



DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt

Governor

150 North 1950 West
Salt Lake City, Utah 84114
(801) 536-4000
(801) 536-4099 Fax
(801) 538-6621 T.D.D.

Dianne R. Nielson, Ph.D.

Executive Director

F. Burnell Cordner

Director

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

DAQE-0103-93

February 11, 1993

James Van Orman
Department of the Air Force
HQ Ogden AFMC
HAFB, Utah 84056-5990

Re: Modified Approval Order for Aircraft Purge System Near Building 287
Davis County CDS Al

Dear Mr. Van Orman:

This Modified Approval Order revises and replaces Modified Approval Order BAQE-021-91 dated January 15, 1991, by replacing two catalytic incinerators, used to control hydrocarbon emissions from the Aircraft Purge Facility near Bldg 287, with a closed loop distillation unit. The Aircraft Purge Facility is a facility used to purge the fuel from aircraft fuel cells thus eliminating the danger of explosion during the repair of an aircraft fuel cell. This Air Quality Modified Approval Order authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install a 28,000 gallon purge oil reclamation unit, which shall operate in conjunction with the two existing 6,000 gallon units. The unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988, October 8, 1992, and additional information submitted December 3, 1992.
2. 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
3. This Modified Approval Order shall replace Modified Approval Order BAQE-021-91 dated January 15, 1992, and Variance DAQC-670-92 dated June 4, 1992.
4. The JP-4 and purge oil from all three purge oil units shall be processed by closed loop distillation unit that is operating under vacuum. The purge oil is stored and reused in the purge system. The JP-4 is separated by distillation and diverted to a portable 1,000 gallon tank where it is transported to a storage area. The JP-4 tank venting emissions are not controlled.
5. Visible emissions from the vent on the JP-4 portable tank shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
6. The following extraction limits for JP-4 shall not be exceeded without prior approval in accordance with R307-1-3.1, UACR:

4.2.4-594

A. 24,000 gallons per 12-month period

Compliance with the annual limitations shall be determined on a rolling 12-month total. Based on the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of consumption/production shall be made available to the Executive Secretary or his representative upon request and shall include a period of two years ending with the date of the request. Production/Consumption shall be determined by a log of the JP-4 recovered in the portable tank. The log shall be kept in area 15090. The records shall be kept on a daily basis.

7. All installations and facilities authorized by this Approval Order shall be adequately and properly maintained. The owner/operator shall comply with R307-1-3.5 and 4.7, UACR. R307-1-3.5, UACR addresses emission inventory reporting requirements. R307-1-4.7, UACR addresses unavoidable breakdown reporting requirements which result in excess emissions. It specifies the reporting requirements where excess emissions result from the breakdown. The owner or operator shall take all reasonable measures to minimize emissions which may include curtailment of production. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The sum total of excess and normal emissions shall be reported to the Executive Secretary as directed for each calendar year.
8. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

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

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

Sincerely,



F. Burnell Cordner, Executive Secretary

FBC:JTB:dn

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

RECEIVED
DEC 18 1992
Air Quality

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

Mr Tim Blanchard
Division of Air Quality
1950 W. North Temple
P O Box 144820
Salt Lake City, UT 84114-4820

17 DEC 1992

Re: Distillation Units for the Aircraft Purge System

Reference your telecon 2 Dec. 92, we answer your questions as follows:

JP-4 distillate tank capacity is about 1,000 gallons. The tank is vented and there will be a small amount of hydrocarbon emissions. Based on our workload, we estimate distilling about 2,000 gallons of JP-4 per month.

Emission Factor:

Use AP-42, 4th Edition, Eqn (1), Page 4.4-5

$L = 12.46 \times \text{SPM/T}$

For JP-4

S, Saturation Factor, AP-42, Table 4.4-1, Assume splash loading, Dedicated normal service = 1.45

P, True Vapor Pressure, AP-42 Table 4.3-2. Assume 60 degree F = 1.3 PSIA

M, Molecular Weight, AP-42, Table 4.3-2 = 80 Lb/Lb mole

T, Absolute temperature, Assume average 460+60 = 520 R

L, Loading Loss = $12.46 \times 1.45 \times 1.3 \times 80 / 520 = 3.61$

Use 4.0 Lb Loading Loss/1,000 gallons

Hydrocarbon Emissions:

$4 \text{ Lb HC/1,000 gals} \times 2,000 \text{ gals/Mo} \times 12 \text{ Mo/Yr} \times \text{Ton/2,000 Lbs}$
= 0.048 Ton/Yr

These emissions are insignificant.

Please also note that we have specified " Factory Mutual Valves" ie dead ended valves with petroleum service gaskets, the best in the petroleum

industry, to almost eliminate fugitive hydrocarbon emissions. Therefore, fugitive emissions reported in our 8 Oct. 92 transmittal will be negligible.

We hope this answers your questions. If there are any more questions, please feel free to contact Jay Gupta at 777-0359.

Sincerely

James R. Van Orman

James R. Van Orman
Director of Environmental Management

FAX 777-1526



Post-It™ brand fax transmittal memo 787		# of pages = 1
To	TIM BLANCHARD	JAY GUPTA
Co.	Div Air Quality	HILL AIR FORCE BASE
Dept.		Phone # 777-0359
Fax #	536-4099	Fax #

From : OO-ALC/EME, HAFB *Jay Gupta 12/3/92*

Sub: Distillation Units for the Aircraft Purge System

TO: Div Air Quality (Attn: Tim Blanchard)

Reference your telecon 2 Dec 92, we answer your questions as follows:

JP-4 distillate tank capacity is about 1,000 gallons. The tank is vented and there will be a small amount of hydrocarbon emissions. Based on our workload, we estimate distilling about 2,000 gallons of JP-4 per month.

Emission Factor:

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M, Molecular Weight, Ap-42 Table 4.3-2 = 80 Lb/Lb mole

T, Absolute T, assume avg = 460+60 = 520°R

$$L, \text{Loading Loss} = 12.46 \times 1.45 \times 1.3 \times 80 / 520 = 3.61$$

Use 4.0 Lb Loading Loss/1,000 gallons

Hydrocarbons Emissions:

$$4 \text{ Lb HC/1,000 gal} \times 2,000 \text{ gal/mo} \times 12 \text{ mo/yr} \times 10^{-6} / 2,000 \text{ Lbs} \\ = 0.048 \text{ Ton/Yr}$$

These emissions are insignificant.

Please note that we have specified " Factory Mutual Valves " ie lead ended valves with petroleum service gaskets, the best in petroleum industry, to almost eliminate fugitive emissions. Therefore, fugitive emissions reported in our 8 Oct 92 transmittal will be negligible.

We hope this answers your questions. If there are any more questions, please feel to call Jay Gupta at 777-0359.



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

RECEIVED
OCT 09 1992
Air Quality

8 OCT 1992

Mans

F. Burnell Corder, Executive Secretary
Division of Air Quality
1950 W. North Temple
P.O. Box 144820
Salt Lake City UT 84114-4820

Re: 15 Jan 91 A.O. for Aircraft Purge System Near Bldg 287
(BAQE-021-91); 4 Jun 92 Ltr, Twelve Month Extension of
Variance for Aircraft Purge System (DAQC-670-92)

Dear Mr Corder

In Oct 90, a fire destroyed the catalytic incinerators which were the pollution control equipment on our JP-4 purge facility near Bldg 287. On 31 Jan 91, the State granted us an 18 month variance for continued operation of the purge facility. On 4 Jun 92, a twelve month extension of variance was granted. After the variance was granted, we began a project to install new air pollution control equipment.

In lieu of catalytic incinerators, we propose to install distillation units operating under a vacuum. A schematic of distillation units is Attachment 1. Distillation units will separate and recycle the two product streams, namely, JP-4 and the purge oil. Since the distillation units will be closed loop, they will not be a source of air pollution and we feel a NOI is not required for these units. Fugitive emissions from piping valve flanges are negligible and estimated as follows:

Number of Pipe Line Valves = 23
Process Stream Category = I
Emission Factor, AP-42 Table 9.1-2 = 0.00056 lb/hr source
Fugitive Emissions = $\frac{23 \times 0.00056 \times 24 \times 365}{2,000}$

We request you modify our 15 Jan 91 Approval Order deleting any reference to catalytic incinerators and include distillation units in the same.

If you have any questions, please feel free to contact Jay Gupta at 777-0359.

