 CM

THIS IS A GAS RELEASE
HEIGHT OF LEAK ABOVE GROUND IS 6 M
EMISSION RATE IS .01 KG/MIN
CHEMICAL IS STILL LEAKING
CONCENTRATION AVERAGING TIME IS 15 MIN
ELAPSED TIME SINCE START OF SPILL IS 240 MIN
HEIGHT ABOVE GROUND IS 0 M
DOWNWIND DISTANCE IS 150 M
CROSSWIND DISTANCE IS 0 M

THE CONCENTRATION IS .005 PPM(.011 MG M-3)

ELAPSED TIME SINCE START OF SPILL IS 250 MIN
HEIGHT OF INTEREST IS 0 M

90% PROB HAZARD DIST = 275 M
HAZARD DIR. AND WIDTH 180 + - 75 DEG
THE MAXIMUM DISTANCE FOR .01 PPM IS 131 M
THE MAXIMUM DISTANCE FOR .03 PPM IS 65 M
.05 PPM IS TOO HIGH



MAX CONC WITHIN 30 M (100') OF SOURCE

AT 30 M CONC IS .01 PPM.

DON'T KNOW TLV FOR POx i.e OXIDES OF PHOSPHORUS

TYPICAL O_3P_2 NO TOX DATA

DETAILED DOCUMENTATION

FIRST COUPLE OF PAGES DESCRIBING THE MODEL USED. PL. ADVISE IF YOU NEED COMPLETE PACKAGE

A. PROGRAM DESCRIPTION

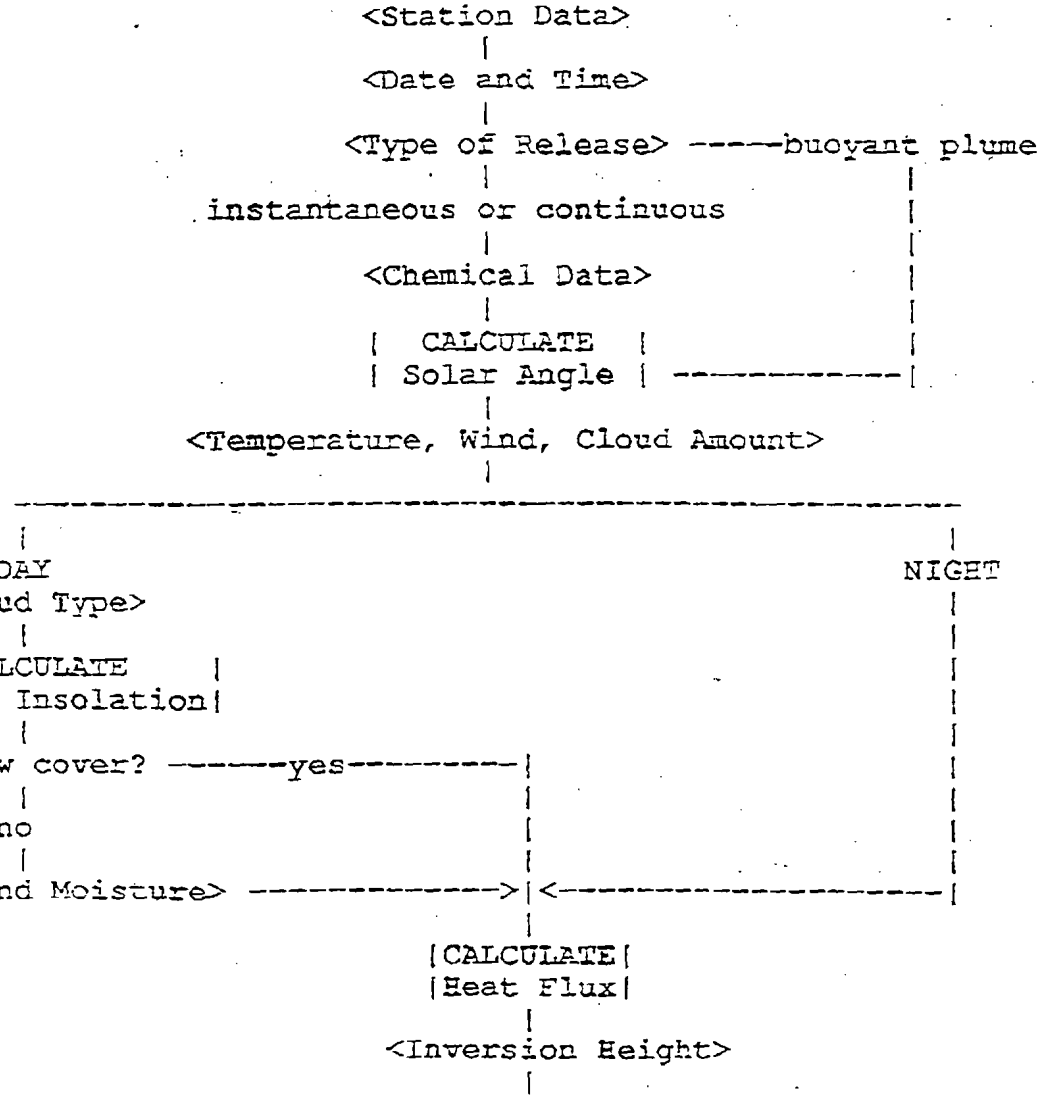
1. Purpose: AFTOX will determine toxic chemical concentrations and give the user the option of calculating a toxic corridor, the concentration at a specific location, or the maximum concentration and its location.

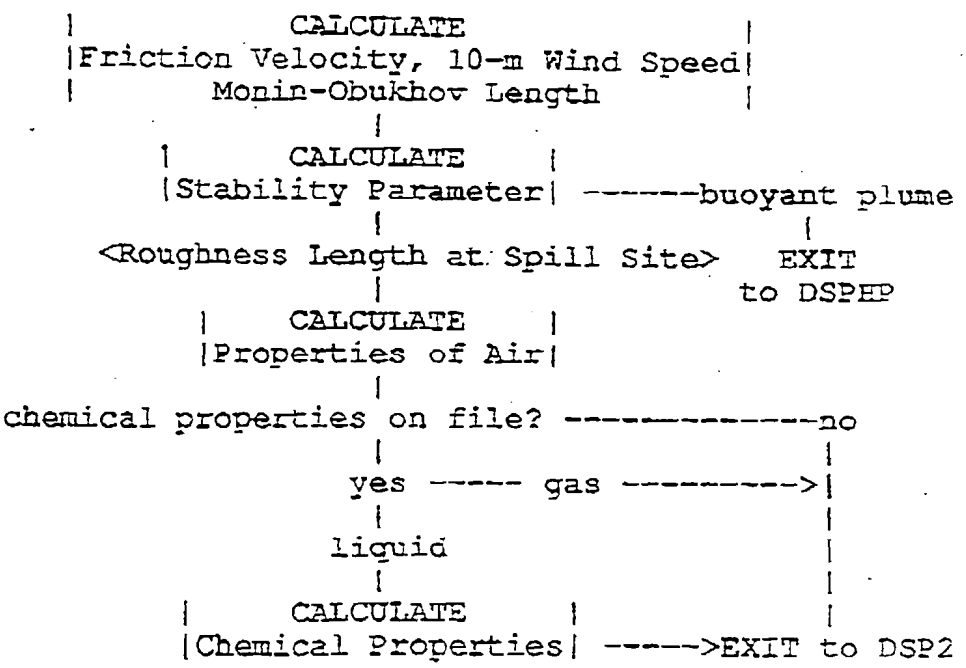
2. Application: AFTOX was developed for real time analysis of toxic chemical releases. Usage of AFTOX is governed by AFR 355-1, AWS Supplement 1. It is written so that AWS base weather stations can apply AFTOX to continuous or instantaneous, gas or liquid releases from either ground or elevated sources. It can also be applied to heated plumes from smokestacks. AFTOX contains seventy-six chemicals on file and has the capability to add other chemicals.

