State of Utah
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

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

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

DAQE-167-92

February 19, 1992

James R. Van Orman
Director, Environmental Management Office
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

Re: Approval Order for JP-4 Tank Throughput Limitations

Dear Mr. Van Orman:

This amended AO is being issued to update and combine the AOs dated January 3, 1989 and July 29, 1991. The JP-4 tank throughput limitations are combined to give one throughput limit for all four tanks. The re-worded throughput limitations give more flexibility and do not allow an increase in total throughput.

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. This air quality AO authorizes the project with the following conditions and failure to comply with any of the conditions may constitute a violation of this order:

1. This AO shall replace the AO's issued to Hill Air Force Base on July 29, 1991 and January 3, 1989.

2. The approved facilities shall consist of the following equipment:

   A. Two steam generators, a total heat input rate of 120.3 MMBTU/hr with natural gas as primary fuel with a standby diesel fuel (116.5 MMBTU/hr) at building 260;

   B. Dual seals for JP-4 storage tanks 10873, 10885, 10861 and 10862;

   C. Two mobile waste hydraulic fluid reclamation units based at Building 514;

   D. Paint spray booth and two lab hoods at the Building 5N;

   E. Lab Hoods



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F. Nine Turboclean chambers, or equivalent, for the paint spray hangar at Building 220 - In addition, water reducible primer or low VOC primer shall be substituted for solvent base primer, and a high volume low pressure (HVLP) type spray gun shall replace the conventional paint spray gun.

Equivalency shall be determined by the Executive Secretary.

3. Visible emissions from any point or fugitive emission source associated with the emission points listed in this AO shall not exceed 10% opacity. Opacity observation of emissions from stationary sources shall be conducted in accordance with 40 CFR 60, Appendix A, Method 9.

4. The following operating limits shall not be exceeded without prior approval in accordance with R446-1-3.1, UAC:

A. Steam generators, Building 260

1) $465.7 \times 10^9$ BTU from natural gas per 12-month period
2) $108.3 \times 10^6$ BTU from natural gas per hour
3) $50.1 \times 10^9$ BTU from diesel fuel per 12-month period
4) $116.5 \times 10^6$ BTU from diesel fuel per hour
5) 4,300 hours per 12-month period

B. Storage tanks 10873, 10885, 10861 and 10862 - total combined JP-4 throughput for all four tanks shall not exceed 1,260,000 barrels per 12-month period and shall be determined by summing individual tank throughputs

F. Hydraulic fluid waste reclamation units, Building 514

1) 30,000 gallons of total fluid per 12-month period
2) 8 hours per day
3) 2,080 hours 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 usage, operation, and production shall be kept for all periods when the plant/equipment is in operation. Records of usage, operation, and 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.

Fuel consumption for steam generators shall be determined by examination of fuel meter records. Storage tank throughputs shall be determined by examination of tank throughput records, which shall be kept on a daily basis. Hydraulic fluid waste reclamation unit throughput shall be determined by examination of usage records, which shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

5. The owner/operator shall comply with R446-1-4.9.1(c), UAC for controlling emissions form storage tanks 10861, 10862, 10873 and 10885.

6. In addition to the requirements of this AO, all provisions of 40 CFR 60, NSPS Subparts A and Ka apply to storage tanks.

7. The condenser at the final point of each of the hydraulic fluid waste reclamation units shall operate during the operation of hydraulic fluid waste reclamation units. If the condenser is out of service, the hydraulic fluid waste reclamation units shall not be used until the condenser has been returned to service. The hydraulic waste reclamation equipment shall be operated for maximum solvent recovery at all times.

   The condenser shall be capable of recovering no less than 75% of solvents from the fluid. Records of solvent recovery shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation.

   Demonstration of the 75% recovery shall be made by monitoring the solvent input and solvent recovery over a specified period of time acceptable to the Executive Secretary and calculating the percent recovery. A compliance demonstration shall be performed if directed by the Executive Secretary. Records of the amount of solvent recovered shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation. The record shall include the following items:

   A. Date;
   B. Unit usage (start and end times);
   C. Total hydraulic fluid waste processed;
   D. Amount solvent recovered.

8. The owner/operator shall use only natural gas as a primary fuel and #2 diesel fuel as a backup fuel in the steam generators. If any other fuel is to be used, an AO shall be required in accordance with R446-1-3.1, UAC.

   Natural gas consumption shall not exceed $465.7 \times 10^6$ scf per 12-month period, and diesel fuel consumption shall not exceed 5% of the annual fuel used in the boilers without prior approval in accordance with R446-1-3.1, UAC. Compliance with the 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 fuel consumption shall be kept for all periods when the plant is in operation. Records of fuel 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. Fuel consumption shall be determined by examination of fuel meter records and fuel bills.

9. The sulfur content of any diesel fuel burned shall not exceed 0.50% by weight as determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

10. The paint spray booth at Building 5N 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 into the atmosphere. Equivalency shall be determined by the Executive Secretary.

11. The paint spray hangar at Building 220 shall be equipped with a water wall (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. Emissions of VOC from the paint spray booth and the two lab hoods in Building 5N shall not exceed a total of 2.37 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 building emissions of VOC shall be determined by maintaining a record of paints, thinners and cleaning agents 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 2.37 tons per 12-month period as specified.

13. Emissions of VOC from the paint spray hangar in Building 220 shall not exceed 17.2 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 building emissions of VOC 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 17.2 tons per 12-month period as specified.

14. The owner/operator shall operate a solvent cleaning operation under the lab hoods according to the following:

    A. Covers shall remain closed at all times except during actual loading, unloading, or transfer operations. The covers shall be designed so that they can easily be operated with one hand;

    B. Parts shall be completely drained in the internal draining rack until all dripping ceases;

    C. Waste or used solvent shall be stored in covered containers and disposed by a method which prevents its emission into the atmosphere in accordance with R446-1-4.9.4.A(3);

    D. Tanks, containers, and all associated equipment shall be maintained in good operating condition and leaks shall be repaired immediately;

    E. Written procedures for the operation and maintenance of the solvent cleaning equipment shall be posted in an accessible and apparent location near the equipment;

    F. The requirements of R446-1-4.9.4.A, UAC shall apply to this operation as applicable.

15. 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.

16. 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.

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

Sincerely,

F. Burnell Cordner

F. Burnell Cordner, Executive Secretary
Utah Air Quality Board

FBC:DC:cl

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

Montie

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Air Quality

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

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

Re: Approval Orders # DAQE-540-91, 29 Jul 91, and # BAQE-757-88, 3 Jan 89, Vapor Seals for JP-4 Storage Tanks

Dear Mr Cordner

In reference to the above approval orders, we request the following changes:

a. Combine the above two approval orders and delete any reference to a refrigeration unit on the vapor degreaser (BAQE-757-88) in Bldg 507 since this process has been discontinued since spring 90. Please delete this source.

b. Combine throughputs of JP-4 storage tanks 10861, 10862, 10873, and 10885 to give an annual throughput of 1.26 x $10^6$ barrels. Currently, these tanks have individual throughput limits. With the outage of Chevron's JP-4 storage tanks, it's extremely difficult to receive a large inventory without transferring fuel between the tanks. This leads to throughput exceedence on an individual tank basis. However, the combined throughput for the overall tank farm is under the combined throughput limits. Our records (Atch 1) show that due to the above, throughput for the JP-4 tank 10885 was exceeded by 25,788 barrels on 1 Dec 91. For the tank farm as a whole, we were under the limits by 286,610 barrels. Similarly, on 1 Jan 92, the throughput for tank 10885 was exceeded by 6,717 barrels and overall we were under the limits by 267,387 barrels. Allowing us to combine the throughput will give us more freedom in fuel management while staying under the overall limit.