Sincerely

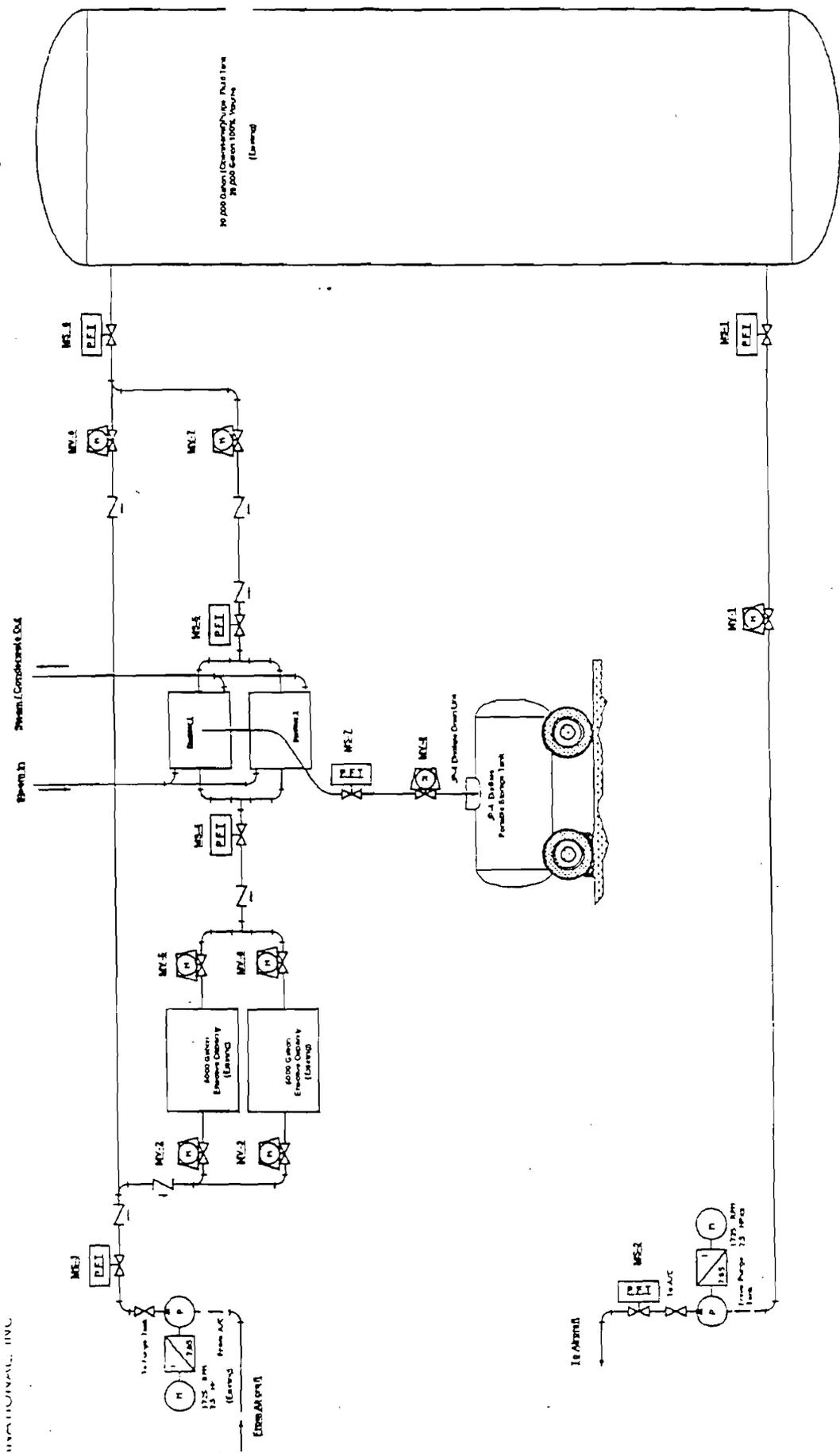
James R. Van Orman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Distillation Units
Schematic

4.2.4-599

BDM/ABQ-91-0122-TR



BDM INTERNATIONAL CONCEPT DRAWING
VP-4 Hydrogen System

4.2.4-600

ATCH-1



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

SEP 12 1988

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

Re: Additional Information on Notice of Intent (NOI) to Construct New
Aircraft Purge System Near Building 287

Dear Mr Cordner

In our NOI dated 1 Aug 88, we proposed using either an activated carbon adsorption or a refrigeration unit to control JP-4 emissions from the purge tanks. Subsequent evaluation reveals that activated carbon is not suitable for JP-4 vapors and a refrigeration unit is not cost-effective. As a result, we propose using two catalytic incineration units. Additional information on control devices and air emissions is provided as Atch 1. Atch 2 is a descriptive brochure on catalytic incineration unit.

If you have any questions, please feel free to contact Jay Gupta at 777-6742.

Sincerely

NATHAN O. CURRIER
Dep Chief
Environmental Mgt Office

- 2 Atch
1. Additional Info
2. Brochure

RECEIVED
SEP 14 1988
AIR QUALITY

4.2.4-601

ADDITIONAL INFORMATION ON NOTICE OF INTENT (NOI)
TO CONSTRUCT
NEW AIRCRAFT PURGE SYSTEM NEAR BUILDING 287

1. Control Devices:

a. In our NOI dated 1 August 1988, we proposed activated carbon adsorption or a refrigeration heat transfer solvent recovery unit for controlling JP-4 emissions from the purge tanks. We have determined that these control devices are not cost effective for the recovery of JP-4 vapors from the purge tanks.

b. We are now proposing to control these emissions by two catalytic incineration units. One 200 SCFM catalytic unit will be installed on two existing 6,000-gallon purge tanks, while a second unit will control emissions from the proposed 28,000-gallon tank. Descriptive brochure from the equipment manufacturer is attached.

2. Air Emissions: We estimate 95-98% destruction efficiency for the catalytic incineration units. Based on this, hydrocarbon emissions to the atmosphere will be reduced to 0.26 tons per year.

ORS Environmental Equipment

Catalytic Scavenger[®]

Vapor Abatement System



Vapor Abatement Systems

4.2.4-603

ATU-2

ORS Environmental Equipment

Catalytic Scavenger®

Vapor Abatement System

When Clean Air Matters

Most site remediation projects start off with contaminated soil and groundwater. But they often end up with a contaminated air stream from the very systems that are doing the cleanup! Now, ORS Environmental Equipment has combined proven catalytic conversion technology with years of site remediation experience to create the Catalytic Scavenger® system. This unique state of the art system is specifically designed to handle the vapors emitted from air strippers and soil vent systems during site cleanups.

Cost Effective And Efficient

The ORS Catalytic Scavenger system is highly cost effective because of its unique design. At the heart of the system is a durable platinum-coated catalytic element. This unit operates at temperatures which efficiently destroy organic contaminants. Special ceramic insulation retains the heat, which is recovered during the process and recycled to pre-heat the inlet gases. Reusing this energy greatly reduces operating costs.

Meets Environmental Standards

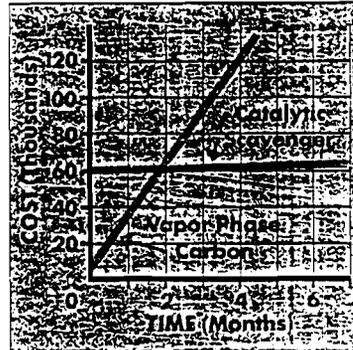
Contaminated air streams that have been processed through the Catalytic Scavenger system may be safely released into the atmosphere. High destruction rates meet state and federal VOC and air toxics emissions standards. Since the Catalytic Scavenger system runs on convenient electricity and creates no emissions of its own, it is an extremely clean unit. Unlike activated carbon which merely transfers contaminants to an expensive medium, the Catalytic Scavenger system destroys contamination on site, eliminating chain-of-custody and other lingering liability issues.

Safe

Safety precautions have been built into the Catalytic Scavenger system at every level. Digital output displays provide quick, easy-to-read references for site personnel. From its explosion-proof design to its gas monitoring, temperature sensing, and automatic shut-off systems, the Catalytic Scavenger system has been designed to provide completely safe operation.



Above: Interior view of control module showing electrical circuitry.



Graph shows comparative costs of carbon and catalytic conversion. In this example, the Scavenger

system saved the client \$30,000 over 3 months. Carbon was regenerated off-site.

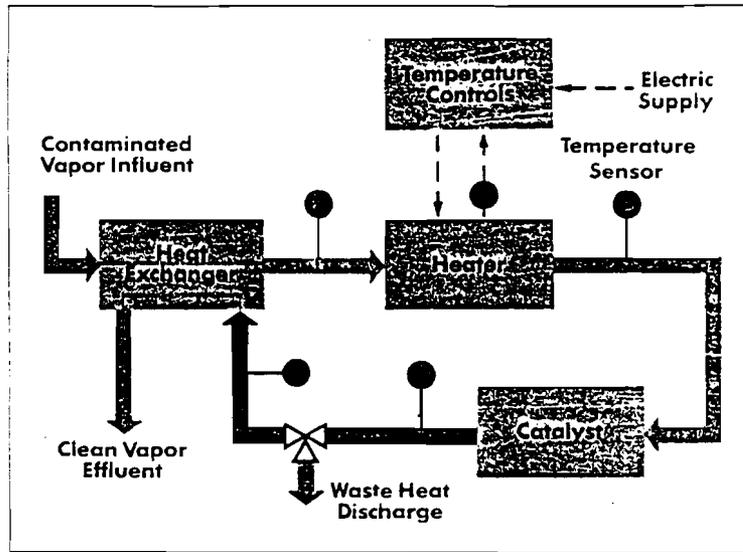
Reliable

ORS Environmental Equipment has been designing, manufacturing and installing innovative systems for site remediation and contaminant recovery since 1975. ORS systems have been field-proven on thousands of projects worldwide. From the innovative Filter Scavenger® oil/water separator, to our ambient monitoring units, to our full-scale remediation systems, ORS equipment has operated reliably on virtually every kind of remediation project. This experience is built into every Catalytic Scavenger system and is part of what you can depend on every ORS product.