3. Structure: A detailed explanation of AFTOX is contained in AFGL-TR-88-0009. AFTOX is composed of several files which are linked together. The program files are DSP1.EXE, DSP2.EXE, DSPHP.EXE, and DSP3.EXE. The file structure is as follows:

a. DSP1: This file determines the chemical properties and meteorological conditions. Schematic representation is shown in Figure 1.

Figure 1. DSP1 Flow Diagram





Major computations of DSP1 are described as follows:

(1). Solar elevation angle: Determined using date, time, latitude and longitude.

(2). Sensible heat flux: Determined by one of two methods, dependent on daytime or nighttime conditions.

(a). Day: Cloud amount, temperature, ground state, and solar insolation (from solar angle, cloud amount and cloud type) used.

(b). Night: Cloud amount only is used.

(3). Turbulence parameters: Friction velocity, 10-meter wind speed, and Monin-Obukhov length are interrelated and are determined iteratively from initial estimates based on the wind speed, heat flux, surface pressure, and surface roughness.

(4). Stability parameter: One of two methods of computation are used.

(a). Method 1: Turbulence parameters described in (3) above are used.

(b). Method 2: Standard deviation of the wind direction and wind speed at 10 m are used.

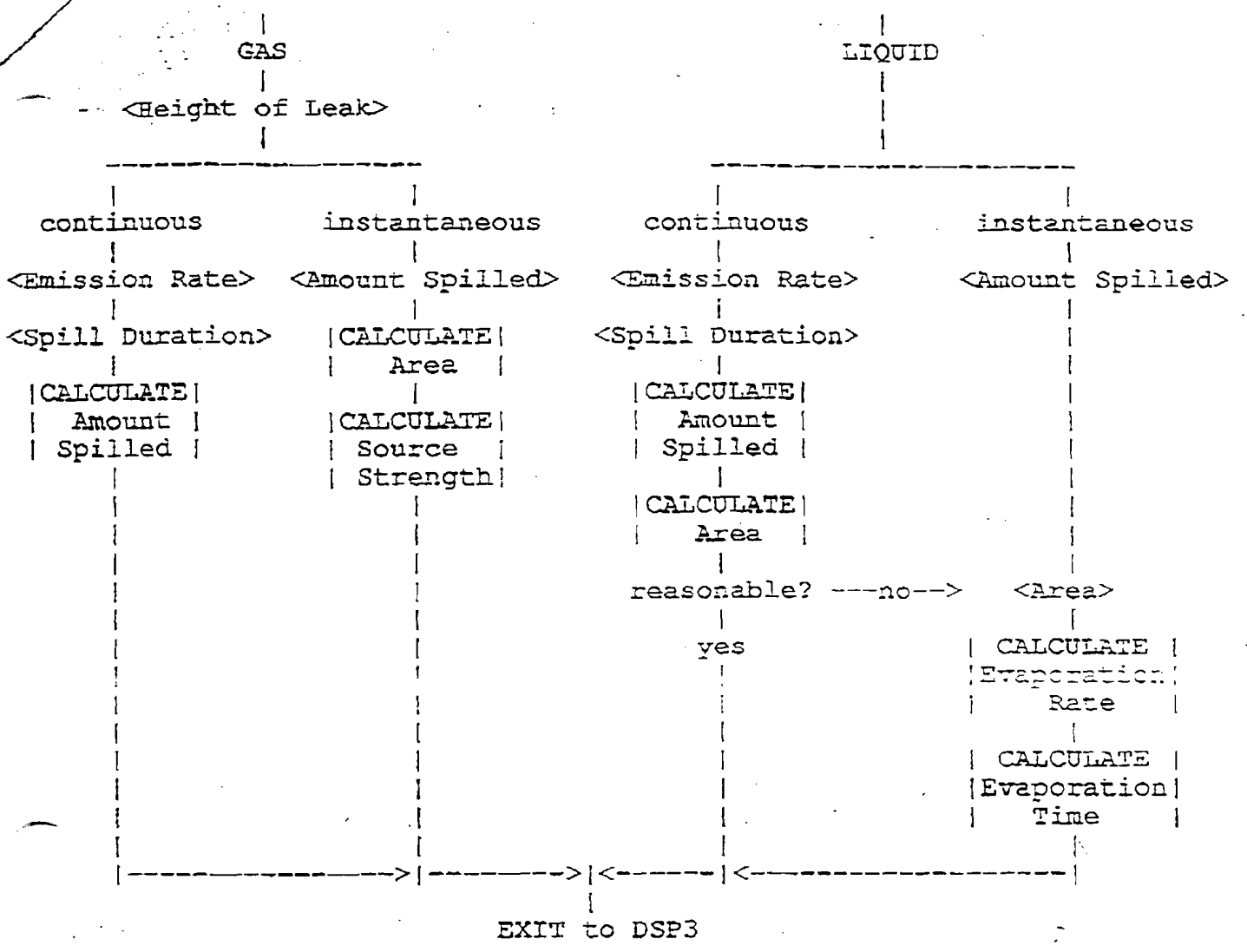
(5). Air properties: Density and viscosity are computed from temperature and pressure.

(6). Chemical properties: For a liquid chemical which is in the data file, the vapor pressure, liquid density, and vapor density are computed from the chemical data, the air temperature, and pressure.

b. DSP2: This file determines the source conditions (e.g., emission rate duration of spill, area of spill, and source strength). Processing through DSP2 is dependent on type of release. The air temperature is compared to the chemical's boiling point to determine if it is a gaseous or liquid spill. If the chemical of interest is not on file, default settings may be used or user may input molecular weight, vapor pressure, and whether release is a liquid or gas to determine source strength. Schematic representation of DSP2 is shown in Figure 2.

Figure 2. DSP2 Flow Diagram

DSP1



(1). Continuous gas release: Uses the emission rate and the total time of the spill to compute the total amount spilled. The emission rate is the source strength.

(2). Instantaneous gas release: Uses the amount spilled and air density to determine the initial volume of the spill.