We request your concurrence or comments in this matter. If you have any questions, please feel free to contact Jay Gupta at 777-4618.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director of Environmental Management

1 Atch
Throughput Volumes for
1 Dec 90 - 30 Nov 91 &
1 Jan 91 - 31 Dec 91

JULIAN DATE

BEGINNING QUANTITY

ENDING QUANTITY

PET VOLUMES BY TANK FOR 1 DEC 90 - 31 NOV 91

| VOLUMES | SOURCE | STARTDATE | STOPDATE | [illegible] | [illegible] | [illegible] (GALLONS) |
|---|---|---|---|---|---|---|
| TK 10861 | | | | | | |
| 861 | 885 | 0350 | 20 DEC | [illegible] | [illegible] | [illegible] |
| 861 | 862 | 1127 | 08 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | 873 | 1128 | 09 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | 885 | 1143 | 24 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | 885 | 1161 | 11 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | 885 | 1164 | 14 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | 885 | 1165 | 17 [illegible] | [illegible] | [illegible] | [illegible] |
| 861 | [illegible] | 1255 | 12 SEP | [illegible] | [illegible] | [illegible] |
| 861 | | | | | | [illegible] |
| TANK 10[illegible] | | | | | | |
| 862 | 861 | 0352 | 19 DEC | [illegible] | [illegible] | [illegible] |
| 862 | 885 | 0357 | 20 DEC | [illegible] | [illegible] | [illegible] |
| 862 | 885 | 0354 | 21 [illegible] | [illegible] | [illegible] | [illegible] |
| 862 | 885 | 1060 | 04 [illegible] | [illegible] | [illegible] | [illegible] |
| 862 | 861 | 1068 | 11 [illegible] | [illegible] | [illegible] | [illegible] |
| 862 | 885 | 1102 | 15 [illegible] | [illegible] | [illegible] | [illegible] |
| 862 | 885 | 1116 | 29 [illegible] | 310517 | 438220 | 127703 |
| 862 | 885 | 1123 | 06 MAY | 331215 | 534656 | 203441 |
| 862 | 885 | 1144 | 28 MAY | 0 | 255710 | 255710 |
| 862 | 885 | 1150 | 31 MAY | 255710 | 371617 | 115907 |
| 862 | 885 | 1151 | 03 JUN | 372588 | 1047433 | 174535 |
| 862 | 885 | 1151 | 03 JUN | 371617 | 533165 | 161548 |
| 862 | 885 | 1162 | 12 JUN | 427617 | 469699 | 42082 |
| 862 | 885 | 1164 | 14 JUN | 469699 | 524876 | 55179 |
| 862 | 885 | 1165 | 17 JUN | 524878 | 533496 | 8618 |
| 862 | 885 | 1179 | 01 JUL | 138037 | 536479 | 398442 |
| 862 | 885 | 1198 | 18 JUL | 371440 | 501345 | [illegible] |
| 862 | 885 | 1199 | 19 [illegible] | [illegible] | [illegible] | [illegible] |
| 862 | [illegible] | 1254 | 12 SEP | [illegible] | 438352 | [illegible] |
| 862 | [illegible] | 1255 | 12 SEP | 438352 | 538137 | [illegible] |
| 862 | | | | | | [illegible] |
| TANK 10873 | | | | | | |
| 873 | [illegible] | 1749 | 16 DEC | 126290 | [illegible] | [illegible] |
| 873 | 885 | 0355 | 26 DEC | [illegible] | 1051070 | [illegible] |
| 873 | 885 | 1003 | 04 JAN | [illegible] | 968403 | [illegible] |
| 873 | 885 | 1004 | 07 JAN | 968403 | 1000497 | [illegible] |
| 873 | 885 | 1015 | 16 JAN | [illegible] | 749429 | [illegible] |
| 873 | 885 | 1016 | 17 JAN | 749429 | 996850 | [illegible] |
| 873 | 885 | 1024 | 25 JAN | 589958 | 1033807 | [illegible] |
| 873 | 885 | 1030 | 01 FEB | 536720 | 815776 | [illegible] |
| 873 | 885 | 1035 | 04 FEB | 815776 | [illegible] | [illegible] |
| 873 | 885 | 1042 | 12 MAR | [illegible] | 712965 | [illegible] |
| 873 | 885 | 1044 | 13 MAR | 712965 | 1051313 | 338348 |
| 873 | [illegible] | 1046 | 16 FEB | 117553 | 963540 | 845987 |
| 873 | 885 | 1051 | 20 FEB | 952115 | 1051070 | 98955 |
| 873 | 885 | 1051 | 20 MAR | 799636 | 931744 | 132108 |

4.2.4-750

ATCH-1.

PUT VOLUMES BY TANK FOR 1 DEC 90 - 30 NOV 91

| NUMBER | SOURCE | STARTDATE | STOPDATE | BOTY... | EOTY... | THRUPUT. |
|---|---|---|---|---|---|---|
| 873 | 885 | 1052 | 22 MAR | 931944 | 1051556 | 119612 |
| 873 | PPL | 1098 | 08 APR | 531117 | 736369 | 205162 |
| 873 | 885 | 1102 | 15 APR | 737327 | 1054230 | 266403 |
| 873 | 885 | 1122 | 03 MAY | 990560 | 1055203 | 74643 |
| 873 | 885 | 1134 | 15 MAY | 795115 | 1049611 | 254496 |
| 873 | 885 | 1136 | 17 MAY | 1049611 | 1055203 | 5592 |
| 873 | 885 | 1142 | 23 MAY | 536487 | 800951 | 264464 |
| 873 | 885 | 1143 | 24 MAY | 800951 | 990285 | 189334 |
| 873 | 885 | 1144 | 28 MAY | 990285 | 1039399 | 49114 |
| 873 | 885 | 1168 | 18 JUN | 972293 | 1021164 | 48871 |
| 873 | 885 | 1172 | 24 JUN | 1026755 | 1051799 | 25043 |
| 873 | 885 | 1179 | 01 JUL | 937047 | 1045964 | 108917 |
| 873 | 885 | 1199 | 09 JUL | 995351 | 1046693 | 51302 |
| 873 | PPL | 1252 | 09 SEP | 93322 | 943366 | 850033 |
| 873 | PPL | 1259 | 17 SEP | 98373 | 943123 | 844744 |
| 873 | PPL | 1275 | 02 OCT | 31794 | 414454 | 382660 |
| 873 | PPL | 1276 | 04 OCT | | 0 | 0 |
| 873 | PPL | 1323 | 20 NOV | 331616 | 313954 | 32338 |
| 873 | PPL | 1324 | 21 NOV | 313954 | 457269 | 143315 |
| --- | | | | | | --- |
| VTD | | | | | | 8261938 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 885 | PPL | 0340 | 07 DEC | 1325579 | 2124035 | 798456 | |
| 885 | PPL | 0357 | 24 DEC | 1157154 | 1997342 | 840188 | 27[illegible] |
| 885 | PPL | 1006 | 07 JAN | 1342488 | 1762575 | 420087 | |
| 885 | PPL | 1025 | 26 JAN | 1616853 | 2240149 | 623296 | |
| 885 | PPL | 1036 | 06 FEB | 1246919 | 2045568 | 798949 | |
| 885 | PPL | 1057 | 27 FEB | 587126 | 1845247 | 1258121 | |
| 885 | PPL | 1062 | 04 MAR | 281577 | 1159538 | 877961 | |
| 885 | PPL | 1077 | 14 MAR | 1257711 | 2097736 | 840126 | |
| 885 | PPL | 1087 | 29 MAR | 1158742 | 2178115 | 1019373 | |
| 885 | PPL | 1107 | 18 APR | 1371116 | 2173874 | 802255 | |
| 885 | PPL | 1117 | 28 APR | 1075196 | 2177055 | 1101949 | |
| 885 | PPL | 1126 | 06 MAY | 1375127 | 2172813 | 797486 | |
| 885 | PPL | 1137 | 18 MAY | 1397577 | 2237498 | 839905 | |
| 885 | PPL | 1146 | 27 MAY | 966590 | 2019070 | 1052480 | |
| 885 | PPL | 1157 | 07 JUN | 773247 | 2294464 | 1520221 | |
| 885 | PPL | 1166 | 16 JUN | 1114781 | 2233431 | 1118650 | |
| 885 | PPL | 1176 | 26 JUN | 873472 | 2206216 | 1332744 | |
| 885 | PPL | 1185 | 04 JUL | 1110926 | 2059556 | 948630 | |
| 885 | PPL | 1196 | 16 JUL | 915244 | 2175464 | 1260221 | |
| 885 | PPL | 1207 | 27 JUL | 1147087 | 2210988 | 1063891 | |
| 885 | PPL | 1223 | 12 AUG | 860192 | 1718058 | 857867 | |
| 885 | PPL | 1229 | 18 AUG | 910529 | 1581716 | 1671187 | |
| 885 | PPL | 1238 | 27 AUG | 445308 | 1725479 | 1280171 | |
| 885 | PPL | 1259 | 27 SEP | 241308 | 1730386 | 1488078 | |
| 885 | PPL | 1278 | 06 OCT | 827670 | 1836648 | 1010978 | |
| 885 | PPL | 1288 | 17 OCT | 108577 | 947497 | 838924 | |