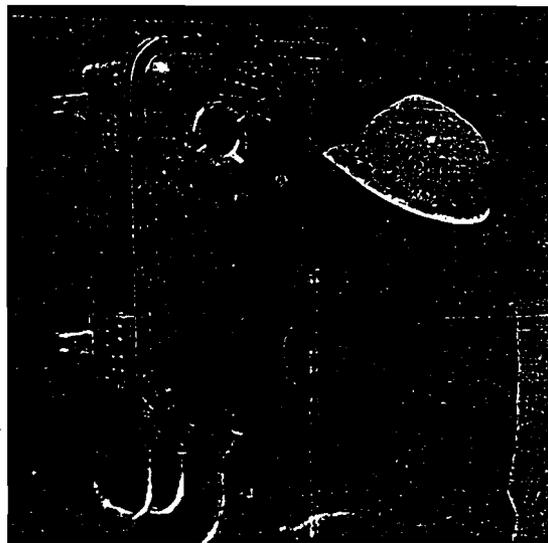
Benefits

- On-site contaminant destruction
- No off-site hauling or disposal
- No long-term liability
- Flexible design accommodates multiple applications
- Low operating costs

When environmental regulations require clean emissions, put the Catalytic Scavenger system to work for you.



At a service station on the West Coast, the ORS Catalytic Scavenger® system was used for on site destruction of contaminated vapors emitted from a Soil Vent System. The unit achieved a 99% destruction rate for benzene, which met California Air Pollution Control District requirements. Operating costs were less than \$300 per month.



Engineer taking digital readout of influent air temperature at the catalyst through glass viewing port.

Above: Process flow diagram showing path of gas from remediation system to discharge. Contaminated vapors are preheated in the heat exchanger by hot exhaust released from the catalyst. Gas passes through the heater to the catalyst where combustion takes place. The clean vapor effluent is discharged after being cooled in the heat exchanger.

The Catalytic Scavenger™ system was used on site to destroy the vapors from an underground fuel spill in Maryland. The unit was installed to replace a carbon tank which cost the client \$15,000 in just three days. In five months, the Catalytic Scavenger destroyed approximately 6000 lbs. of vapor phase contaminants, and saved the client hundreds of thousands of dollars in operating costs.

ORS Environmental Equipment

Catalytic Scavenger®

Features and Specifications

Features

Applications: Can be used with Air Strippers, Soil Vent Systems, or other vapor streams.

Portable: Lightweight, skid mounted unit is easily transported.

Durable: Precious metal catalyst is designed for long life with proper maintenance.

Efficient Operation: Up to 70% heat recovery by heat exchanger.

Explosion Proof Design: Control system and heater meet NFPA standards for use in Class 1, Division 1, Group D hazardous environments.

Sensor Redundancy: System features two LEL sensors wired in series.

Control Mechanism: Allows interruption of other site operations during alarm conditions.

Manual Blast Gate Dampers: Allow the processing of higher contamination levels produced by Soil Vent Systems.

Manual Temperature Monitoring: Thermocouples and hand held thermometers provide additional monitoring capabilities.

Manual Reset: After an alarm condition or shutdown, system will not restart without operator intervention. This feature prevents re-starting before the cause of the shutdown has been investigated.

High and Low Temperature Shutoffs: Prevent overheating and release of untreated vapors.

Continuous Gas Monitoring: LEL sensors and controller shut

Model

Information

	#1282001	#1282002
	20 kw	35 kw
Air Flow Rate	100-200* SCFM	200-500 SCFM
Power Requirements**	230V (1 or 3 Ph.) or 460V (3 Ph.)	230V/460V (3 Ph.)
Dimensions	85" h x 85" l x 42" w	62" h x 132" l x 62" w
Weight	~1300 lb.	~2000 lb.
Operating Temp. Range	400°-900°F	400°-900°F

* 300 SCFM is achievable with special duplex unit.

** Up to 125 amp service depending on voltage and phase. Consult factory for specific requirements.

down system if flammable gas concentrations rise beyond adjustable limits.

Gas Sensor Failure Alarm: Shuts system down and triggers audible/visible alarm with audible shut-off.

Automatic Dampers: Divert explosion proof vapors away from catalyst during alarm conditions.

Minimal Temperature Drift: System electronics provide tight temperature control of gas entering the catalyst.

Specifications

Catalyst: Platinum coated.

Enclosure: 15 gauge sheet aluminum.

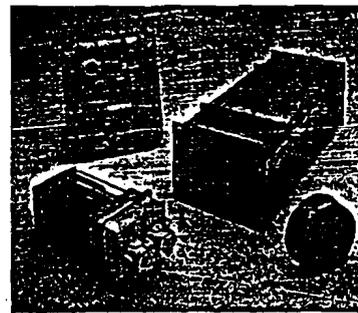
Gas Exposed Components: 304 stainless steel.

Inlet Pipe: 4" female PVC flange.

Outlet Pipe: 6" O.D. stainless steel discharge port.

Insulation: 3" ceramic blanket.

Patent: Pending.



Components of Catalytic Scavenger unit clockwise from lower left: heater, control module, heat exchanger, catalyst.

Partial List of Destructible Compounds

Aromatics:

Benzene
Toluene
Xylenes
Ethyl benzene
Naphthalene
Styrene
Isobutyl benzene

Ketones:

Methyl ethyl ketone (MEK)
Methyl isobutyl ketone (MIBK)

Acetone

Alcohols:

Isopropanol
Methanol
Butanol
Ethanol
2 methyl-1-butanol

Esters:

Ethyl acetate
Propyl acetate
Isobutyl acetate
Cyclohexyl acetate

Alkenes:

Propylene
Ethylene

Aldehydes:

Formaldehyde
Benzaldehyde

Other gases:

Acetylene
Carbon monoxide

Alkanes:

Butane
Heptanes
Hexanes
Pentanes
Octane

...and other organic compounds



4 Mill Street, Greenville, NH 03048
Fax: (603) 878-3866 Telex: 75-2858

For more information or to place an order, please call (603) 878-2500. Sales and service facilities are located throughout the U.S., Canada, and overseas.



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5149

AUG 01 1988

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

Re: Notice of Intent to Construct New Aircraft Purge System Near Bldg 287

Dear Mr Cordner

In compliance with Section 3.1 of the State Air Conservation Regulations,
we submit the attached Notice of Intent to Construct.

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

Sincerely

A handwritten signature in black ink, appearing to read "Thayne H. Judd".

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

1 Atch
Notice of Intent to Construct

RECEIVED

AUG 3 1988

AIR QUALITY

A handwritten signature or set of initials in black ink, possibly "JG", written over the "RECEIVED" stamp.

NOTICE OF INTENT TO CONSTRUCT
NEW AIRCRAFT PURGE & RECOVERY SYSTEM
HILL AIR FORCE BASE, UTAH

1. PROJECT DESCRIPTION:

Hill AFB presently operates two 6,000 gallon purge fluid recycling units. Approval orders for these units were granted on 19 Oct 77 and 11 Jan 83 respectively. These units are operating with Rotamist 650 oil mist collection device. Due to increased workload and larger aircraft programmed for depot maintenance at HAFB, a new purge system at area 15090 adjacent to building 287 will be built. The system includes a 28,000 gallon tank purge oil reclamation unit and will function in conjunction with the existing 12,000 gallon purge system. Aircraft is defueled and bucket drained in area 15090. Aircraft fuel tanks are then connected to the purge oil lines and are pumped full of purging oil. The oil is left in the aircraft for ten minutes and then is pumped out and back into the purge tank. The flash point of purge oil and JP-4 mixture in purge tank must be maintained above 120°F. This requirement is fulfilled by aerating the mixture and by maintaining the tank temperature between 100-120°F.

2. AIR EMISSIONS:

Based on projected workload (FY92), total JP-4 defueled and estimated emissions from purging are as follows:

Total JP-4 defueled	546,000 gals/yr
Assuming 1% retention, fuel extracted by purge fluid	5,460 gallons
Upon aeration, assuming 70-75% JP-4 "bubbled off" JP-4 emissions to the atmosphere	4,040 gals/yr
Assuming carbon adsorption/condenser efficiency 90% Net HC emissions	404 gals/yr
$\frac{404 \text{ gals}}{\text{yr}} \times \frac{6.5 \text{ lbs}}{\text{gal}} \times \frac{\text{ton}}{2,000 \text{ lbs}} = 1.3 \text{ ton VOC/yr}$	

3. AIR CLEANING DEVICES:

Hydrocarbon emissions from purging operations will be controlled through the use of either an activated carbon adsorption equipment or a refrigeration heat transfer solvent recovery equipment. We are currently evaluating these control devices.

4. EMISSION POINTS:

A 20" diameter duct will discharge approximately 1,000 standard cubic feet per minute, 10' above ground level.

5. SAMPLE POINTS:

No sampling points are provided

6. OPERATING SCHEDULE:

The proposed facility will normally be operated two eight-hour shifts per day, five days a week and 52 weeks per year.



DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangertter
Governor
Lizanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Akema
Director

288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-1690
801/533-6108

BAQE-653-88

January 13, 1989

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

*Approved by
1/15/89*

Dear Colonel Judd:

Re: Approval Order for Aircraft Purge System Near Building 287
Davis County, CDS Al

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

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which will operate in conjunction with the two existing 6000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.
2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the 28,000 gallon unit, and one incinerator shall be used on the two existing 6000 gallon units. Both incinerators shall be an ORS Environmental Equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.
3. Either one or both of the catalytic incinerators shall be stack tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:
 - A. 19.18 LB/1000 gallons burned for particulate
 - B. 11.89 LB/1000 gallons burned for PM₁₀

The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4.2.4-610

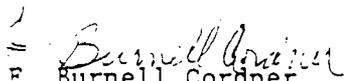
4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
5. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 6-minute period shall not apply. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.
6. The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be the volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.
7. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.
8. This approval order shall replace the approval orders dated October 19, 1977 and January 11, 1983.
9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.
10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

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

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

The fee for issuing this approval order is \$411.04. The amount is payable to the Bureau of Air Quality, sent to the Executive Secretary, Utah Air Conservation Committee, 288 North 1460 West, P.O. Box 16690, Salt Lake City, Utah 84116-0690 and is due within 30 days after receipt of this approval order.