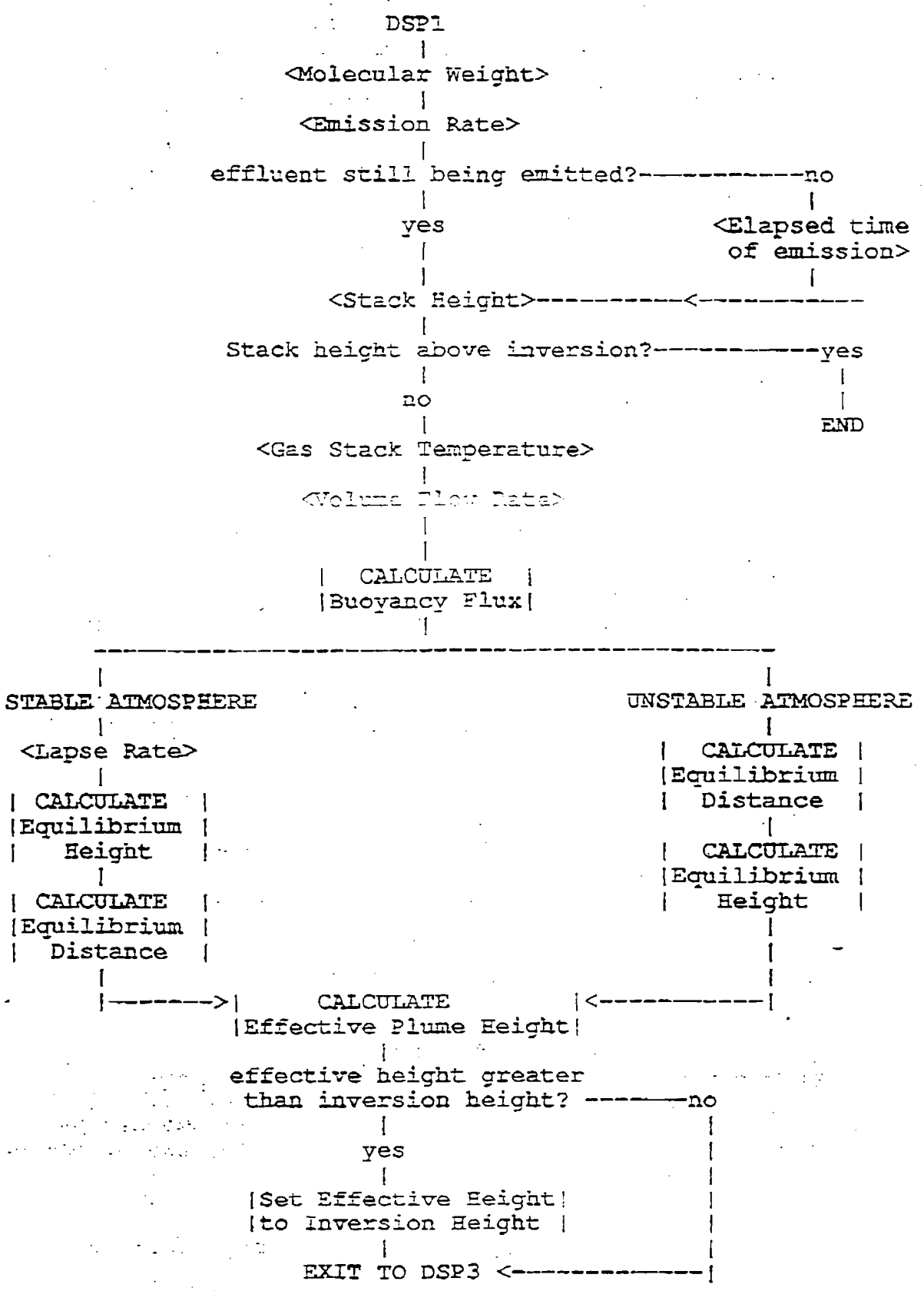
(3). Continuous liquid release: The evaporation rate into the atmosphere is the source strength. If the area of the spill is known, it is used to determine the evaporation rate. If the area is unknown, then the evaporation rate is set equal to the emission rate and an area is calculated. If this calculated area appears unreasonably large, then user may input a smaller area which will give a new evaporation rate. An alternate method exist for chemicals without full data information. Evaporation rate is determined using spill area, pool temperature, chemical molecular weight and vapor pressure. If variables are unknown, the model assumes the worst case and the evaporation rate is set equal to the emission rate.

(4). Instantaneous liquid release: Uses the amount spilled, area covered, chemical and air properties to compute the evaporation rate. The evaporation rate is set equal to the source strength. The amount spilled and the evaporation rate determine the total evaporation time. The alternate method listed in (3) above is used if chemical data is not available.

c. DSPHP: This file determines the source conditions for a buoyant plume from a stack (e.g., emission rate, duration of spill, height of spill). Source strength is set equal to the emission rate. As

shown in Figure 3, atmospheric conditions determine processing through the module.

Figure 3. DSPHP Flow Diagram



(1). If stack height is above the inversion, then program terminates since surface input meteorological conditions most likely do not apply above the inversion.

(2). Buoyancy flux: It is determined using the air temperature, gas stack temperature, volume flow rate, and gravitational acceleration.

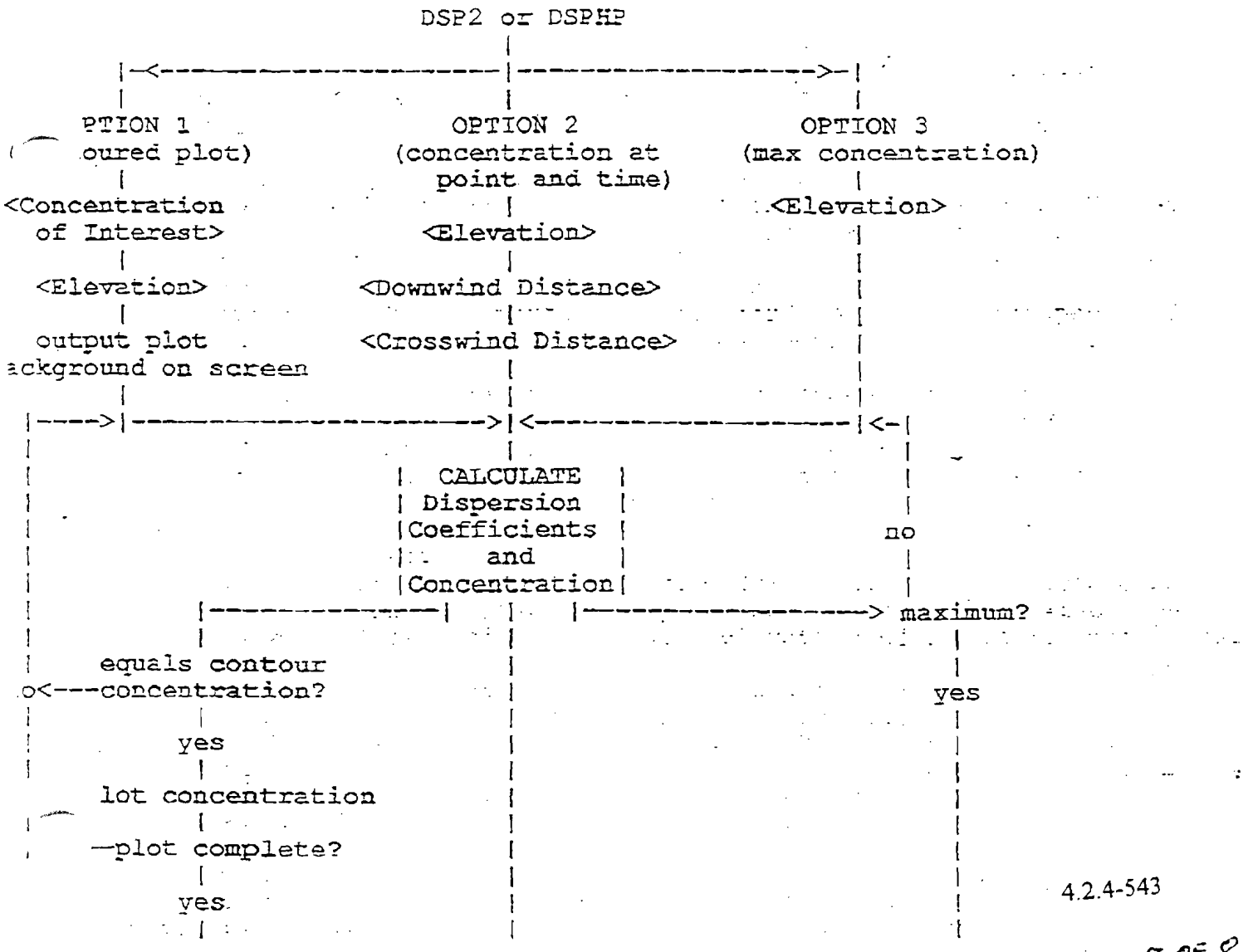
(3). Unstable or neutral conditions: The buoyancy flux is used to compute the distance downstream where the equilibrium height is reached. This distance, the buoyancy flux, and wind speed determine the equilibrium height.