TANK 10885

UT VOLUMES BY TANK FOR 1 DEC 90 - 30 NOV 91

| BER | SOURCE | STARTDATE | STOPDATE | BQTY... | EQTY... | THRUPUT. |
|---|---|---|---|---|---|---|
| 885 | PPL | 1312 | 09 NOV | 105175 | 942639 | 837464 |
| 885 | PPL | 1320 | 16 NOV | 282405 | 1121688 | 839283 |
| 885 | PPL | 1327 | 24 NOV | 343870 | 1311920 | 1467050 |
| 885 | | | | | | 2880310 gal |

LIMIT 27,720,000 GALLONS.

ALL FOUR TANKS. Σ 40,823,573

" " " Σ .97 x $10^6$ BARRELS

1.8 1.6

660,000

27,720,000

PUT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

| UMBER | SOURCE | STARTDATE | STOPDATE | BOTY... | EOTY .. | THRUPUT. |
|---|---|---|---|---|---|---|
| 861 | 862 | 1127 | 08 MAY | 0 | 277574 | 277574 |
| 861 | 873 | 1129 | 08 MAY | [illegible] | [illegible] | [illegible] |
| 861 | 885 | 1143 | 24 MAY | 309580 | 351010 | 1408 |
| 861 | 885 | 1161 | 11 JUN | 67334 | 219299 | 151965 |
| 861 | 885 | 1164 | 14 JUN | 219299 | 352346 | 133047 |
| 861 | 885 | 1165 | 17 JUN | 352346 | 355664 | 3312 |
| 861 | PPL | 1255 | 12 SEP | 329559 | 358762 | 29204 |
| 861 | 885 | 1349 | 1349 | 82473 | 317614 | 235141 |
| --- | | | | | | --- |
| 861 | | | | | | 9019239 |
| 861 | | | | | | BT |
| 862 | 885 | 1060 | 04 MAR | 264651 | 539297 | 274646 |
| 862 | 861 | 1062 | 10 APR | 444135 | 455782 | 11647 |
| 862 | 885 | 1102 | 15 APR | 455782 | 532468 | 32686 |
| 862 | 885 | 1116 | 29 APR | 710517 | 838220 | 127703 |
| 862 | 885 | 1127 | 05 MAY | 331215 | 534656 | 213441 |
| 862 | 885 | 1144 | 28 MAY | 0 | 255710 | 255710 |
| 862 | 885 | 1150 | 31 MAY | 255710 | 371617 | 115907 |
| 862 | 885 | 1151 | 03 JUN | 372868 | 1047433 | 174565 |
| 862 | 885 | 1151 | 03 JUN | 371617 | 533165 | 161548 |
| 862 | 885 | 1162 | 12 JUN | 427617 | 469699 | 42082 |
| 862 | 885 | 1164 | 14 JUN | 469699 | 524878 | 55179 |
| 862 | 885 | 1165 | 17 JUN | 524878 | 533496 | 8618 |
| 862 | 885 | 1179 | 01 JUL | 138037 | 536479 | 398442 |
| 862 | 885 | 1198 | 18 JUL | 271440 | 501345 | 229905 |
| 862 | 885 | 1199 | 19 JUL | 501345 | 539297 | 37952 |
| 862 | PPL | 1254 | 12 SEP | 52374 | 438552 | 386178 |
| 862 | PPL | 1255 | 12 SEP | 438552 | 538137 | 99585 |
| 862 | 885 | 1349 | 1349 | 61606 | 299092 | 237486 |
| 862 | 881 | 1358 | 001358 | 84102 | 505483 | 421381 |
| --- | | | | | | --- |
| 862 | | | | | | 3324586 |
| 862 | | | | | | 18T |
| 873 | 885 | 1003 | 04 JAN | 649030 | 968403 | 319373 |
| 873 | 885 | 1004 | 07 JAN | 968403 | 1000497 | 32094 |
| 873 | 885 | 1015 | 16 JAN | 634202 | 749429 | 115227 |
| 873 | 885 | 1016 | 17 JAN | 749429 | 996850 | 247421 |
| 873 | 885 | 1024 | 25 JAN | 589953 | 1033807 | 443849 |
| 873 | 885 | 1032 | 01 FEB | 536730 | 815776 | 279046 |
| 873 | 885 | 1035 | 04 FEB | 815776 | 997579 | 181803 |
| 873 | 885 | 1043 | 12 MAR | 437829 | 712965 | 275136 |
| 873 | 885 | 1044 | 13 MAR | 712965 | 1051313 | 338348 |
| 873 | PPL | 1046 | 16 FEB | 117353 | 963540 | 845987 |
| 873 | 885 | 1051 | 20 FEB | 952115 | 1051070 | 98955 |
| 873 | 885 | 1051 | 20 MAR | 759636 | 931944 | 172308 |
| 873 | 885 | 1052 | 22 MAR | 931944 | 1051556 | 119612 |

PUT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

| TANKNUMBER | SOURCE | STARTDATE | STOPDATE | BOTY... | EOTY... | THRUPUT. |
|---|---|---|---|---|---|---|
| 877 | PPL | 1098 | 08 APR | 581207 | 786745 | 205162 |
| 877 | 885 | 1102 | 15 APR | 737827 | 1054277 | 266400 |
| 877 | 885 | 1122 | 03 MAY | 980560 | 1055200 | 74647 |
| 877 | 885 | 1134 | 15 MAY | 795119 | 1049611 | 254492 |
| 877 | 885 | 1136 | 17 MAY | 1049611 | 1055203 | 5592 |
| 877 | 885 | 1142 | 23 MAY | 576487 | 800951 | 264464 |
| 877 | 885 | 1143 | 24 MAY | 800951 | 990285 | 189334 |
| 877 | 885 | 1144 | 28 MAY | 990285 | 1039399 | 49114 |
| 877 | 885 | 1168 | 19 JUN | 972293 | 1021164 | 48871 |
| 877 | 885 | 1172 | 24 JUN | 1026756 | 1051799 | 25043 |
| 877 | 885 | 1179 | 01 JUL | 937047 | 1045964 | 108917 |
| 877 | 885 | 1189 | 09 JUL | 995391 | 1046693 | 51302 |
| 877 | PPL | 1252 | 09 SEP | 93038 | 943366 | 850328 |
| 877 | PPL | 1259 | 17 SEP | 98379 | 943133 | 344754 |
| 877 | PPL | 1275 | 02 OCT | 31394 | 414454 | 383060 |
| 877 | PPL | 1276 | 04 OCT | 0 | 0 | 0 |
| 877 | PPL | 1323 | 20 NOV | 231646 | 313954 | 82308 |
| 877 | PPL | 1324 | 21 NOV | 313954 | 457269 | 143315 |
| 877 | pol | 1334 | 001300 | 127260 | 620711 | 493451 |
| 877 | pol | 1349 | 001350 | 75559 | 904724 | 829165 |
| 877 | pol | 1358 | 001358 | 152016 | 974238 | 822222 |
| --- | | | | | | --- |
| 877 | | | | | | 9,461,0908 |
| 877 | | | | | | 347 |
| 885 | PPL | 1006 | 07 JAN | 1342488 | 1762575 | 420087 |
| 885 | PPL | 1025 | 26 JAN | 1616853 | 2240149 | 623296 |
| 885 | PPL | 1036 | 06 FEB | 1246619 | 2045568 | 798949 |
| 885 | PPL | 1057 | 27 FEB | 587126 | 1845247 | 1258121 |
| 885 | PPL | 1062 | 04 MAR | 1281877 | 2159558 | 877681 |
| 885 | PPL | 1070 | 14 MAR | 1257212 | 2097338 | 840126 |
| 885 | PPL | 1087 | 29 MAR | 1159742 | 2178115 | 1018373 |
| 885 | PPL | 1107 | 18 APR | 1371619 | 2173874 | 802255 |
| 885 | PPL | 1117 | 28 APR | 1075106 | 2177055 | 1101949 |
| 885 | PPL | 1126 | 06 MAY | 1375327 | 2172813 | 797486 |
| 885 | PPL | 1137 | 18 MAY | 1297573 | 2237498 | 939925 |
| 885 | PPL | 1146 | 27 MAY | 966590 | 2019070 | 1052480 |
| 885 | PPL | 1157 | 07 JUN | 734243 | 2254464 | 1520221 |
| 885 | PPL | 1166 | 16 JUN | 1014761 | 2133431 | 1118670 |
| 885 | PPL | 1176 | 26 JUN | 973472 | 2206216 | 1232744 |
| 885 | PPL | 1185 | 04 JUL | 1010526 | 1859556 | 849030 |
| 885 | PPL | 1196 | 16 JUL | 915244 | 2175464 | 1260220 |
| 885 | PPL | 1207 | 27 JUL | 1147097 | 2210988 | 1063891 |
| 885 | PPL | 1220 | 12 AUG | 860192 | 1718059 | 857867 |
| 885 | PPL | 1229 | 18 AUG | 513569 | 1581366 | 1067797 |
| 885 | PPL | 1238 | 27 AUG | 445308 | 1725479 | 1280171 |
| 885 | PPL | 1259 | 27 SEP | 262308 | 1750386 | 1488078 |
| 885 | PPL | 1278 | 06 OCT | 823670 | 1834648 | 1010978 |