Sincerely,


F. Burnell Cordner
Executive Secretary
Utah Air Conservation Committee

FBC/MK/cc

cc: EPA Region VIII, John Dale
Davis County Health Department

UTAH BUREAU OF AIR QUALITY APPROVAL ORDER FEE

Department of the Air Force
Aircraft Purge System Near Building 287

Filing Fee _____ = \$ 100.00

Review Engineer - total hours 13 (\$22.08/hr) = \$ 287.04

Modeler - total hours _____ (\$18.07/hr) = \$.

Computer time - total hours _____ = \$.

Notice To Paper _____ = \$ 24.00

Travel - total miles _____ (\$ 0.23/mile) = \$.

Total = \$ 411.04

Please send payment to:

Utah Bureau of Air Quality
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 538-6108

Memorandum To: Montie Keller
Through: Dave Kopta
From: Don Robinson *DR*
Subject: Response To Comments from HAFB on Aircraft Purge System near Building 287; NOI Dated August 1, 1988
Date: December 19, 1988

HAFB submitted a notice of intent dated August 1, 1988 to install an additional aircraft purge system at area 15090 adjacent to Building 287. The intent to approve letter is dated November 1, 1988. The comment period began on November 15, 1988. HAFB submitted comments on December 13, 1988. Following are the affected conditions, the comments, and our suggested responses:

Condition #6

The total amount of JP-4 to be defueled from aircraft shall not exceed 546,000 gallons per 12 month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of defueling shall be kept for all periods when the plant is in operation. Records of defueling 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. The total amount of JP-4 to be defueled from aircraft shall be determined by the use of flow meters on the purge lines. An operations log shall be kept in which shall be recorded daily the volume of JP-4 which is defueled. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.

Comment on Condition #6

HAFB has submitted six separate comments on condition #6. I will summarize them here. For additional details consult their letter dated December 13, 1988.

HAFB has a defueling process and a purging process. The defueling process is as follows:

- A. An aircraft is brought into the purging area.
- B. A fuel truck pumps as much fuel as possible from the aircraft into the fuel truck for later use.
- C. Leftover fuel is bottom drained to fuel bowsers.

The purging operation is as follows:

- A. The only fuel left in the aircraft is residue that must be removed to avoid any flammability problems while the aircraft is in the repair hangar. This is done by running purge fluid through the fuel system.

- B. Purge fluid is stored in tanks that can be attached to the aircraft.
- C. The purge fluid is pumped into the fuel system and mixes with the JP-4 residue. The fuel purge fluid mixture is pumped back to the purge fluid tank.
- D. The fuel purge fluid mixture is continually heated and aerated to drive off the residual fuel which the purge fluid has picked up.
- E. The fuel being driven off will be controlled by the catalytic incinerator units.

HAFB recommends that this condition be changed because the defueling and purging processes are independent. Regulating the volume of fuel reclaimed will not control VOC emissions from the purging operation.

Since submitting the NOI, HAFB has concluded that this condition is not a sound method of determining VOC emissions. There are simply too many variables with this method. For example, there are too many different configurations in the various aircraft serviced. Some aircraft have fuel foam and some do not. In looking at more reliable methods we concluded that using replenishment figures for the purge oil would be much more reliable.

The best method of measuring VOC emissions is to record the amount of purge fluid replenished in the storage tanks annually. The purge oil lost annually is attributed to it being retained in the aircraft after the purging operation. The purge oil/JP-4 mixture is returned to the storage tanks where the JP-4 is evaporated and incinerated. New purge oil is pumped into the storage tanks to retain the same level, hence replacing the volume of JP-4 evaporated.

This intent would be served by the following conditions:

- A. Use of catalytic incineration of JP-4 vapors
- B. Accurate recording of purge oil replenishment figures

Response

The reasoning of HAFB seems to be logical, considering the fact that the defueling and purging operations are separate. The BAQ realizes that the actual process has many variables in it. Condition #6 will be rewritten to read as follows:

"The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be the volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request."



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

13 DEC 1988

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

Re: Public Comments on Notice of Intent to Approve Aircraft Purge System Near
Bldg 287 for HAFB

Dear Mr Cordner

In reference to the above Intent to Approve Notice dated 1 Nov 88, we submit
our comments as an attachment.

If you have any questions, please feel free to contact Jay Gupta at 777-6742.

Sincerely

A handwritten signature in cursive script, appearing to read "Nathan O. Currier".

NATHAN O. CURRIER
Director
Env Mgt Directorate

1 Atch
Comments

RECEIVED
DEC 14 1988
AIR QUALITY

A handwritten signature in cursive script, appearing to be a stylized signature.

4.2.4-615

COMMENTS ON INTENT TO APPROVE FOR PURGE FACILITY

1. Condition 6 indicates we did not adequately explain the difference between the defueling process and the purging operation. The detailed process we use to defuel and purge an aircraft are as follows:

a. The defueling process:

- (1) An aircraft is brought into the purging area.
- (2) A fuel truck pumps as much fuel as possible from the aircraft into the fuel truck for later reuse.
- (3) Leftover fuel is bottom-drained to fuel bowsers.

b. The purging operation:

- (1) The only fuel left in the aircraft is residue that must be removed to avoid any flammability problems while the aircraft is in the repair hangar. This is done by running purge fluid through the fuel system.
- (2) Purge fluid is stored in tanks that can be attached to the aircraft.
- (3) The purge fluid is pumped into the fuel system and mixes with the JP-4 residue, the fuel-purge fluid mixture is pumped back to the purge fluid tank.
- (4) The fuel-purge fluid mixture is continually heated and aerated to drive off the residual fuel the purge fluid has picked up.
- (5) The fuel being driven off will be controlled by the catalytic incinerator units.

2. Recommend condition six in the proposed approval order be changed because defueling and purging processes are independent. Regulating the volume of fuel reclaimed during the defueling process will not control hydrocarbon emissions into the air as a result of the purging operation and may well affect the Air Force mission. The submitted Notice of Intent included a linkage between the two processes only for the purpose of estimating air emissions. These figures vary annually and are by no means a maximum.

3. Since submitting the Notice of Intent, we have concluded that this is not a sound method of predicting or measuring emissions. There are simply too many variables with this method. For example, there are too many different configurations in the

various aircraft we service and some aircraft have fuel foam and some do not. Furthermore, arbitrarily limiting the quantity of fuel may have direct impact on the military operations at Hill AFB. In looking at more reliable methods of estimating, we concluded that using replenishment figures for the purge oil would be much more reliable.

4. The best method of measuring hydrocarbon emissions in the air is to record the amount of purge fluid replenished in the storage tanks annually. The purge oil lost annually is attributed to it being retained in the aircraft after the purging operation. The purge oil/JP-4 mixture is returned to the storage tanks where the JP-4 is evaporated and incinerated into carbon dioxide and water vapors. New purge oil is pumped into the storage tanks to retain the same level, hence replacing the volume of JP-4 evaporated.

5. It would be premature to require or limit the quantity of JP-4 fuel defueled. Such a requirement could result in disastrous effects upon the Air Force mission. The intent of the Bureau should be that we control actual emissions to the maximum practical extent possible.

6. This intent would be served by the following conditions:

- a. Use of catalytic incineration of JP-4 vapors.
- b. Accurate recording of purge-oil replenishment figures.



DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Norman H. Bangerter
Governor
160 South 1400 West
Salt Lake City, Utah 84143
Telephone: 533-6108

168 North 1400 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690
501 533-6108

BAQE-629-88

November 2, 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 Tuesday, November 15, 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, Manager
Engineering Unit
Bureau of Air Quality

Enclosure

DK/cc

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. Tooele Army Depot, Four Air Stripping Towers, Tooele County
2. Overlook Gold Mining, Surface Mining Operation, Uintah County
3. Tooele Army Depot, Spray Booth in Building 511, Tooele County
4. The Pillsbury Company, Gas Fired Boiler, Weber County
5. Hill Air Force Base, Paint Spray Booth & Oil/Water Separator, Weber County.
6. Nucor Steel, Increase Zinc Oxy-Sulfate Plant, Box Elder County
7. Hercules Aerospace Company, Exhaust Systems for Mazzk Flexible Machining Center, G & L Machining Center, and Niles Lathe Machining Center; Clearfield Plant, Davis County
8. James M. Lekas Mineral Exploration, Gilsonite Mine, Uintah County
9. Hercules Aerospace Company, Flexseal Boiler System at Clearfield Plant, Davis County
10. Department of the Army, Two Bead Blast Booths in Building 271, Davis County
11. Department of the Air Force, Aircraft Purge System Near Building 287, Davis 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 Thursday, December 15, 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 15, 1988

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

Re: Aircraft Purge System Near Building 287
Davis County, CDS A1

DATE: October 7, 1988 *DK*

NOTICE OF INTENT DATED: August 1, 1988

PLANT CONTACT: Jay Gupta

PHONE NUMBER: (801) 777-6742

PLANT LOCATION: Hill Air Force Base

Filing Fee _____ = \$ 100.00

Review Engineer - total hours 13 (\$22.08/hr) = \$ 287.04

Modeler - total hours _____ (\$18.07/hr) = \$.

Computer time - total hours _____ = \$.

Notice To Paper _____ = \$ 24.00

Travel - total miles _____ (\$ 0.23/mile) = \$.