(4). Stable conditions: The buoyancy flux, wind speed, and potential temperature lapse rate (based on the degree of stability) are used to compute the equilibrium height. Downwind distance where equilibrium height occurs is not needed.

(5). Effective plume height: This is equal to the sum of the equilibrium height and stack height above ground. Model assumes gas is released at the effective height for dispersion calculations. If the effective height is above the inversion height, it is set equal to the inversion height. This is a conservative approach for calculating ground concentrations.

d. DSP3: This file computes the hazard area (determined by concentration), concentration at a given location and time, or maximum concentration and location, and outputs the results. The type of output determines the processing through the file, as shown in the flow diagram of Figure 4.

igure 4. DSP3 Flow Diagram



FAX FOR : NANDO MELI

FROM : JAY GUPTA, HAFB

4 Oct. 91

Hill Air Force Base-Utah

RECEIVED
OCT 04 1991
AIR QUALITY

Nando Meli
Div of Air Quality
1950 W North Temple
SLC UT 84114

Ref: Additional Information on our NOI dated 24 Apr 91 and supplement transmitted 30 Jul 91, Boilers Bldgs 2203,1624,2104,1904 and Carbon Brake Coating Bldg 507.

Per our telecon of 27 Sept, we provide additional information as follows:

We will revise boilers purchase requisitions to require low NOx burners with NOx rating of 40 ppm or less. Exception to this is an old existing boiler for bldg 1904. We are not replacing the burner for this boiler.

MSDS for the Bendix P-11 coating is enclosed. This coating contains phosphoric acid and mono-aluminum phosphate as oxidants. the exact composition is not available due to proprietary reasons.

The coating oven temperature is 900 degrees C, the exhaust pipe is 1 inch in diameter and point of discharge will be approximately 20 feet above grade. At 900 degrees C, the discharge volume will be about 20 acfm.

The hours of operation for the coating process will be 2000 hrs/yr nominal and 4000 hrs/yr maximum. Based on this, maximum POx emission rate will be as follows:

250(gal)x8.33x1.5(S Gr)x.85(Evap)x454x1/2000x1/3600=0.157 Gm/Sec

Nominal POx emission rate will be 0.0835 Gm/Sec.

Jay Gupta
Environ Engr

(1)

ALLIED-SIGNAL AEROSPACE COMPANY
A UNIT OF ALLIED-SIGNAL INC.
BENDIX WHEELS AND BRAKES DIVISION

MATERIAL SAFETY DATA SHEET

The following data may be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. The Standard must, however, be consulted for specific requirements.

All of the particulate ingredients in Carbon Disk Brake friction material products are sintered together to form a solid material. Hazards normally associated with exposure to or contact with pure dusts of the listed ingredients are not expected to be significant. Allied-Signal has listed all of the essential ingredients present in a series of products of this general description. The recommended exposure limits are those for the most hazardous substance in a class of substances. Exact formulations are proprietary and therefore confidential. Precise product information will not be disclosed, other than in accordance with applicable laws and regulations, or without a written Secrecy Agreement.

Allied-Signal shall in no event be responsible for any damages of any nature or kind directly or indirectly resulting from or arising out of the publication or use of or reliance upon data contained herein. No express or implied warranty of any kind, including warranties of merchantability or fitness for use, with respect to the Friction Material products or to the data herein is made hereunder.

SECTION I

Manufacturer's Name:

Allied-Signal Aerospace Company
a unit of Allied-Signal Inc.
Bendix Wheels and Brakes Division
Address: P.O. Box 10
South Bend, Indiana 46624

Emergency Phone NO.219-237-280

Date Prepared: January 4, 1988
Prepared By: J. L. Wood

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity): Oxidation Penetrant P/N 2610503 (P-11)

Common Name(s)	ACGIH TLV	OSHA PEL
Phosphoric Acid	1mg/m³	1mg/m³
Mono-aluminum-Phosphate	2mg(AL)/m³	NA
-ic Acid	NA	NA

(2)

SECTION III – Physical / Chemical Characteristics

Boiling Point: 100°C Specific Gravity: (H_2O = 1) (g/cc.) 1.30

Vapor Pressure: (mm Hg.) @20°C –0.0285 Melting Point: NA

Vapor Density: (Air = 1) @25°C – 1.864 Evaporation Rate: (Butyl Acetate = 1) NA

Solubility in Water: – (>100g/100ml)

Appearance and Odor: Transparent (Odorless) liquid

SECTION IV – Fire and Explosion Hazard Data

Flash Point (Method Used): Not flammable Flammable Limits: NA LEL: NA UEL: N.

Extinguishing Media: Not flammable

Special Fire Fighting Procedures: Use self-contained breathing apparatus. Use dry chemical, Carbon Dioxide, or foam for fighting fires.

Unusual Fire and Explosion Hazards: Dangerous; when heated to decomposition, emits toxic fumes of PO_x.

SECTION V – Reactivity Data

Stability: Unstable: Conditions to Avoid: None currently know.

Stable: X

Incompatibility (Materials to Avoid): Strong bases (Caustics)

Hazardous Decomposition or ByProducts: Decomposes upon heating to form toxic and/or corrosive gases or fumes of PO_x

Hazardous Polymerization: May Occur: Conditions to Avoid: None currently know

Will Not Occur: X

SECTION VI - Health Hazard Data

Route(s) of Exposure: Inhalation? Yes Skin? Yes Ingestion? Yes

Toxic when heated to above 100°C.

Health Hazards (Acute and Chronic):

Corrosive to skin and eyes.

Carcinogenicity Listing:	NTP?	IARC Monographs?	OSHA Regulated?
	NA	NA	NA

Signs and Symptoms of Exposure:

Redness, irritation, and burning of eyes or skin.

Medical Conditions Generally Aggravated by Exposure: None currently known

Emergency and First Aid Procedures:
If penetrant contacts eyes, skin, clothes (remove), flush immediately with large amounts of cold water. Wash eyes fora minimum of 15 minutes. Call a physician. If ingested, immediately call a physician.

SECTION VII - Precautions for Safe Handling and Use

Steps To Be Taken in Case Material is Released or Spilled:

Neutralize spill with sodium bicarbonate (soda). Mop up neutralized material.

Waste Disposal Method:

Cautiously add to an excess of water. Adjust pH to neutral. Separate any insoluble solids and package for waste disposal.

Precautions to be Taken in Handling and Storing:

Store at room temperature away from strong bases.

Other Precautions:

Do not wear contact lenses; see control measures.

SECTION VIII - Control Measures

Provide adequate general or local ventilations to keep vapors below P.E.L. for phosphoric acid (1 mg/m^3) and aluminum (2 mg/m^3).

Protective Gloves: Acid - resistant rubber gloves.

Eye Protection: Safety Glasses: Chemical goggles or face shield.