UPUT QUANTITIES BY TANK FOR 1 JAN 91 - 31 DEC 91

| UMBER | SOURCE | STARTDATE | STOPDATE | IITY... | EDTY... | TVBUMLT. |
|---|---|---|---|---|---|---|
| 885 | PPL | 1288 | 17 OCT | 108577 | 947497 | 373892- |
| 885 | PPL | 1312 | 09 NOV | 175175 | 942439 | 837464 |
| 885 | PPL | 1320 | 16 NOV | 282405 | 1121698 | 839233 |
| 885 | PPL | 1327 | 24 NOV | 345870 | 1812920 | 1467050 |
| 885 | PPL | 1340 | 1341 | 345370 | 1683083 | 337713 |
| --- | | | | | | --- |
| 885 | | | | | | 2800021298 |
| 885 | | | | | | 25T |
| | | | | | | 41680772223 |
| | | | | | | 89T |

BAQE-235-91

# MEMORANDUM

**To:** Don Robensen

**Through:**

**From:** Dale Chapman, Environmental Engineer
**Date:** February 13, 1992

**Subject:** Hill Air Force Base request for Approval Order changes

On February 5, 1992 the Division received a letter from Hill Air Force Base requesting changes to two of their existing approval orders. These changes include:

a. Remove the perchloroethylene vapor degreaser and associated vapor chiller (this equipment has been removed) from approval order dated January 3, 1989

b. Combine the approval orders dated July 29, 1991 and January 3, 1989.

c. Combine the JP-4 tank throughput limitations to give an annual throughput for all four tanks combined. Present approval order conditions limit throughput by individual tank.

There will not be an emission increase as a result of these changes. Therefore a Notice of Intent for these changes is not necessary. The revised approval and the current approval orders are attached for your review.

By combining the two listed Approval Orders all of the four JP-4 storage tanks will be included on one permit. This is the most logical grouping and is consistent with other approval order groupings issued by the Division.

Existing approval orders for the four JP-4 tanks limit throughput for each tank (condition 10 and 5D existing AO). The total permitted throughput for all four tanks is presently 1,260,000 barrels per year.

Working losses from organic storage tanks are dependent upon the total number of turnovers (total throughput), not the specific tank that is used. Therefore combined throughput limitations can be made for the four JP-4 tanks without changing the potential emissions from working losses.

There should be no confusion about the meaning of "total combined throughput" for these tanks. The total combined tank throughput is the sum of individual tank throughputs. Calculation of the throughput in this manner accounts for the transfer of fuel between tanks (ie: not just the flow into or out of the tank farm).

I have included condition 4b on the attached "revised" approval order which is intended to clarify the meaning of total combined throughput for these four tanks. Individual tank throughput is measured and recorded daily (condition 4F), but throughput limits are for the sum of all four tanks. All other conditions were taken from the current approval orders.

SC

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

BAQE-324-90

May 23, 1990

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

Gentlemen:

This letter will confirm the authorization to publish the attached NOTICE in the Salt Lake Tribune and Deseret News on May 26, 1990.

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 84110-0690.

Sincerely,

Carol Holmes
Office Technician
Bureau of Air Quality

Enclosure

NOTICE

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

1. Utah Fuel Company, modification to coal storage facility at Skyline Coal Mine, Carbon County CDS A2

   Increased emissions for this modification are calculated at the following values:

| | |
|---|---|
| $PM_{10}$ | 0.02 ton/yr |
| Particulate | 0.05 ton/yr |

2. Department of the Air Force, installation of steam boilers, vapor seals for JP-4 storage tanks, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar at Hill AFB, Davis County, CDS A

   Increased emissions for these modifications are currently calculated at the following values:

| | |
|---|---|
| Particulate | 1.34 tons/yr |
| $PM_{10}$ | 1.34 tons/yr |
| $SO_2$ | 10.79 tons/yr |
| $NO_x$ | 8.31 tons/yr |
| CO | 8.60 tons/yr |
| VOC | 21.47 tons/yr |

The engineering evaluations and air quality impact analyses has 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 Bureau of Air Quality, Utah State Department of Health, 288 North 1460 West, Salt Lake City,

4.2.4-759

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 June 18, 1990 will be considered in making the final decision on the approval or disapproval of the proposed construction.

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

Date of Notice: May 26, 1990

UTAH BUREAU OF AIR QUALITY
NEW/MODIFIED SOURCE PLAN REVIEW

Nathan
~~Nathan O. Currier~~
Director, Environmental Mgt Office
Department of the Air Force
Headquarters Ogden Air Logistics Center (AFLC)
Hill Air Force Base, Utah 84056

| | |
|---|---|
| RE: | 5 Projects - Installation of Steam Boilers, Vapor Seals for JP-4 Storage Tanks, Waste Hydraulic Fluid Reclamation Units, a Paint Spray Booth, Lab Hoods, and a Paint Spray Hangar at the Hill AFB, Davis County, CDS A |
| DATE: | April 23, 1990 |
| NOTICES OF INTENT DATED: | November 7, 1989, January 19, 1989, August 9, 1989 July 18, 1898, 1989, and November 22, 1989 respectively |
| PLANT CONTACT: | Jay Gupta |
| PHONE NUMBER: | 777-7651 |
| PLANT LOCATION: | Hill Air Force Base, Davis County |

FEES:

| | |
|---|---|
| Filing Fee | $ 100.00 |
| Review Engineer - Consultant | $6,660.50 |
| Consultant | $ 000.00 |
| Modeler - 00 hours at $18.07/hour | $ 000.00 |
| Computer Usage Fee | $ 000.00 |
| Notice to Paper | $ 24.00 |
| Travel - 00 miles at $0.23/mile | $ 000.00 |
| Total | $6,784.50 |

Review Completed By Tetra Tech/L.Carl Broadhead

APPROVALS:

Engineering Unit Manager OK 5/3/90

Technical Evaluation Section Manager M. Keller 5/10/90

BACT and Approval Order Coordination with Source

(Date/Contact and Agree or Disagree) 5-1-90 / Bill / by Carl B"