Total = \$ 411.04

Approved by Engineering Unit Manager *DK 10/12/88*

Approved by Technical Evaluation Section Manager *M. Keller 10/25/88*

I. DESCRIPTION OF PROPOSAL

Hill Air Force Base has filed a notice of intent dated August 1, 1988 in which they are proposing to install an additional aircraft purge system at area 15090 adjacent to building 287.

HAFB presently operates two 6000 gallon purge fluid recycling units. These units are operating with Rotamist 650 oil mist collection devices. When aircraft are to receive certain repairs, they must be completely defueled. The fuel is first drained from the aircraft, and then a purging oil is pumped through the craft's fuel system to remove the remaining estimated 1% of the JP-4 fuel. Air is then blown through the purge oil to remove the JP-4, and the purge oil is recycled back to the fuel purge unit. For safety purposes, the flash point must be kept below 120°F.

Due to increased workload and larger aircraft programmed for depot maintenance, the new purge system is needed. The system includes a 28,000 gallon tank purge oil reclamation unit which will function in conjunction with the existing 12,000 gallon system.

Aircraft fuel tanks are defueled and bucket drained in area 15090. The tanks are then connected to the purge oil lines and are pumped full of purging oil. The oil is left in the aircraft for 10 minutes and is then pumped out and back into the purge tank. The flash point requirement is fulfilled by aerating the mixture and by maintaining the tank temperature between 100-120°F.

The total amount of JP-4 to be defueled is projected to reach 546,000 gallons per year. An estimated 1% of the fuel is picked up by the purge system. HAFB is proposing to pass them through two catalytic incineration units. One unit will handle the two existing 6000 gallon purge units, and the other unit will handle the new 28,000 gallon purge unit.

Installation will begin as soon as approval is granted.

II. EMISSION SUMMARY

The emissions from the JP-4 being bubbled off and from the incineration units will be as follows:

JP-4

VOC 0.66 tons/yr

Incineration

Particulate	0.04 tons/yr
PM ₁₀	0.02 tons/yr
SO ₂	0.00 tons/yr
NO _x	0.11 tons/yr
CO	0.01 tons/yr
VOC	0.00 tons/yr
Methane	0.00 tons/yr

These emissions represent a net emission increase.

III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

The proposed new purge unit was to have either a carbon adsorption unit or a refrigeration unit as a control device for VOC emissions. The refrigeration unit would have recovered JP-4 from all three purge units. The cost of the

refrigeration unit was considered to be too high.

The vendors for the carbon adsorption unit claimed that some of the polarized components in JP-4 would become so attached to the carbon bed that the beds would not last very long. This would make the operating cost of the unit too high. Both control systems are rated at a capture efficiency of 90%.

The vapor stream from the purge oil recycling unit will be suitable for catalytic incineration. The proposed incinerators (two) will have destruction efficiencies of 95-99%. BACT for the incinerators has been determined to be the following limitations:

Particulate	19.18 LB/1000 gallons burned
PM ₁₀	11.892
SO ₂	0.27
NO _x	55.0
CO	5.0
VOC	1.13
Methane	0.475
Opacity	10.0 %

The inclusion of the catalytic incinerator for the existing units will result in a decrease in VOC emissions. However, the combustion units will produce other emissions.

The low temperatures of the units will result in a lowered emission rate of NO_x.

The proposed units are identical. The units will be ORS Environmental Equipment model #1282001 incinerators. The catalyst is a platinum-coated element. The unit operates at temperatures which efficiently destroy organic contaminants. The unit has ceramic insulation which will reduce operating costs. The exhaust flow rate is at most 200 scfm. The operating temperature range is 400-900°F. A partial list of destructible compounds includes benzene and toluene.

It is recommended that the two catalytic incinerators be approved as BACT.

IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

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

1. Section 3.1.1, UACR - Notice of intent required for a modified source. This regulation applies.
2. Section 3.1.8, UACR - Application of best available control technology (BACT) required at all emission points. This regulation applies.
3. Section 3.1.9, UACR - Rules for relocation of temporary sources. This source is a permanent source. Therefore, this regulation does not apply.
4. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a nonattainment area. HAFB is listed in this regulation. The existing boilers are limited to 20% opacity. However, these new emission points are not listed. Therefore, this regulation does not apply to this notice of intent.
5. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a nonattainment area or

which impact a nonattainment area. This notice of intent does not represent a new major source or a major modification. Therefore, this regulation does not apply.

6. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. HAFB must submit an inventory every year, and this new emission point must be included in that inventory.
7. Section 3.6.5(b), UACR - 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 regulation does not apply.
8. Section 3.8, UACR - Stack height rule. This regulation limits the creditable height of stacks to that height determined to be good engineering practice. The formulas used to determine good engineering practice are found in 40 CFR 51.1. A de minimus height of 65 meters (213.2 feet) is allowed. HAFB has no stacks which exceed 65 meters in height. It is in compliance with this regulation.
9. Section 3.11, UACR - Visibility screening analysis requirements. This regulation requires all new major sources or major modifications to undergo a visibility screening analysis to determine visibility impact on any mandatory Class I area. This notice of intent does not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.
10. Section 4.1.2, UACR - 20% opacity limitation at all emission points unless a more stringent limitation is required by New Source Performance Standards (NSPS) or BACT or National Emission Standards for Hazardous Air Pollutants (NESHAPS). In this case, BACT has been determined to be a 10% opacity limitation.
11. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.
12. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This new emission point (the catalytic incinerators) burns JP-4. The limitation is 0.85 LB of sulfur per 10⁹ BTU heat input.
13. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.
14. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a nonattainment area for ozone. This process (catalytic incineration) is not covered in this regulation.
15. Section 5, UACR - Emergency episode requirements. This regulation applies.
16. New Source Performance Standards (NSPS) - There is no NSPS for this industrial process.
17. National Emission Standards for Hazardous Air Pollutants (NESHAPS)\- There is no NESHAPS for this industrial process.
18. National Ambient Air Quality Standards (NAAQS) - This source is

located in Davis County which is a nonattainment area for ozone. The Bureau of Air Quality guidelines do not call for this new emission point to be modeled for any pollutant. The bureau has found through experience that, because of the conservative predictions made by modeling, a source or emission point of this small size will not cause a new violation of the NAAQS.

V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which will operate in conjunction with the two existing 6000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.
2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the 28,000 gallon unit, and one incinerator shall be used on the two existing 6000 gallon units. Both incinerators shall be an ORS Environmental Equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.
3. Either one or both of the catalytic incinerators shall be stack tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:

- A. 19.18 LB/1000 gallons burned for particulate
- B. 11.89 LB/1000 gallons burned for PM_{10}

The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60, Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.
5. Opacity observations of 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. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.
6. The total amount of JP-4 to be defueled from aircraft shall not exceed 546,000 gallons per 12 month period without prior approval in accordance with Section 3.1, UACR. Compliance with the limitation shall be determined on a rolling monthly total. On the first day of each month a new 12-month total shall be calculated using the previous 12 months. Records of defueling shall be kept for all periods when the plant is in operation. Records of defueling 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. The total amount of JP-4 to be defueled from aircraft shall be determined by the use of flow meters on the purge lines. An operations log shall be kept in which shall be recorded daily the volume of JP-4 which is defueled. The log shall be kept in area 15090 and shall be made available to the Executive Secretary upon request.

7. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.
8. This approval order shall replace the approval orders dated October 19, 1977 and January 11, 1983.
9. All installations and facilities authorized by this approval order shall be adequately and properly maintained.
10. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

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

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

DER/sh
HAFPURG

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: CATALYTIC INCINERATOR VENT, BLDG. 297

FILE: HAFB297

COMPANY NAME: HILL AIR FORCE BASE

LOCATION: DAVIS COUNTY

DATE: 15-SEP-1998

TOTAL ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

ISP	0.039	TON/YR
PM-10	0.024	TON/YR
SOX	0.0005	TON/YR
NOX	0.11	TON/YR
CO	0.010	TON/YR
VOC non METHANE	0.66	TON/YR
VOC METHANE	0.0010	TON/YR

SOURCES INCLUDED:

VOC MATERIAL BALANCE
OIL COMBUSTION EMISSIONS

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: VOC MATERIAL BALANCE

COMPANY NAME: HILL AIR FORCE BASE

FILE: 4PMTLB

LOCATION: DAVIS COUNTY

DATE: 15-SEP-1988

TIME: 11:28:59 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

VOC, non-METH..... 0.66 TONS/YR

MATERIAL-BALANCE CALCULATIONS

JP-4 BUBBLED OFF: NOI INFO..... 4,040 GAL/YR

% JP-4 INCINERATED: BACT ESTIMATE 95%

VOC EXHAUSTED TO THE ATMOSPHERE: 202 GAL/YR

VOC EMISSIONS EST.: (GAL/YR)(LB/GAL)/(2000 LB/TON) 0.66 TON/YR

JP-4 DENSITY 6.5 LB/GAL

CONTROLLED ANNUAL EMISSION RATE ESTIMATE FOR:

SOURCE: OIL COMBUSTION EMISSIONS

FILE: AP1.3CR

COMPANY NAME: HILL AIR FORCE BASE

LOCATION: DAVIS COUNTY

DATE: 15-SEP-1998

TIME: 11:29:59 AM

ANNUAL EMISSIONS ESTIMATE IN TONS/YR =

(EMISSION FACTOR)(FUEL OIL CONSUMPTION)(1TON/2000LBS)