Other Protective Clothing or Equipment: Acid - resistant apron.

k/Hygiene Practices: Wash work clothes separately from other clothes.

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

Mr F. Burnell Cordner, Executive Secretary
Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City UT 84116-0690

RE: Request to Supplement our NOI, 24 Apr 91, Replacement Boilers Bldgs 2104 and 1904

Dear Mr Cordner

On 24 Apr 91, we submitted a Notice of Intent to construct two replacement boilers in Bldgs 2203 and 1624. In addition to these, we also propose to install similar boilers in Bldgs 2104 and 1904. We request our referenced NOI be supplemented to include these boilers. Design data and emissions from these boilers is provided.

If you have any questions, please feel free to contact Jay Gupta, EME, 777-6917.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

2 Atch
1. Design Data/Emissions
2. Vendor Brochure

REPLACEMENT BOILERS
BLDGS 2104 & 1904

Bldg 2104:

Bldg 2104 has two boilers; one is 200HP and the other 150HP. An energy study has shown that if the larger boiler (200HP) was to fail, then the mission essential load could not be met by the smaller (150HP) boiler. There will be no change to the 200HP boiler. We propose to replace the 150HP boiler with a new 250HP boiler. Vendor brochure on the new boiler is attached. Design data is as follows:

Boiler rating	250HP
Primary fuel	Natural Gas
Back-up fuel	#2 Oil
Steam Rate	8,625 Lbs/hr
Total heat input	10.45MM BTU/hr
Total heat output	8.37MM BTU/hr
Thermal efficiency	80%
Gas heating value	1,000 BTU/SCF
Gas firing rate	10,450 SCFH, Add 10% = 11,500 SCFH
Oil heating value	140,000 BTU/gal
Oil firing rate	1.24 GPM, Add 10% = 1.4 GPM
Estimated Stack Gas Volume;	gas firing 4,270 ACFM
	oil firing 4,345 ACFM
Flu Gas Temperature	465 °F

EMISSIONS:

Existing (150HP) Boiler:

Boiler HP	= 150
Theoretical heat input	= 150 HP X 33,472 BTU/HP
	= 5.02 MM BTU
Fuel to Steam efficiency	= 80%
Total heat input	= $\frac{5.02}{0.8}$ = 6.275 MM BTU/hr

Boiler probably averages out at 70 - 75% load

Fuel firing rate: Gas (1,000 BTU/SCF) = 6,275 SCFH
Oil (140,000 BTU/gal) = 44.82 GPH

Operating hours: Only one boiler runs at a time and they alternate. These boilers operate from 15 Oct to 15 May and are generally shut-down during the summer. Estimate 5 months, 24 hours operation each boiler = 3,600 hours. Use 4,000 hours.

Emission factors AP-42, Tables 1.4-1 and 1.3-1

Gas Firing:

Pollutant	Fuel 1X10⁶CFH	E.F. LB/10⁶Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.00627	3	.02	.04 PM_{10} = .02
SOX	.00627	.6	Neg	Neg
NOX	.00627	100	.627	1.25
HC	.00627	6	.125	.08
CO	.00627	20	20	.25

Oil Firing

Pollutant	Fuel 1X10³GPH	E.F. LB/10³Gal	EMISSIONS LB/Hr	TPY
Particulate	.045	2	.09	.18 PM_{10} = .09
SOX	.045	142 S	1.28	2.55
NOX	.045	20	.90	1.80
HC	.045	.34	.01	.03
CO	.045	5	.22	.45

S = 0.2 wt % Sulfur, typical

New (250) Boiler:

Gas Firing

Pollutant	Fuel 1X10⁶CFH	E.F. LB/10⁶Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.0115	3	.03	.07 PM_{10} = .03
SOX	.0115	.6	Neg	.01
NOX	.0115	100	1.15	2.3
HC	.0115	6	.07	.13
CO	.0115	20	.23	.46

Oil Firing

Pollutant	Fuel $1X10^3$GPH	E.F. LB/10^3Gal	EMISSIONS LB/Hr	TPY
Particulate	.084	2	.17	.33 PM_{10} = .17
SOX	.084	142 S	2.38	4.77
NOX	.084	20	1.68	3.36
HC	.084	.34	.03	.06
CO	.084	5	.42	.84

Net increase in emissions:

Gas Firing NOX = 1.05 TPY
Oil Firing NOX = 1.56 TPY
SOX = 2.22 TPY

BLDG 1904

An existing boiler (a grandfathered source) had been removed from service in Bldg 1132 and was in storage near Bldg 2025. We propose to put this boiler back in service in Bldg 1904. Design data and estimated emissions are as follows:

Boiler HP = 400
Theoratical heat input = 400 HP X 33,472 BTU/HP
= 13.39 MM BTU
Thermal efficiency = 80%
Total heat input = $\frac{13.39}{0.8}$ = 16.74 MM BTU/Hr

Fuel firing rate; Gas (1,000 BTU/SCF) = 16,740 SCFH,
Add 10% = 18,414 SCFH

Oil (140,000 BTU/Gal) = 119.6 GPH,
Add 10% = 131.5 GPH

Operating Hours = 4,000/Yr

Emission Factors AP-42, Tables 1.4-1 and 1.3-1

EMISSIONS

Gas Firing

Pollutant	Fuel 1X10^{6}CFH	E.F. LB/10^{6}Cu Ft	EMISSIONS LB/Hr	TPY
Particulate	.0184	3	.05	.11 PM_{10} = .05
SOX	.0184	.6	.01	.02
NOX	.0184	100	1.84	3.68
HC	.0184	6		
	.11	.22		
CO	.0184	20	.37	.73

Oil Firing

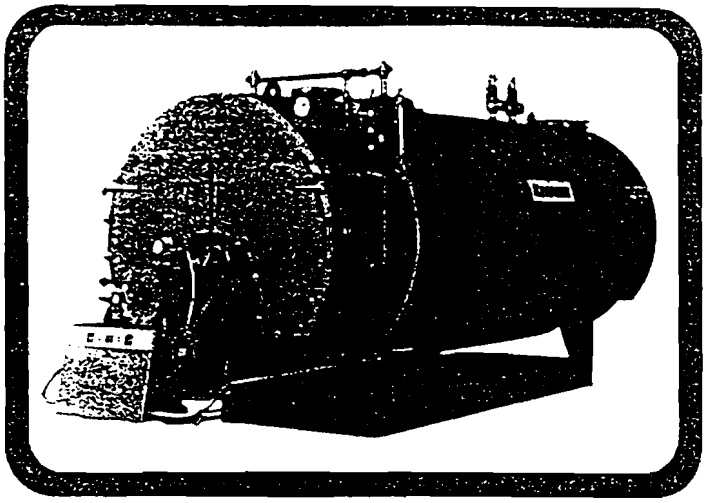
Pollutant	Fuel 1X10^{3}GPH	E.F. LB/10^{3}Gal	EMISSIONS LB/Hr	TPY
Particulate	.1315	2	.26	.52 PM_{10} = .26
SOX	.1315	142 S	3.73	7.46
NOX	.1315	20	2.63	5.26
HC	.1315	.34	.04	.08
CO	.1315	5	.65	1.31