## I. DESCRIPTION OF PROPOSAL

The Department of the Air Force has filed notices of intent dated November 7, 1988, January 19, 1989, June 16, 1989, August 11, 1989, August 30, 1989, and November 22, 1989. They are proposing to install, modify, and operate steam boilers, vapor seals for JP-4 storage tanks, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar, respective to those dates. The description of each notice of intent is as follows:

1. Steam boilers, consisting of two (2) 100,000 pounds per hour, 120 psig packaged steam boilers in total heat input rate of 120.328 million Btu per hour for natural gas combustion (primary fuel) with a standby diesel fuel (116.542 million Btu per hour), to expand the existing steam plant. The location of this expansion will be in Building 260 at Hill Air Force Base. The steam generators are equipped with a flue gas recirculation system which is designed to recirculate 20 percent of exhaust gas resulting in 60 percent reduction in NOx emissions. The flue gas recirculation system is designed to operate only for natural gas combustion, not for the standby diesel fuel combustion. The steam generators are also equipped with an economizer system for an exhaust gas heat recovery. In addition, this expansion replaces an existing 180 gallons per minute boiler feedwater pump with a new 600 gallons per minute pump. To account for emissions from standby diesel fuel combustion in total boiler emissions, the diesel fuel utilization is assumed to be 10 percent (%) of annual boiler operation. The use of diesel fuel is dependent upon the availability of natural gas. The following numbers describe the operation:

   A. Annual operating hours - 4300 hours per year;
   B. Total boiler capacity - 120.328 million Btu per hour for natural gas combustion;
      116.542 million Btu per hour for diesel fuel combustion;
   C. Diesel fuel utilization - 10 percent of annual boiler operation;
   D. Flue gas recirculation - 20 percent;
   E. Nox emissions - 18 ppm at 100 percent boiler capacity for natural gas combustion;
      - 25 ppm at 25 percent boiler capacity for natural gas combustion;
   F. Volume of each boiler - 1900 cubic feet.

2. Vapor seals for JP-4 storage tanks, consisting of dual seals for tank number 10873 and 10885, to reduce fugitive VOC emissions from the tank. The location of these tanks is the tank farm at Hill Air Force Base. The installation of dual seals results in hydrocarbon emission reduction at a rate of 0.17 pound per hour or 0.73 ton per year which are requested to be banked for future offset credits.

   The tank 10885 is currently operating under an approval order issued on February 15, 1978. Tank capacity is 55,000 barrels with a dimension of 93 feet diameter and 52 feet height. The proposed modification for this tank is to replace the existing aluminum pan with a new steel pan and the existing single rolled rubber sectional seal with a dual seal mounted one above the other.

   Tank 10873 capacity is 25,000 barrels with a dimension of 63 feet diameter and 50 feet 3 inches height. The proposed modification for this tank is to replace the existing foam log seal with a dual seal mounted one above the other.

   For both tanks, the new primary seal will be a resilient foam log with impregnated fabric. The secondary seal will be rim mounted, weather guard, continuous tip, complete with

compression channel, compression plate, plate gasketing and ground shunt. Seals extend continuously from the floating roof to the tank wall.

The following numbers describe the operation:

A. Annual operating hours - 8760 hours per year
B. Annual throughput - 660,000 barrels for tank 10885
300,000 barrels for tank 10873
C. Reid vapor pressure - 3 psia

3. Bldg 514, Waste hydraulic fluid reclamation units, consisting of two portable hydraulic fluid reclamation units manufactured by Pall Corporation or equivalent complete with vacuum process chamber, controls, and condensers, to reclaim solvent from the fluid and hence reduce hazardous wastes. This project is part of the Air Force Base Hazardous Waste Minimization Program's intent to reduce its hazardous waste disposal. These units will be initially installed in Building 514. At later time, these units will be deported to and utilized in the other locations in effort to reclaim and reduce hazardous wastes from the other locations in the base. This project will reduce 95 percent of contaminants in the hydraulic fluid waste. The contaminants of hydraulic fluid waste consist of 1,1,1 trichlorethane, freon 113, and JP-4 jet fuel. The reclamation process involves a vaporization of contaminants and then vapor condensation at the water cooled condenser. The hydraulic fluid waste contains 15 percent contamination. The condenser in the unit will recover 95 percent of the vapor solvents. The recovered solvents will be recycled for reuse. Total process rate is 30,000 gallons of waste per year or 4,500 gallons of contaminants per year. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year
B. Annual throughput - 30,000 gallons
C. Exhaust VOC concentration - 2.5 ppmv
D. Exhaust flow rate - 20,000 cubic feet per minute
E. Stack height - 25 feet.

4. Bldg 5N, Paint spray booth and lab hoods, consisting of a 4 feet by 4 feet spray booth with the open face and two (2) 9 square feet lab hoods with the open face, to use circuit board repair and the application of conformal coating on circuit cards and to clean printed circuit boards using organic solvents. The location of this installation will be in Building 5 Bay N. The paint spray booth is relocated from Building 214. Workload for the spray booth from Building 214 has been transferred to Building 100. The booth is equipped with dry paint arrestor filters, an exhaust fan and an 18-inch diameter vent. The hood is equipped with exhaust plenum, fan and vent. The exhaust vents from lab hoods are combined into one (1) exhaust stream. 85 percent of the solvent will be recovered and recycled. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year

B. Annual usage rate - 50 gallons per year of urethane compound
- 5 gallons per year of miscellaneous paint
- 300 gallons per year of xylene cleaning solvents
- 100 gallons per year of an aliphatic cleaning solvents
- 300 gallons per year of Isopropyl alcohol cleaning solvents

C. Exhaust face velocity - 100 feet per minute

D. Exhaust flow rate - 1,600 cubic feet per minute for the spray booth
- 1,850 cubic feet per minute for the lab hoods (in total)

E. Stack height - 30 feet for the spray booth
- 25 feet for the lab hoods.

5. Bldg 220 Paint spray hangar, consisting of modular turboclean chambers complete with pumps; nozzles, associated piping, controls and sludge disposal, to modify the existing paint spray hangar. This modification is required for a replacement of corroded existing paint hangar waterfall troughs and pipings. The location of this modification will be in Building 220. The aircraft paint hangar in Building 220 is in existence since the 50's which does not have an air quality permit nor does it require one. In conjunction with this modification, Department of the Air Force also proposes to substitute solvent base primer with water reducible primer and to replace the conventional type spray gun with a high volume low pressure (HVLP) type spray gun. The primer substitution and spray gun replacement will result in reductions for VOC emissions due to less solvent contained in the water reducible primer and an increase in paint transfer efficiency. The solvent content for the water reducible primer is 2.8 pounds per gallon versus 5.8 pounds per gallon for the solvent based primer. In addition, HVLP spray gun transfers efficiency is 60 to 70 percent whereas 30 to 40 percent for the conventional spray gun. The modified paint spray hangar can accommodate up to three aircrafts for painting at one time by splitting the painting areas into three using movable partitions. There will be a total of 9 units including 2 exhaust fans per unit. The following numbers describe the operation:

A. Annual operating hours - 2080 hours per year

B. Annual usage rate - 4600 gallons per year of polyurethane compound
- 1600 gallons per year of water reducible primer
- 625 gallons per year of nitrocellulose lacquer
- 650 gallons per year of miscellaneous

C. Exhaust face velocity - 100 feet per minute

D. Exhaust flow rate - 18,500 cubic feet per minute per fan
- 333,000 cubic feet per minute in total

E. Stack height - 52 feet.

## II. EMISSION SUMMARY

The total emissions from sources listed in this Approval Order will be as follows:
This is not a total for all sources at Hill Air Force Base. The current allowable permited emissions are not totaled at this time.

| | | |
|---|---|---|
| Particulate | 1.34 | tons/year |
| $PM_{10}$ | 1.34 | tons/year |
| $SO_2$ | 10.79 | tons/year |
| $NO_x$ | 8.31 | tons/year |
| CO | 8.60 | tons/year |
| VOC | 21.47 | tons/year |

Hill requested banking of the emissions from the JP-4 tanks but the overal emissions from this group of sources consumed those emissions and so the banking of emissions is denied.