TSP.....	0.04 TONS/YR
PM10.....	0.02 TONS/YR
SOx.....	0.00 TONS/YR
NOx.....	0.11 TONS/YR
CO.....	0.01 TONS/YR
VOC: non-METH.....	0.00 TONS/YR
METHANE	0.00 TONS/YR

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1

SECTION 1 EXTERNAL COMBUSTION SOURCES

1.3 FUEL OIL COMBUSTION

TABLE 1.3-1 FUEL OIL COMBUSTION

COMMERCIAL BOILER (0.5 MMBTU/HR TO 10 MMBTU/HR) USING RESIDUAL OIL

EMISSION FACTOR IN POUNDS PER 1000 GALLONS OF FUEL OIL COMBUSTED

TSP	19.18 LB/1000GAL
% CONTROL FROM BACT DETERMINATION.....	0.0 %
PM10 = (% ≤ 10µm)(TSP).....	11.892 LB/1000GAL
% ≤ 10µm (FROM TABLE 1.3-5).....	62.0 % PASS
SOx= (144)(%S CONTENT OF FUEL)(100-% CONTROL)/(100)	0.27 LB/1000GAL
% SULFUR CONTENT OF FUEL: UACR 4.2 LIMIT.....	1.70 % WT.
% CONTROL FROM BACT DETERMINATION.....	99.9 %
NOX	55.0 LB/1000GAL
CO.....	5.0 LB/1000GAL
NON METHANE VOC	1.13 LB/1000GAL
METHANE	0.475 LB/1000GAL

FUEL OIL CONSUMPTION IN 1000 GALLONS / YR FROM :

(MMBTU/HR)(HR/YR)/(BTU/GAL)	4.0 1000GAL/YR
MMBTU/HR: (HR)((MMBTU/HR)/HP)/((BOILER EFF)/100)	0.126 MMBTU/HR
HP: NOI INFO.	2 HP
BOILER % EFF. : NOI INFO.	60 %
HR/YR: NOI INFO.	4,160 HR/YR
% SULFUR BY WT. ALLOWED: UACR 4.2=	
(LB/MMBTU ALLOWED)(OIL HEAT VALUE BTU/GAL)/	
(FUEL OIL DENSITY)(100)/(1000000).....	1.70 % (S)
LB/MMBTU= ALLOWED SULFUR BY UACR 4.2.....	0.85 LB/MMBTU
OIL HEAT VALUE FROM: AP42 PG. A-3.....	130000.0 BTU/GAL
FUEL OIL DENSITY	6.50 LB/GAL



STATE OF UTAH
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

Raw phone 777-761
BAQE-065-91

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

Bureau of Air Quality
1950 West North Temple
P O Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

January 31, 1991

Thayne Judd, Environmental Air Management

~~Thayne Judd, Colonel, USAF~~
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056-5149

Re: Eighteen Month Variance for Aircraft Purge System near Building 287 to use Rota-Mist while Repairs are Accomplished
Davis County CDS Al

Dear Colonel Judd:

The above-referenced request was presented to the Utah air Conservation Committee (UACC) on January 17, 1991. Under authority of Title 26, Chapter 13-15, Utah Code Annotated, as amended, the UACC approved the request to temporarily use alternate, less efficient, Rota-Mist emissions control equipment on the aircraft fuel purge system (approval order BAQE-653-90). It is understood, you will proceed with redesign and installation of the burned-out incinerators or equivalent technology as quickly as possible. The following conditions shall be applicable during the time of the variance:

1. Hill Air Force Base shall install the Rota-Mist emissions control equipment on the 28,000 gallon purge oil reclamation unit. The purge unit shall be located at area 15090 near Building #287.
2. The reclamation unit shall operate with the Rota-Mist emissions control equipment no longer than June 30, 1992. Effort needs to be extended to minimize the actual time the Rota-Mist emissions control equipment will be used before the incinerators or equivalent technology will be put into service.
3. The purge oil reclamation unit shall not be operated without the Rota-Mist emissions control equipment in place and operational.
4. The applicable conditions of the approval order BAQE-040-91, numbers 4, 5, 6 and 9, shall apply while the Rota-Mist emissions control equipment is in use.

Thayne Judd
January 31, 1991
Page 2

5. Emissions from the reclamation unit shall not exceed 2.6 ton per 12 month period and shall be included in the emissions inventory. Emissions shall be calculated using the data obtained from compliance with conditions in approval order BAQE-040-91 and an efficiency factor recommended by the manufacturer or as determined by testing if directed by the Executive Secretary.
6. A notice of intent shall be submitted for the new incinerators or alternate technology for the reclamation unit emissions in accordance with Section 3.1, Utah Air Conservation Regulations.

Sincerely,


F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee

FBC:LCB:jiw

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



State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

MEMORANDUM TO: F. Burnell Cordner, Executive Secretary

THROUGH: Montie Keller, Branch Manager *(MK) Agree*

THROUGH: Donald E. Robinson, P. E., Manager, Engineering Section *DRP*

FROM: Carl Broadhead, Environmental Health Engineer *1/2*

Subject: Hill Air Force Base Fuel Purge System Intermediate Control Variance

Date: January 14, 1991

Background

The fuel must be removed from an aircraft before moving it into a hangar for repairs due to safety and fire concerns. After draining the tanks, the mechanics pump a purge fluid through the fuel system and then regenerate the purge fluid. This is done by heating the used purge fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and is located near Building 236. The ROTAMIST collectors are about 70% effective. On January 13, 1989 HAFB was issued an approval order for a second purge system to be located near Building 287 which had two incinerators for emissions control which are both 98% effective. The new unit became the unit of primary use. In October 1990 the incinerators became overheated and caught fire, rendering both incinerators nonfunctional.

HAFB has determined that there was condensation of JP-4 fuel vapors into droplets plus carryover droplets in the vapors from the purge fluid regenerator that were going to the incinerators. The incinerators were designed for only vapors. The higher BTU value of the droplets drove the temperature beyond the maximum allowable temperature of the catalyst and destroyed the units.

Problem

The purge system emissions control system will have to be redesigned and replaced. It is estimated that the time required to have a new high efficiency emissions control system on line will be

18 months. Meanwhile, the fuel purge system is still required to be used because of fire and safety concerns, and the purge fluid needs to be regenerated. HAFB has available ROTAMIST oil mist collectors for immediate installation and use. The estimated difference in emissions between the incinerators and the mist collectors is approximately 2.6 ton per year of VOC.

Applicant Request

HAFB requests the Air Conservation Committee to grant a variance allowing the use of the less efficient ROTAMIST collectors only until the new high efficient incinerators can be replaced. The requested time period is not to exceed 18 months or no later than June 30, 1992.

Recommendation

I recommend that the request be granted, based on the following:

- A. The ROTAMIST collectors are the best control option which is available on short notice. No uncontrolled emissions will be released.
- B. The 18 month request is reasonable and a relatively short time to accomplish the work.
- C. The 2.6 tpy increase in VOC emissions is a small amount for that time period.
- D. The emissions will be controlled at the same level as the older unit near Building 236.

CARL
HAFB-VAR.REQ



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

RECEIVED

DEC 17 1990

AIR QUALITY

DEC 10 1990

Mr Mike Beheshti
Bureau of Air Quality
1950 West North Temple
PO Box 16690
Salt Lake City, UT 84116-0690

Ref: Request for Modification of 13 Jan 89 Approval Order for Aircraft Purge System Near Bldg 287 (BAQE-653-88)

Dear Mr Beheshti:

Per 10 Dec 90 telephone conversation between Jay Gupta and you, we submit this request for modification of the referenced approval order.

On 10 Oct 90, we reported that one of the JP-4 purge incinerators caught fire rendering both incinerators nonfunctional. Since then, we have not operated our purge facility near Bldg 287. We wish to operate this facility using Rotamist oil mist collectors, until we can put the incinerators back in operation. We anticipate 15-18 months for the redesign and installation of new incinerators. Actual performance data on Rotamist collectors is not available. Estimating, at best, 70% collection efficiency, additional JP-4 vapors emissions to the atmosphere will be 5,250 pounds per year. Manufacturer's brochure on Rotamist collector is attached.

We would also like to operate our purge facility in Bldg 236 under an Approval Order, issued 11 Jan 83. However, condition 8 of the referenced approval order states, "This approval order shall replace the Approval Orders, dated 19 Oct 77 and 11 Jan 83". 11 Jan 83 approval order was for the purge facility in Bldg 236. We did not intend that this approval order be replaced when we filed NOI for the purge facility near Bldg 287.

We request two modifications to the referenced approval order as follows:

1. Change condition 8 to read, "This approval order shall replace the approval order dated October 19, 1977."

2. Change condition 2 or add a new condition to read, "For a period not to exceed 18 months from the date of this modified approval order, emissions from all three purge oil units near Bldg 287, shall be controlled using Rotamist oil mist collectors. At the end of this period, emissions shall be controlled by catalytic incinerators."

If you have any questions or need additional information, please feel free to contact Jay Gupta at 777-6917.