KEWANEE

CLASSIC III (60 H.P. thru 800 H.P.) — 150 PSI STEAM

Packaged Scotch Design Firetube Boiler
Oil, Gas, Combination Oil/Gas Fired

- Boiler, Burner package is U/L listed.
- These units, rated at 5.0 square feet of fireside heating surface per boiler horsepower, maximize efficiency and service life.
- CLASSIC III Packages are offered in 14 sizes ranging from 2,009,000 to 26,780,000 Btu/Hr (60 to 800 Bhp) fired by a Kewanee gas, oil, or combination gas-oil burner.
- Meets the requirements of ASME Code for 150 psi Steam Working Pressure. (Higher working pressures available.)
- Three Pass Design features a rear combustion chamber that's totally surrounded by water. This eliminates the need for refractory baffles, reduces costly maintenance, eliminating refractory replacement. Heat loss is minimized and overheating of the rear tube sheet is prevented. The wetback surface becomes additional primary heating surface, improving boiler performance.
- All heating surfaces are accessible without disturbing burner equipment, reducing inspection and maintenance costs. By using separate tube sheets the development of excessive stresses caused by temperature differentials between the passes are eliminated. All tubes are roller expanded and beaded. 2" boiler tubes are used on 60-250 hp and 2½" tubes on 300-800 hp.
- Factory installed 22 gauge enameled steel jacket with glass or mineral fiber insulation. Extra density insulation is used at selected locations for additional protection at potential pressure points.
- Hinged steel front flue doors lined with refractory insulation contained by welded steel liner and guaranteed for a period of 10 years. Gasket gives gas-tight construction for pressurized firing.



- Units furnished with complete line of controls consisting of combination water column, pump control, low water cut-off, safety valve(s), steam pressure gauge, operating and limit pressure controls and 3" flue gas thermometer.
- All CLASSIC III Units are factory firetested, firing the unit with the specified fuel, adjusting fuel & air ratios plus checking all controls and operating sequence. A detailed report of this test is delivered to the purchaser with each unit.
- Guaranteed fuel to steam efficiencies at 25 percent to 100 percent of full rating.

RATINGS & DATA — 150 PSI STEAM

UNIT NUMBER	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
Rating —															
Horsepower	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
MBh	2,009	2,343	2,676	3,346	4,184	5,021	6,695	8,369	10,043	11,716	13,390	16,738	20,085	25,106	26,780
Steam per Hour — 212°F lbs	2,070	2,415	2,760	3,450	4,313	5,175	6,900	8,625	10,350	12,075	13,800	17,250	20,700	25,875	27,600
Steam Gross Output sq. ft	8,370	9,765	11,160	13,950	17,438	20,925	27,895	34,875	41,845	48,820	55,795	69,750	83,690	104,610	111,600
Firing Rate															
Gas (1,000 BTU/cu. ft.) MBh	2,511	2,930	3,346	4,185	5,231	6,278	8,370	10,463	12,554	14,646	16,740	20,925	25,110	31,383	33,475
Oil (140,000 BTU) gph	17.9	20.9	23.9	29.9	37.4	44.8	59.8	74.7	89.7	104.6	119.6	149.5	179.4	224.2	239.1
Oil (150,000 BTU) gph	16.7	19.5	22.3	27.9	34.9	41.9	55.8	69.8	83.7	97.6	111.6	139.5	167.4	209.2	223.2
Heating Surface — ASME sq. ft	300	350	400	500	625	750	1,000	1,250	1,500	1,750	2,000	2,500	3,000	3,750	3,750*
Safety Valve Capacity lbs	2,400	2,800	3,200	4,000	5,000	6,000	8,000	10,000	12,000	14,000	16,000	20,000	24,000	30,000	30,000
Insulation Thickness in.	1½"	1½"	1½"	1½"	1½"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"
Minimum Stack Diameter in.	12"	12"	12"	12"	14"	14"	16"	20"	20"	20"	24"	24"	27"	30"	30"
Steam Space cu ft.	6.5	7.5	8.4	9.6	11.8	15.4	21.5	34.8	43.1	49.9	69.7	77.1	87.0	107.6	107.6
Disengaging Area sq. ft.	17.6	20.1	22.8	23.9	29.5	33.5	43.9	53.7	60.1	69.5	75.3	83.0	91.1	112.7	112.7
Water Content (full) gals	378	437	499	591	736	875	1,161	1,474	1,987	2,302	2,729	3,004	3,526	4,394	4,394
(to normal waterline) gals.	330	381	436	519	647	752	1,000	1,214	1,664	1,929	2,208	2,427	2,875	3,589	3,589
Approx Weight (full) lbs	8,855	9,844	11,064	13,131	15,834	18,396	23,783	28,991	36,771	42,798	50,855	56,952	67,507	83,546	83,546
Dry Weight lbs.	5,700	6,200	6,900	8,200	9,700	11,100	14,100	16,700	20,200	23,600	28,100	31,900	38,100	46,900	46,900

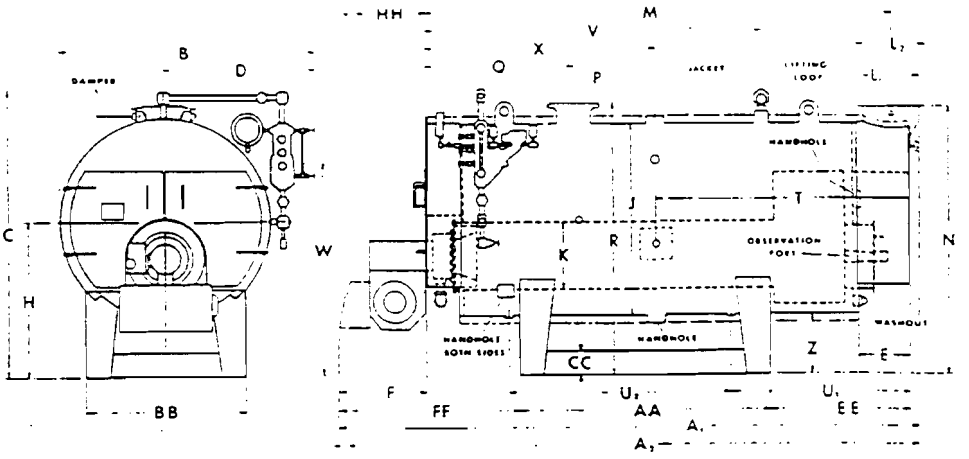
Supersedes Bulletin 20A-3
January, 1988

*Except 800 HP = 4.7 Sq. Ft/Bhp
DIMENSIONS, DATA SUBJECT TO CHANGE WITHOUT NOTICE

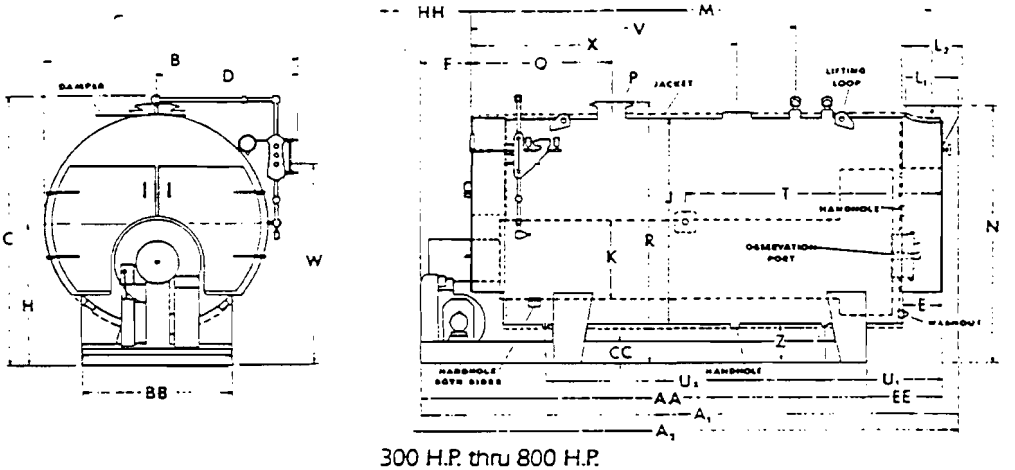
Bulletin 20/
April, 19

4.2.4-554

Look ahead with KEWANEE.