## III. BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

BACT will be required at all emission points. This includes the following points:

A. Boiler plant
B. JP-4 storage tanks
C. Waste hydraulic fluid reclamation
D. Paint spray booth and lab hoods
E Paint spray hangar.

Boiler plant

Sox and Nox emissions from the boiler plant expansion are of the highest concern.

In the event natural gas is not available to Hill AFB, Department of the Air Force proposed to use the diesel fuel as standby fuel. The diesel fuel combustion contributes the majority of boiler's Sox emissions due to the high sulfur content. 10 percent of annual operating hours using diesel fuel is assumed for accounting diesel fuel combustion emissions in total boiler emissions. These Sox emissions can be eliminated or significantly reduced by utilizing as much natural gas as possible.

Various control technologies can be utilized in effort to minimize the Nox emissions from the combustion process. Control technologies are Low-Nox designed burner, flue gas recirculations, selective catalytic reduction, and selective non-catalytic reduction. Implementation of these control technologies are often not economically practical. For example, initial capital cost for selective catalytic reduction is $6,525 per million Btu-hr in 1981 dollars. In addition, operating cost for selective catalytic reduction is $870 per million Btu-hr in 1981 dollars.

The Department of the Air Force has proposed 20 percent flue gas recirculation in part of the proposed boiler plant expansion which result in 60 percent NOx emission reductions for natural gas combustion. Based on manufacture guarantee, NOx emission is 0.028 lb/million Btu, 18 ppm.

The proposed flue gas recirculation is considered as BACT. Boiler and flue gas recirculation must be properly maintained and operated in good working condition, ensuring the proposed reductions. Properly maintained and operated boiler will also be beneficial to VOC and CO emissions. For diesel fuel combustion, use of fuel which meets the sulfur standards established in the UACR is required. For fuel oils the standard is 0.5 % by wt. Natural gas must be utilized in maximum; natural gas must be used as fuel whenever natural gas is made available at the Hill AFB.

The proposed firing of natural gas with restricted use of diesel fuel is recommended as having applied Bact for minimum emissions.

JP-4 storage tanks

JP-4 storage tanks, 10873 and 10885, are currently equipped with a single seal. In efforts to reduce VOC emissions from JP-4 storage tanks for the future offset credits, the Department of the Air Force voluntarily proposed an installation of dual seals. This modification is similar to a modification already made on JP-4 storage tank 10861 and 10862. The VOC reduction from the storage tanks and the hanger 220 paint booth is less than the total emissions from all sources so there are no emissions reductions of VOCs to bank.

BACT for the JP-4 storage tanks is proper installation, maintenance, and operation of dual seals on the JP-4 storage tanks. Dual seals must be properly maintained and kept in good condition at all times to prevent excess emissions from the JP-4 storage tanks.

These seals are recommended to be approved as having applied BACT.

Waste hydraulic fluid reclamation

A condenser for recovering 95 percent of the solvents removed from the fluid is proposed in a part of this project. This is considered as BACT for the waste hydraulic fluid reclamation. No other options were reviewed.

This process is recommended as having applied BACT.

Paint spray booth and lab hoods

VOC emissions from the paint spray booth and parts cleaning under the lab hoods can be further controlled through a carbon adsorption unit. Installation of the carbon adsorption unit is not economically practical, especially with modest VOC emissions; 0.18 lb per hour for paint spray booth and 0.29 lb per hour for the lab hoods. Cost effectiveness was calculated by Hill AFB to be $48,900 per ton of VOC emissions. Recommended BACT for paint spray booth and lab hoods is the minimization of emissions through good operating practice. As proposed, 85 percent of solvent use in the lab should be recovered and recycled. The dip tank covers shall remain closed at all times except during actual loading, unloading or transfer operations. Parts shall be completely drained in the internal draining rack until all dripping ceases. Waste or used solvent shall be stored in covered containers and disposed of by a method which prevents its emission into the atmosphere. Tanks, containers and all associated equipment shall be maintained in good operating condition and leaks shall be repaired promptly. Written procedures for the operation and maintenance of the solvent cleaning equipment are posted in an accessible and apparent location near the equipment. Paint particulate emissions from the spray booth is controlled by dry filters. All air exiting the booth shall pass through this control system before being vented into the atmosphere. The dry filter must be properly maintained and kept in good condition at all times.

The installation of filters and a limitation on the amount of paint used is recommended as having applied BACT.

Paint spray hangar

VOC emissions from the paint spray hangar can be further reduced through a carbon adsorption unit. Installation of a carbon adsorption unit is not economically practical. Cost effectiveness was calculated by Hill AFB to be $52,480 per ton of VOC emissions and is considered an excessive cost.

As BACT for this project, the Department of the Air Force proposed a substitution of high solvent content epoxy polyamide primer with low solvent content water reducible primer. In addition, the conventional paint spray gun is replaced with high transfer efficiency "High Volume Low Pressure" paint spray gun. The paint substitution will result in 2.4 tons VOC emissions reduction per year.

The recommended BACT for a paint spray hangar is the use of low-VOC solvent paints and high transfer efficiency paint spray gun; this BACT control measure is already included in the proposed modification. No other options for VOC emissions were reviewed. Paint particulate emissions from the spray hangar is controlled by water falls. All air exiting the booth shall pass through this control

system before being vented into the atmosphere.

## IV. APPLICABLE UTAH AIR CONSERVATION REGULATIONS (UACR)

These notices of intent are for modifications to an existing installation. It is not 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 modifications. 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 3.1.10, UACR - Additional information requirements for a major new source or major modification which emits precursors of ozone and impact an area of non-attainment for ozone. Notices of intent do not represent a major new source or a major modification. Therefore, this regulation does not apply.

5. Section 3.2, UACR - Particulate emission limitations for existing sources which are located in a non-attainment area. The existing installation is listed in this regulation for 36 boilers with a limitation of 20% opacity. Therefore, this regulation does apply.

6. Section 3.3.1, UACR - Emission limitation for a new source which is located in a non-attainment area or which impact a non-attainment area. These notices of intent do not represent a new major source, but additional new sources at an existing installation and minor modifications. Therefore, this regulation will apply.

7. Section 3.3.2, UACR - Review requirements for new major sources or major modifications which are located in a non-attainment area or which impact a non-attainment area. Notices of intent do not represent a new major source or a major modification. Therefore, this regulation will not apply.

8. Section 3.5, UACR - Emission inventory reporting requirements. This regulation requires any source which emits 25 tons or more per year of any pollutant to submit an emission inventory to the Bureau of Air Quality every year. This source must comply with this regulation.

9. Section 3.6.5(b), UACR - Prevention of significant deterioration (PSD) review requirements for new major sources or major modifications. Notices of intent do not represent a major source or a major modification under PSD rules. Therefore, this regulation does not apply.

10. 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. These notices of intent do not have stacks which exceed 65 meters in height. It is in compliance with this regulation.

11. 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. Notices of intent do not represent a new major source or a major modification under UACR rules. Therefore, this regulation does not apply.

12. 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). BACT will require a lower limitation than 20%, therefore, this regulation does not apply.

13. Section 4.1.9, UACR - EPA Method 9 to be used for visible emission observations. This regulation applies.

14. Section 4.2.1, UACR - Sulfur content limitations in oil and coal used for combustion. This source burns fuel oil. The limitation is 0.85 pounds of sulfur per $10^6$ BTU heat input. This regulation applies, however, BACT for diesel oil limits sulfur to a lower value.