Sincerely

James R. Sanderman

1 Atch
Manufacturer's Brochure

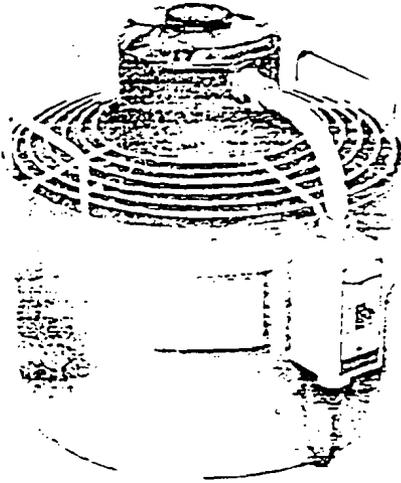
cc: JAM
TIVV

J. R. Sanderman
Director

ROTAMIST COLLECTORS

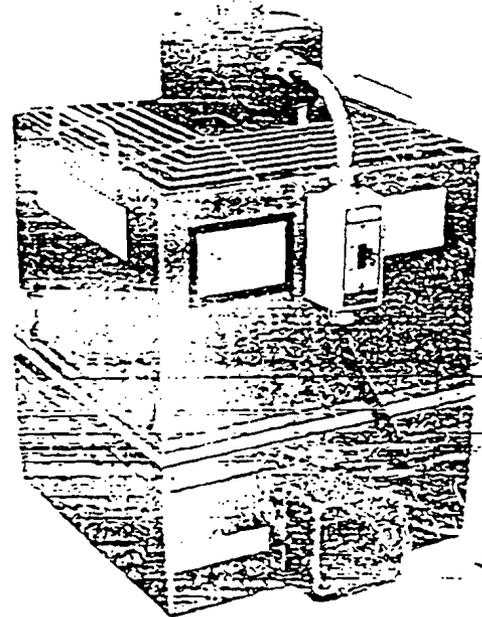
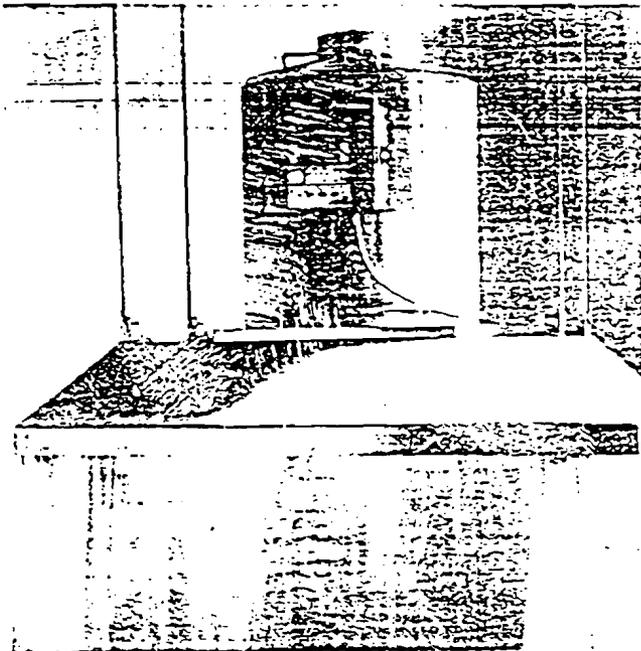
FOR AUTOMATIC SCREW MACHINES AND OTHER MACHINE TOOLS

MODEL 650



MODEL 450

Often used on Browns and Sh. Dies, Index Wrenches, Grinders, power drills and other small machine tools. This model handles 475 cfm with power input of only 250 watts and operating weight of 25 lbs. shown mounted on unit adapter RMS 104.



FIRE SHOWER

← HOODS AND ADAPTERS

ROTAMIST offers an extensive line of adapters and fittings to simplify installation of mist control on automatic screw machines and other machine tools. Hoods and curtains are available for general purpose use with machines not equipped with enclosures. Shown on left, is Model 604 mounted on suspended 24 x 36 hood. Filtration element may be cleaned in place from below, entire unit is readily removable. Hood and unit assembly may also be floor supported with standard pedestal and swivel adapter. Suspended arrangement also applicable to Model 750.

Two models available for Davenport Automatics, 450 and 5000, for top mounting on the machine. Refer to catalog for details on this line of high efficiency and compact mist collectors that has won acclaim for reliability and low cost of maintenance.

ake Eric
TECHNOLOGY, INC.

ROTAMIST® Division
210 FRENCH ROAD • GARDENVILLE INDUSTRIAL PARK
BUFFALO, NEW YORK 14227
IAC 716) PHONE 658-5222

REPRESENTED BY

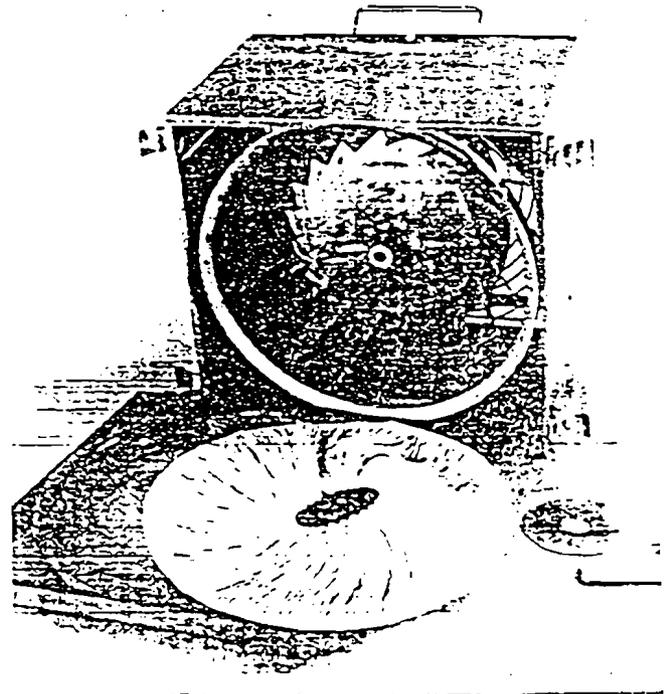
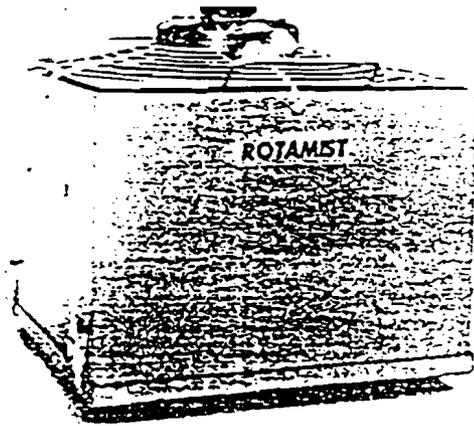
Manufactured and sold under U.S. Patents 3538657 or 3544084 and Canadian Patent 811703 and Patents Pending.

Printed in U.S.A. Form A15

Manufacturer reserves the right to change product specifications without notice.

ROTAMIST®

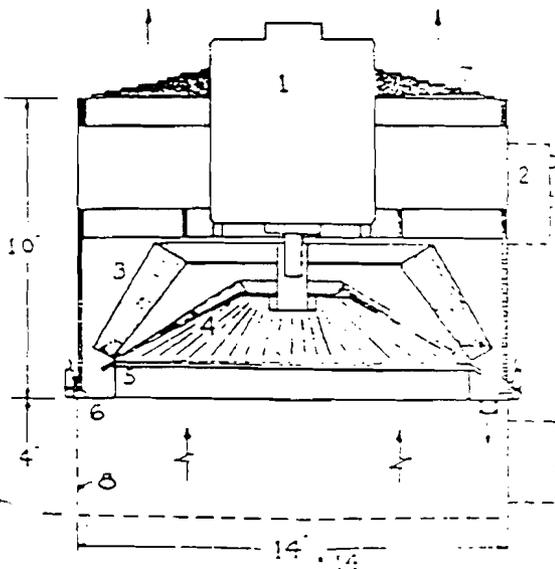
650
675 CFM



The permanent collector element is self-draining, and can be easily cleaned with a jet spray of solvent while operating. Oil is separated from the air stream and deposits in the removable drain pan, from which it returns to the machine for reuse. Drain pan removable by opening spring-latches, affords complete access to inside of unit. Removal of shaft collar allows collector element to slip out for cleaning of the machine with water soluble detergent if desired. Companion element cage and centrifugal type fan wheel with backward inclined blades is riveted and welded and permanently balanced. Handles provided on top of unit shell.

SPECIFICATIONS

1. 1/2 H.P. 1725 Rpm enclosed type Ball Bearing G.E. Motor, single or 3 phase, standard voltages.
2. Single phase models supplied with manual overload relay starter and pilot light mounted on shell, with 6 ft. service cord and plug.
3. Element cage and fan with backward inclined blades for high performance at low noise level, complete assembly balanced as a unit.
4. Permanent Nylon collector element, cleanable and easily removable.
5. Highly efficient 675 SCFM performance.
6. Removable drain pan assembly attached with spring latches provides complete access to interior of unit.
7. Safety discharge grille and lifting handles.
8. Optional Fire Damper with electrical interlock to shut down collector if temperature exceeds 160°. May also be provided for shut down area around unit.





State of Utah
DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

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

Bureau of Air Quality
1950 West North Temple
P.O. Box 16690
Salt Lake City, Utah 84116-0690
(801) 536-4000
(801) 536-4099 FAX

MEMORANDUM TO: F. Burnell Cordner, Executive Secretary

THROUGH: Montie Keller, Branch Manager MK

THROUGH: Donald E. Robinson, P. E., Manager,
Engineering Section

FROM: Carl Broadhead, Environmental Health Engineer

Subject: Hill Air Force Base Fuel Purge System
Intermediate Control Variance

Date: January 14, 1991

Background

The fuel must be removed from an aircraft before moving it into a hangar for repairs due to safety and fire concerns. After draining the tanks, the mechanics pump a purge fluid through the fuel system and then regenerate the purge fluid. This is done by heating the used purge fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and is located near Building 236. The ROTAMIST collectors are about 70% effective. On January 13, 1989 HAFB was issued an approval order for a second purge system to be located near Building 287 which had two incinerators for emissions control which are both 98% effective. The new unit became the unit of primary use. In October 1990 the incinerators became overheated and caught fire, rendering both incinerators nonfunctional.