60 H.P thru 250 H.P.



300 H.P. thru 800 H.P.

DIMENSIONS (feet-inches)

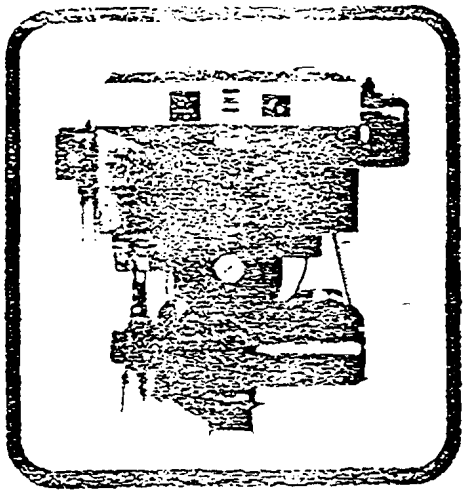
UNIT NUMBER	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
A[1] — Overall length	10'7½"	11'7"	12'6½"	12'7½"	14'5½"	14'9"	17'8½"	18'5½"	17'6"	19'5½"	19'5½"	20'9"	21'10½"	25'2½"	25'2½"
A[2] — Overall length including tube removal	14'4"	16'2½"	18'1½"	17'8".	21'4"	21'1½"	27'0½"	28'2"	27'4½"	31'4"	28'8¾"	31'6"	33'0½"	40'5½"	40'5½"
B — Overall width	5'5"	5'5"	5'5"	5'11½"	5'11½"	6'5½"	6'5½"	7'0"	8'0½"	8'0½"	9'0½"	9'0½"	9'6"	9'6"	9'6"
C — Overall height	6'0"	6'0"	6'0"	6'10"	6'9"	7'3"	7'4"	7'11"	9'2½"	9'2½"	9'11½"	9'11½"	11'1½"	11'1½"	11'1½"
D — Boiler centerline to greatest width	3'1½"	3'1½"	3'1½"	3'4½"	3'4½"	3'8"	3'8"	3'11"	4'5"	4'5"	4'11"	4'11"	5'2"	5'2"	5'2"
E — Rear fluebox to shell	1'0"	1'0"	1'0"	1'0"	1'0"	1'0"	1'0"	1'2"	1'2"	1'2"	1'4"	1'4"	1'4"	1'4"	1'4"
F — Burner to front of boiler	2'2½"	2'2½"	2'2½"	2'4½"	2'4½"	2'9"	2'9"	2'9"	1'10"	1'10"	2'10"	2'10"	2'10"	2'4"	2'4"
H — Boiler centerline height	3'0½"	3'0½"	3'0½"	3'6½"	3'6½"	3'9½"	3'9½"	4'0½"	4'6½"	4'6½"	5'0½"	5'0½"	5'8½"	5'8½"	5'8½"
J — Shell diameter	4'0"	4'0"	4'0"	4'6"	4'6"	5'0"	5'0"	5'6"	6'6"	6'6"	7'6"	7'6"	8'0"	8'0"	8'0"
K — Furnace diameter	1'5"	1'5"	1'5"	1'8"	1'8"	1'11"	1'11"	2'1"	2'6"	2'6"	2'10"	2'10"	3'1"	3'1"	3'1"
L[1] — Flue outlet diameter	1'0"	1'0"	1'0"	1'2"	1'2"	1'4"	1'4"	1'8"	1'8"	1'8"	2'0"	2'0"	2'3"	2'6"	2'6"
L[2] — Flue outlet flange diameter	1'3"	1'3"	1'3"	1'5"	1'5"	1'7"	1'7"	1'11"	1'11"	1'11"	2'3"	2'3"	2'6"	2'9"	2'9"
M — Flue outlet centerline	7'10½"	8'10"	9'9½"	9'6"	11'4"	11'3½"	14'3"	14'10"	14'9½"	16'9"	15'5¾"	16'10½"	17'10½"	21'7"	21'7"
N — Flue outlet height	5'5"	5'5"	5'5"	6'2"	6'2"	6'8"	6'8"	7'2"	8'2"	8'2"	9'2½"	9'2"	10'1"	10'1"	10'1"
P — Supply size 300 lb. ANSI flange	4"	4"	4"	4"	4"	4"	6"	6"	6"	8"	8"	8"	10"	10"	10"
Q — Supply centerline	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	3'2½"	4'6½"	4'6½"	4'6½"	4'6½"	6'9½"	6'9½"	6'9½"
R — Supply height	5'6"	5'6"	5'6"	6'3"	6'3"	6'9"	6'9"	7'3"	8'3½"	8'4"	9'4"	9'4"	10'4"	10'4"	10'4"
T — Feedwater centerline — each side	4'2"	4'9½"	5'3½"	3'3"	4'9"	5'0½"	7'11"	8'6"	8'2½"	9'2"	7'2"	9'9½"	9'5"	11'11"	11'11"
— Feedwater size — NPT	1"	1"	1¼"	1¼"	1¼"	1¼"	1½"	1½"	1½"	2"	2½"	2½"	2½"	2½"	2½"
U[1] — Rear blowoff — centerline to rear of boiler	3'6"	3'6"	3'6"	3'6"	3'6"	3'5"	3'6"	4'1"	3'8"	4'1"	4'8"	4'8"	5'6"	5'1"	5'1"
U[2] — Blowoff centerline to centerline	2'9"	3'8½"	4'8"	4'3½"	6'1½"	6'0"	8'11½"	8'11½"	9'0"	10'6½"	8'9"	10'1"	9'10½"	13'10½"	13'10½"
— Blowoff size — both — NPT	1¼"	1½"	1½"	1½"	1½"	1½"	2"	2"	2"	2"	2"	2"	2"	2"	2"
V — Safety valve centerline	5'4"	6'3½"	7'3"	6'10½"	7'6½"	7'7"	10'6½"	10'11½"	11'2"	13'1½"	12'0"	10'0½"	11'6½"	10'10½"	10'10½"
W — Normal waterline	4'6"	4'6"	4'6"	5'2½"	5'2½"	5'7"	5'7"	5'10"	6'9"	6'9"	7'5½"	7'5½"	8'4"	8'4"	8'4"
X — Handhole centerline	4'2"	4'6"	4'11½"	—	—	—	—	—	—	—	—	—	—	—	—
— Manhole centerline	—	—	—	5'7"	5'8½"	5'5½"	5'8½"	5'11½"	8'6½"	9'4½"	8'8½"	7'3½"	9'10½"	9'8½"	9'8½"
Z — Base height — floor to boiler	1'0"	1'0"	1'0"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'3"	1'8"	1'8"	1'8"
AA — Base length	4'2"	5'0"	5'10"	5'0"	6'8"	6'8"	10'0"	10'0"	14'7"	16'3"	15'11"	17'3"	17'6"	21'2"	21'2"
BB — Base width	3'4"	3'4"	3'4"	3'6"	3'6"	3'10"	3'10"	4'2"	4'10"	4'10"	5'4"	5'4"	5'9"	5'9"	5'9"
CC — Base height	6"	6"	6"	6"	6"	8"	8"	8"	8"	8"	10"	10"	10"	10"	10"
EE — Base to rear of boiler	1'9½"	1'11"	2'0½"	2'5½"	2'7½"	2'6"	2'1½"	2'8½"	2'4"	2'7½"	2'9"	2'9"	3'4½"	2'9½"	2'9½"
— Base to front of burner	4'7"	4'7"	4'7"	4'11"	4'11"	5'2"	5'2"	5'2"	—	—	—	—	—	—	—
Tube removal space	5'11"	6'10"	7'9½"	7'5"	9'3"	9'1½"	12'1"	12'5½"	11'8½"	13'8½"	12'2¾"	13'7"	14'0"	17'7"	17'7"