15. Section 4.7, UACR - Unavoidable breakdown reporting requirements. This regulation applies.

16. Section 4.9, UACR - Review requirements for volatile organic compound (VOC) sources located in a non-attainment area for ozone. This regulation covers the following processes:

    A. Petroleum liquid storage
    B. Petroleum liquid transfer/storage
    C. Control of hydrocarbon emissions in refineries
        1) vacuum producing systems
        2) wastewater separators
        3) process unit turnaround
        4) catalytic cracking units
        5) safety pressure relief valves
        6) leaks from petroleum refinery equipment
    D. Degreasing and solvent cleaning operations
        1) cold cleaning facilities
        2) open top vapor degreasers
        3) conveyorized degreasers
    E. Cutback asphalt
    F. VOC used for various processes
        1) paper coating
        2) fabric and vinyl coating
        3) metal furniture coating
        4) large appliance surface coating
        5) magnet wire coating
        6) flat wood coating

7) misc. metal parts and products
8) graphic arts

G. Synthesized pharmaceutical manufacturing

H. Perchlorethylene dry cleaning plants.

This source is located in a non-attainment area for ozone as defined in the State Implementation Plan. The proposed modification includes petroleum liquid storage and cold solvent cleaning which are subject to this regulation. The provisions pertaining to petroleum liquid storage applies to Subpart Kb to the proposed modification due to the true vapor pressure of stored liquid 1.3 psia. This regulation applies for the cold solvent cleaning operation. This source must comply with this regulation.

17. Section 5, UACR - Emergency episode requirements. This regulation applies.

18. National Emission Standards for Hazardous Air Pollutants (NESHAPS) - There is no NESHAPS for these notices of intent.

19. National Ambient Air Quality Standards (NAAQS) - This source is located in a non-attainment area for ozone. The Bureau of Air Quality guidelines do not call for this source to be modeled for any pollutants. The Bureau has found through experience that, because of the small increase in quantity of emissions involved and the conservative predictions made by modeling, a source or emission point of this small increase is very unlikely to cause a new violation of the NAAQS.

20. New Source Performance Standards (NSPS) - The NSPS which apply to these notices of intent is the NSPS Kb for petroleum liquids storage vessels. The vapors pressure and capacity parts of Kb make it applicable to the storage tanks.

## V. RECOMMENDED APPROVAL ORDER CONDITIONS

1. Department of the Air Force, located at Hill Air Force Base, shall install, modify, and operate the steam generators, dual vapor seals on JP-4 storage tank 10873 and 10885, waste hydraulic fluid reclamation units, a paint spray booth, lab hoods, and a paint spray hangar according to the information submitted in the notices of intent dated November 7, 1988, January 19, 1989, June 16, 1989, August 11, 1989, August 30, 1989, and November 22, 1989, respectively, and the additional information submitted to the Executive Secretary dated February 2, 1989, January 10, 1990.

2. The approved installation shall consist of the following equipment:

A. Two (2) steam generators, a total heat input rate of 120.328 million Btu/hr with natural gas as primary fuel with a standby diesel fuel (116.542 million Btu/hr) at the Building 260;

B. Dual seals for JP-4 storage tank 10873 and 10885;

C. Two (2) waste hydraulic fluid reclamation units at the Building 514;

D. Paint spray booth and two (2) lab hoods at the Building 5 N;

E. Nine (9) Turboclean chambers for the paint spray hangar at Building 220. In addition, solvent base primer shall be substituted for water reducible primer and a high volume low pressure (HVLP) type spray gun shall replace the conventional paint spray gun.

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

4. The following operation limits shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

A. Steam generators

1. 465.7 billion Btu of natural gas per 12 month period
2. 108.3 million Btu of natural gas per hour
3. 50.1 billion Btu of diesel fuel per 12 month period
4. 116.5 million Btu of diesel fuel per hour
5. 4,300 hours per 12 month period

B. JP-4 storage tank 10873

1. 300,000 barrels per 12 month period
2. 24 hours per day
3. 8,760 hours per 12 month period

C. JP-4 storage tank 10885

1. 660,000 barrels per 12 month period
2. 24 hours per day
3. 8,760 hours per 12 month period

D. Hydraulic fluid waste reclamation units

1. 30,000 gallons of total fluid per 12 month period
2. 8 hours per day
3. 2,080 hours per 12 month period

E. Paint spray booth

1. 50 gallons of urethane per 12 month period
2. 5 gallons of miscellaneous per 12 month period
3. 8 hours per day
4. 2,080 hours per 12 month period

F. Lab hoods

1. 200 gallons of xylene per 12 month period
2. 100 gallons of naphtha aliphatic per 12 month period
3. 300 gallons of isopropyl alcohol per 12 month period
4. 8 hours per day
5. 2,080 hours per 12 month period

G. Paint spray hangar

1. 4600 gallons of polyurethane per 12 month period
2. 1600 gallons of water reducible primer per 12 month period
3. 625 gallons of nitrocellulose lacquer per 12 month period
4. 650 gallons of miscellaneous per 12 month period
5. 8 hours per day
6. 2,080 hours per 12 month period.

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 production shall be kept for all periods when the plant is in operation. Records of 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. Fuel consumption for steam generators shall be determined by the use of records from a fuel meter. VOC emissions shall be determined by maintaining a record of paints, solvents, and JP-4 fuel used. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

5. The condenser at the final point of hydraulic fluid waste reclamation units shall be in operation during the operation of hydraulic fluid waste reclamation units. If the condenser is out of service, the hydraulic fluid waste reclamation units shall not be used until the condenser has been returned to service. The condenser shall be capable of recovering 95 percent of solvents from the fluid. Records of solvent recovery shall be kept for all periods when the hydraulic fluid waste reclamation units are in operation. The record shall include the following items:

A. Date
B. Unit usage (start and end times)
C. Total hydraulic fluid waste processed
D. Amount solvent recovered.

Records of treatment shall be made available to the Executive Secretary upon request and shall include a period of time equal to the entire duration of the project.

6. The owner/operator shall use only natural gas as a primary fuel and #2 diesel fuel as a backup fuel in the steam generators. If any other fuel is to be used, an approval order shall be required in accordance with Section 3.1, UACR. Natural gas consumption shall not exceed 465.7 million $ft^3$ of natural gas per 12 month period and diesel fuel consumption shall not exceed 5% of the annual fuel used in the boilers 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 fuel consumption shall be kept for all periods when the plant is in operation. Records of fuel 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. Fuel consumption shall be determined by the use of records from the fuel meter.

7. The sulfur content of any diesel fuel burned shall not exceed 0.5 % by weight of sulfur determined by ASTM Method D-4294-89. The sulfur content shall be tested if directed by the Executive Secretary.

8. The paint spray booth at Building 5N shall be equipped with a set of paint arrestor particulate

filters to control particulate emissions. All air exiting the booth shall pass through this control system before being vented into the atmosphere.

9. The paint spray hangar at Building 220 shall be equipped with a water wall to control particulate emissions. All air exiting the booth shall pass through this control system before being vented to the atmosphere.

10. The following density and volatile organic content of paint shall not be exceeded without prior approval in accordance with Section 3.1, UACR:

A. Paint spray booth

| Paint | Density (lbs/gallon) | VOC (% by Vol) |
|---|---|---|
| Urethane | 8.5 | 80 |
| Miscellaneous | 6.0 | 100 |

B. Paint spray hangar

| Paint | Density (lbs/gallon) | VOC (lbs/gallon) |
|---|---|---|
| Polyurethane | 9.2 | 4.7 |
| Epoxy Polyamide Primer | 10.5 | 5.8 |
| Water Reducible Primer | 8.9 | 2.8 |
| Nitrocellulose | 8.0 | 4.8 |
| Miscellaneous | 9.0 | 6.0 |

These parameters shall be tested if directed by the Executive Secretary using the appropriate ASTM method or another method approved by the Executive Secretary.

11. The owner/operator shall operate a solvent cleaning operation under the lab hoods in the following manners:

A. Cover shall remain closed at all times except during actual loading, unloading or transfer operations;

B. Parts shall be completely drained in the internal draining rack until all dripping ceases;

C. Waste or used solvent shall be stored in covered containers and disposed of by a method which prevents its emission into the atmosphere;

D. Tanks, containers and all associated equipment are maintained in good operating condition and leaks are repaired immediately; and

E. Written procedures for the operation and maintenance of the solvent cleaning equipment are posted in an accessible and apparent location near the equipment.