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18 months. Meanwhile, the fuel purge system is still required to be used because of fire and safety concerns, and the purge fluid needs to be regenerated. HAFB has available ROTAMIST oil mist collectors for immediate installation and use. The estimated difference in emissions between the incinerators and the mist collectors is approximately 2.6 ton per year of VOC.

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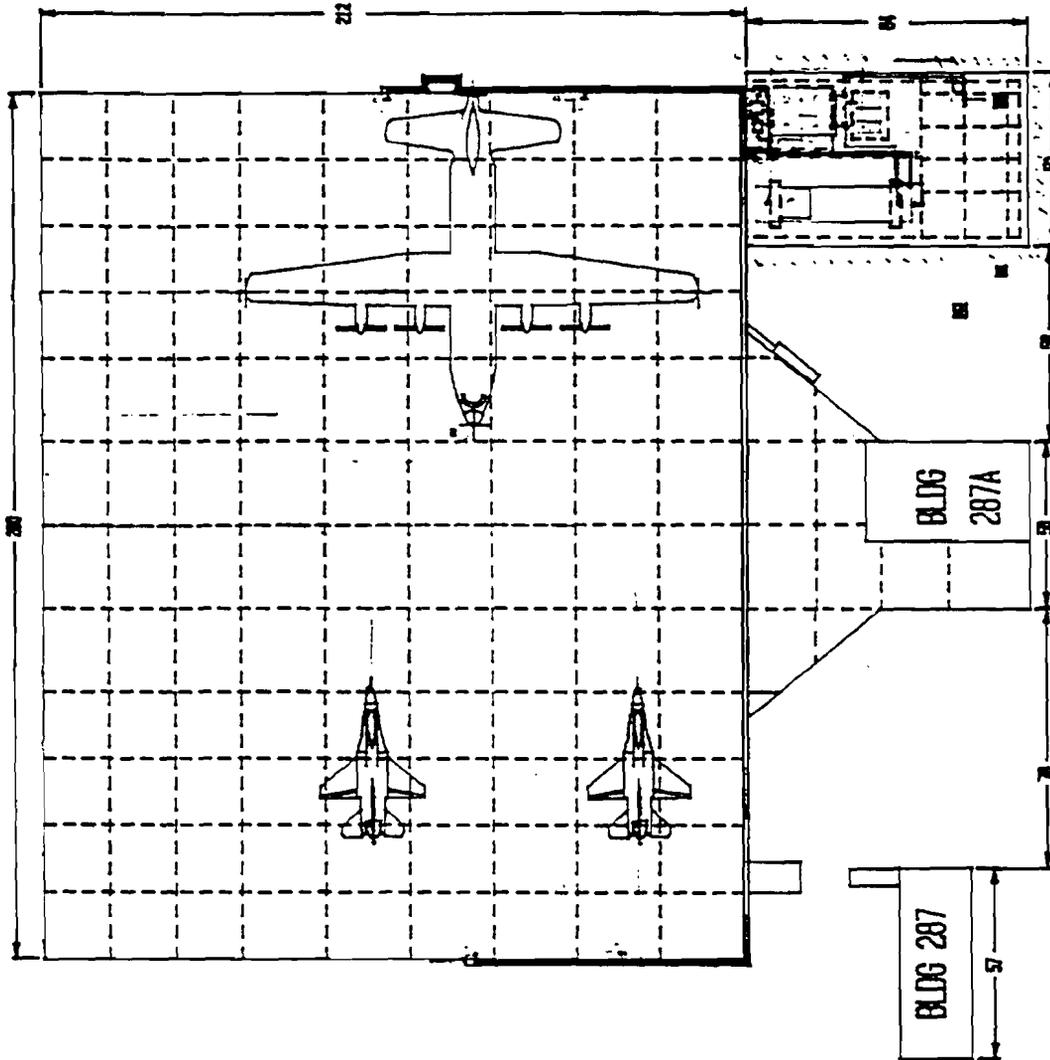
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CARL
HAFB-VAR.REQ

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DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

BAQE-020-1991

Bureau of Air Quality
1950 West North Temple
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Norman H. Bangerter
Governor
Suzanne Dandoy, M.D., M.P.H.
Executive Director
Kenneth L. Alkema
Director

MEMORANDUM

MEMORANDUM TO : Donald E. Robinson, Manager, Engineering Section, BAQ *JP*
FROM: Carl Broadhead, Environmental Health Engineer
SUBJECT: Hill Air Force Base, Aircraft Fuel Purge System
DATE: January 10, 1991

=====
The fuel must be removed from an aircraft before moving it into a hanger for repairs for safety and fire concerns. After draining the tanks, they pump a purge fluid through the fuel system and then recover the purge fluid. This is done by heating the used fluid and blowing air through it. The JP-4 is driven off and either condensed or incinerated.

The old system approved in 1983 (AO dated January 11, 1983) used a ROTAMIST emissions control unit and was located near Building 236. On January 13, 1989 Hill Air force Base was issued an AO for a new purge system located near Building 287 which had incinerator controls. The new unit became the unit of primary use. The wording in the second notice of intent appeared to indicate it to be a replacement of the first unit so the old AO was rescinded in Condition #8 of the AO # BAQE-653-88.

With the new unit at Building 287 on line the purge system at Building 236 has not been used extensively. During the public comment period and until recently, the deletion of the AO was not detected. In a letter dated December 13, 1990, Hill AFB has requested that the approval order for the purge unit at Building 236 be reinstated as they still need to use it on occasion.

It is recommended that the request be granted and a modified AO is attached.

Note: The modified AO (1/15/91) deletes the exclusion of the Rotamist system authorized by AO 1/11/83 by deleting the AO 1/13/89 (condition 7) that deleted the Rotamist system! Now AO 1/11/83 is back in place until the 18 month variance granted by the ACC on Jan 17, 1991 expires when the burned out incinerators will be back on-line or equivalent technology is installed. (MP)

4.2.4-641



DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH

BAQE-021-91

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

Bureau of Air Quality
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(801) 536-4000
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January 15, 1991

Thayne Judd, Colonel, USAF
Department of the Air Force
HQ Ogden Air Logistics Center (AFLC)
HAFB, Utah 84056-5149

Re: Modified Approval Order for Aircraft Purge System Near Building 287
Davis County CDS Al

Dear Colonel Judd:

The above-referenced project has been reevaluated as per your request in the letter dated December 13, 1990. It has been determined that the approval order for the purge system near Building #236 had been rescinded due to a misinterpretation of the submitted information for the new purge system that was approved to be located near Building #287 in approval order #BAQE-653-88. The conditions of this approval order reflect any changes to the previous conditions which resulted from the evaluation. This air quality approval order and authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. Hill Air Force Base shall install the new 28,000 gallon purge oil reclamation unit, which shall operate in conjunction with the two existing 6,000 gallon units. The new unit shall be located at area 15090 near Building 287. The purge oil unit shall be installed according to the information submitted in the notice of intent dated August 1, 1988.
2. Emissions from all three purge oil units shall be controlled by catalytic incinerators. One incinerator shall be used on the two existing 6,000 gallon units. Both incinerators shall be an ORS environmental equipment model 1282001 or equivalent. Equivalency shall be determined by the Executive Secretary. The incinerator shall operate whenever the corresponding purge unit is operating.
3. Either one or both of the catalytic incinerators shall be stacked tested if directed by the Executive Secretary. The emission rate/concentration shall not exceed any of the following values:
 - A. 19.18 lb per 1,000 gallons of purge oil burned for particulate
 - B. 11.89 lb per 1,000 gallons of purge oil burned for PM₁₀

The test method used shall be 40 CFR 60, Appendix A, Method 5. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 30 days prior to the test between the owner/operator, the tester, and the Executive Secretary. The exhaust stacks need not be designed to accommodate testing. However, if the Executive Secretary determines a stack test is necessary, whatever modifications needed to meet the requirements of 40 CFR 60,

4.2.4-642

Thayne Judd
January 15, 1991
Page 2

Appendix A, Method 5 and the requirements of Occupational Safety and Health Administration (OSHA) for providing approvable access to the test site shall be made.

4. Visible emissions from either incinerator shall not exceed 10% opacity. Opacity observations of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9. Opacity observations of intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a 60-minute period shall not apply. The averaging time shall be the actual time interval over which visible emissions are observed. Any time interval with no visible emissions shall not be included.
5. The volume of purge fluid which is replenished to the storage tanks shall be measured every month. This volume is assumed to be volume of JP-4 which has been sent to the catalytic incinerators. The volume shall be recorded in an operations log. The log shall be kept in area 15090 and shall be made available to the Executive Secretary or his representative upon request.
6. The sulfur content of any JP-4 burned shall not exceed 0.85 pounds of sulfur per million BTU heat input as determined by ASTM Method D-4239-83. The sulfur content shall be tested if directed by the Executive Secretary.
7. This approval order shall replace the approval orders dated October 19, 1977 and January 13, 1989.
8. All installations and facilities authorized by this approval order shall be adequately and properly maintained.
9. The Executive Secretary shall be notified in writing upon start-up of the installation, as an initial compliance inspection is required.

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

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

Sincerely,


F. Burnell Cordner, Executive Secretary
Utah Air Conservation Committee

FBC:LCB:jiw

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

4.2.4-643