KEWANEE®
KEWANEE BOILER COMPANY, INC.
A subsidiary of Coppus Engineering Corporation
101 Franklin Street, Kewanee, Illinois 61443
(309) 853-3541 • Fax: (309) 852-0424

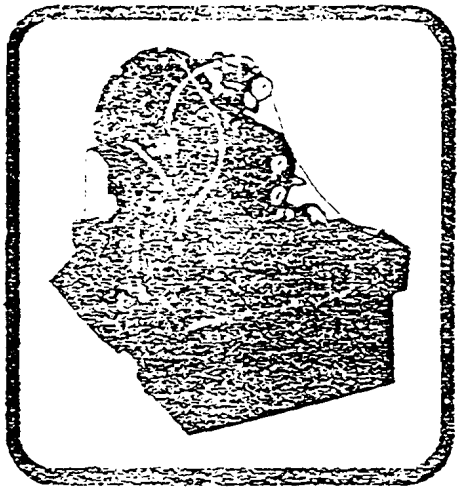
Kewanee

BURNERS

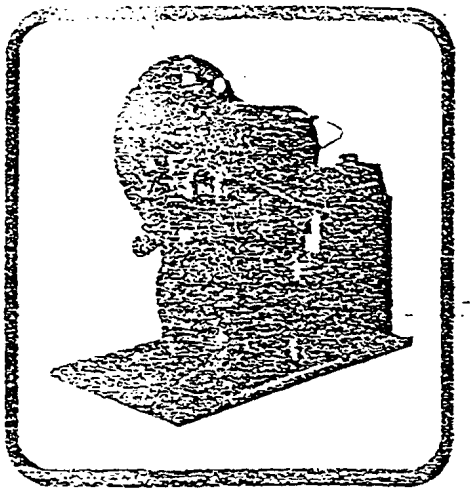
For CLASSIC III Packaged Scotch Design Firetube Oil, Gas, Combination Oil/Gas Fired



20-50 HP



60-250 HP



300-800 HP

* I/L Listed.

Kewanee Burners are designed for oil, natural gas or propane gas, or combination gas-oil firing. Each Kewanee Forced Draft Burner is custom engineered for the package it fires, assuring long, dependable and economical service.

- NEMA 1A Control Cabinet features electronic Flame Safeguard and programming controls, air flow safety switch, coded wiring, numbered terminal strip and console.
- CLASSIC III units are equipped with Kewanee Pressure or Air Atomizing Burners. Pressure Atomizing units fire light oil, and combination gas-light oil. Air Atomizing units fire No. 6 (100 hp to 800 hp) or lighter oil, and combination gas-oil. Both pressure and air atomized units are of flame retention design.
- Second oil solenoid valve furnished as standard on 60 HP-800 HP Boilers.

RATINGS & DATA

UNIT NUMBER	25	30	40	50	60	70	80	100	125	150	200	250	300	350	400	500	600	750	800
Gas Control —																			
Size (STD U.L.)	1"	1¼"	1½"	1½"	1½"	2"	2"	2"	2½"	3"	3"	3"	3"	3"	3"	3"	3"	3"	3"
Req'd. Inlet Pressure ..... In. w.c.	6.0	6.0	5.7	7.0	7.5	5.3	6.6	7.0	9.3	9.3	12.5	16.0	15.5	13.1	16.3	21.2	22.4	35.8	40.7
Identification No.	1	9	13	13	30	34	34	34	62	66	71	70	80	81	81	83	83	83	83
Motors —																			
F.D. Fan — Gas ..... HP	½	½	½	¾	1½	1½	1½	3	3	5	5	7½	10	15	15	20	25	30	45
Gas & P/A Oil ..... HP	½	½	½	¾	1½	1½	1½	3	3	5	5	7½	10	15	15	—	—	—	—
Gas & A/A Oil ..... HP	-	-	-	-	1½	1½	1½	3	3	5	5	7½	10	15	15	20	25	30	45
Press. Atom. Oil Pump Set ..... HP	<Direct Drive From Blower Motor>				<Belt Driven From Double Shaft Blower Motor>						1	1	1	1	1	—	—	—	—
Air Atom. Comp. ..... HP	—	—	—	—	2	2	2	2	2	3	3	3	3	3	5	5	5	5	7.5
Air Atom. Oil Pump Set #2 ..... HP	—	—	—	—	½	½	½	½	½	½	½	½	½	½	½	½	½	½	½
Air Atom. Oil Pump Set #4 ..... HP	—	—	—	—	½	½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Air Atom. Oil Pump Set #5 #6 ..... HP	—	—	—	—	½	½	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Standard Voltage	<115-60-1>				<230-60-3>														
Oil Heater —																			
No. 4, 5 Oil	—	—	—	—	3000	3000	3200	4000	5000	6000	6000	10000	12000	15000	15000	20000	24000	30000	39000
No. 6 Oil	—	—	—	—	—	—	—	2000	3000	3000	4000	5000	6000	8000	8000	10000	12000	15000	15000
Control Circuit Voltage	<115-60-1>																		
Fuel Air Control —																			
Gas	<On-Off>				<Two Position>						<Modulating>								
P/A Oil	On-Off	On-Off W/Low Fire Start			<Two Position>						<Modulating>								
* Combo	—	—	—	—	<Modulating>														
Safeguard	<UVM3R>				<UVM-5>						<C-20>								

SUPERSEDES BULLETIN 20A-6 January, 1988

DIMENSIONS, DATA SUBJECT TO CHANGE WITHOUT NOTICE

BULLETIN 20A-6 April, 1989

4.2.4-556

Look ahead with KEWANEE.

KEWANEE BOILER COMPANY, INC.

A subsidiary of Cerberus Engineering Corporation

DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

BAQE-688-88

November 9, 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 November 18, 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,

David Kopta

David Kopta, Manager
Engineering Unit
Bureau of Air Quality

Enclosure

DK/cc

4.2.4-557

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. Indian Oil Company, Used Oil Recycling Plant, Utah County
2. FCI Chemical Engineers, Gypsum Excavation and Handling, Salt Lake County
3. Amoco Oil Company, Backup Flare System on Loading Racks, SAlt Lake County
4. Department of the Air Force, Carbon Brake Repair Facility, Bldg. 267, Davis County
5. Brackenbury, Conn and Associates, Portable Tank Leaching Operation, Duchesne County
6. Advance Foam Plastics, Expanded Polystyrene Plant, Salt Lake County
7. Golden Eagle Environmental and Recycling Services, API Separator and 14 Storage Tanks, Davis County
8. Morton Thiokol, Inc., Changes to X-17 Automotive Products Facility, Weber 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 to 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 84116-0690. Written comments received by the Bureau, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690, on or before December 16, 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: November 18, 1988