12. Eighteen months from the date of this approval order the Executive Secretary shall be notified in writing of the status of construction of these projects unless the construction is complete and operation has commenced.

13. A copy of this approval order shall be maintained on-site and available to the operators of the equipment.

14. All installations and facilities authorized by this approval order shall be adequately and properly maintained.

15. The Executive Secretary shall be notified in writing upon start-up of the installations, 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.

"Allowable emissions" as defined in Section 1.12, UACR, for point sources listed in this Approval Order are calculated at 1.34 tons/yr for particulates, 1.34 tons/yr for $PM_{10}$, 10.79 tons/yr for $SO_2$, 8.31 tons/yr for $NO_x$, 8.60 tons/yr for CO, and 21.47 tons/yr for VOC. These calculations are for the purposes of determining the applicability of PSD and non-attainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

LCB/Hill-ALL.ENG

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: NET EMISSION INCREASE ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

| SOURCE | VOC | NOX | SOX | CO | PM10 | TSP | UNIT |
|---|---|---|---|---|---|---|---|
| PRE-MODIFICATION ..... | 22.52 | 2.64 | 3.43 | 2.73 | 0.43 | 0.43 | TONS/YR |
| POST-MODIFICATION ..... | 21.47 | 8.31 | 10.79 | 8.60 | 1.34 | 1.34 | TONS/YR |
| NET EMISSION INCREASE ..... | -1.05 | 5.67 | 7.36 | 5.87 | 0.91 | 0.91 | TONS/YR |

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

| SOURCE | VOC | NOX | SOX | CO | PM10 | TSP | UNIT |
|---|---|---|---|---|---|---|---|
| REPLACEMENT BOILERS - 260..... | 0.21 | 2.64 | 3.43 | 2.73 | 0.43 | 0.43 | TONS/YR |
| SEALS ON JP-4 TANKS..... | 2.32 | --- | --- | --- | --- | --- | TONS/YR |
| WASTE HYD FLUID RECLAIM -514... | 0.00 | --- | --- | --- | --- | --- | TONS/YR |
| CLEANING HOODS/PAINT BOOTH - 5N | 0.00 | --- | --- | --- | --- | --- | TONS/YR |
| PAINT HANGER MODIFICATION - 220 | 19.99 | --- | --- | --- | --- | --- | TONS/YR |
| TOTAL ..... | 22.52 | 2.64 | 3.43 | 2.73 | 0.43 | 0.43 | TONS/YR |

SOUCE INCLUDED:
'ACEMENT BOILERS - 260
_S ON JP-4 TANKS
WASTE HYD FLUID RECLAIM -514
CLEANING HOODS/PAINT BOOTH - 5N
PAINT HANGER MODIFICATION - 220

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: NET
DATE: FEB-21-90
TIME: 10:07 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB

| SOURCE | VOC | NOX | SOX | CO | PM10 | TSP | UNIT |
|---|---|---|---|---|---|---|---|
| REPLACEMENT BOILERS - 260..... | 0.67 | 8.31 | 10.79 | 8.60 | 1.34 | 1.34 | TONS/YR |
| SEALS ON JP-4 TANKS..... | 1.59 | --- | --- | --- | --- | --- | TONS/YR |
| WASTE HYD FLUID RECLAIM -514... | 1.13 | --- | --- | --- | --- | --- | TONS/YR |
| CLEANING HOODS/PAINT BOOTH - 5N | 0.49 | --- | --- | --- | --- | --- | TONS/YR |
| PAINT HANGER MODIFICATION - 220 | 17.59 | --- | --- | --- | --- | --- | TONS/YR |
| TOTAL ..... | 21.47 | 8.31 | 10.79 | 8.60 | 1.34 | 1.34 | TONS/YR |

SOUCE INCLUDED:
REPLACEMENT BOILERS - 260
S ON JP-4 TANKS
E HYD FLUID RECLAIM -514
CLEANING HOODS/PAINT BOOTH - 5N
PAINT HANGER MODIFICATION - 220

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: TOTAL EMISSION ESTIMATE (90% NATURAL GAS WITH 10% DIESEL FUEL FIRED)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| TOTAL PARTICULATE..... | 2.27 | 0.29 | 1.34 | 0.04 | 0.00 | 2.27 | 1.34 |
| PM-10 ..... | 2.27 | 0.29 | 1.34 | 0.04 | 0.00 | 2.27 | 1.34 |
| SOx..... | 99.13 | 12.49 | 10.79 | 0.31 | 0.00 | 99.13 | 10.79 |
| NOx..... | 20.02 | 2.52 | 8.31 | 0.24 | 60 OR 0 | 20.02 | 8.31 |
| CO..... | 8.37 | 1.06 | 8.60 | 0.25 | 0.00 | 8.37 | 8.60 |
| VOC, NON-METHANE..... | 0.50 | 0.06 | 0.67 | 0.02 | 0.00 | 0.50 | 0.67 |
| VOC, METHANE..... | 0.40 | 0.05 | 0.70 | 0.02 | 0.00 | 0.40 | 0.70 |

SOURCE:
NATURAL GAS FIRED BOILER (90%)
DIESEL FUEL FIRED BOILER (10%)

ɔLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: NATURAL GAS FIRED BOILER (90%)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| TOTAL PARTICULATE..... | 0.60 | 0.08 | 1.16 | 0.03 | 0.00 | 0.60 | 1.16 |
| PM-10 ..... | 0.60 | 0.08 | 1.16 | 0.03 | 0.00 | 0.60 | 1.16 |
| SOx..... | 0.07 | 0.01 | 0.14 | 0.00 | 0.00 | 0.07 | 0.14 |
| NOx..... | 3.37 | 0.42 | 6.52 | 0.19 | 0.00 | 3.37 | 6.52 |
| CO..... | 4.21 | 0.53 | 8.15 | 0.23 | 0.00 | 4.21 | 8.15 |
| VOC, NON-METHANE..... | 0.34 | 0.04 | 0.65 | 0.02 | 0.00 | 0.34 | 0.65 |
| VOC, METHANE..... | 0.36 | 0.05 | 0.70 | 0.02 | 0.00 | 0.36 | 0.70 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
ATURAL GAS COMBUSTION
1.4-1 UNCONTROLLED EMISSION FACTORS FOR NATURAL GAS COMBUSTION
FUEL TYPE: NATURAL GAS

EMISSION FACTOR IN LB PER MILLION CUBIC FEET

| | | | |
|---|---|---|---|
| TOTAL PARTICULATE..... | 5.00 | LB/MM FT3 | TABLE 1.4-1 |
| PM-10 ..... | 5.00 | LB/MM FT3 | TABLE 1.4-1 |
| SOx..... | 0.60 | LB/MM FT3 | TABLE 1.4-1 |
| NOx..... | 0.03 | LB/MM BTU | BOILER MANUF. |
| CO..... | 35.00 | LB/MM FT3 | TABLE 1.4-1 |
| VOC, NON-METHANE..... | 2.80 | LB/MM FT3 | TABLE 1.4-1 |
| VOC, METHANE..... | 3.00 | LB/MM FT3 | TABLE 1.4-1 |
| TOTAL POWER RATING..... | 120328.00 | K BTU/HR | FROM NOI |
| HOURLY FUEL CONSUMPTION... | 0.12 | MM FT3/HR | (TOTAL POWER RATING)/(1000 BTU/FT3)/(MM) |
| ANNUAL FUEL CONSUMPTION... | 465.67 | MM FT3/YR | (TOTAL POWER RATING)/(1000 BTU/FT3)/(MM)* (ANNUAL OPERATING HOUR)*(OPERATING FACTOR) |
| OPERATING FACTOR..... | 90 | % | FROM NOI, DEPENDING ON THE AVAILABILITY OF NATURAL GAS |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY..... | | HRS/DAY | |
| DAYS PER WEEK..... | | DAYS/WEEK | |
| WEEKS PER YEAR..... | | WEEKS/YR | |
| HOURS PER YEAR..... | 4300.00 | HRS/YR | FROM NOI |

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: BOILER
DATE: FEBUARY 20, 1990
TIME: 12:10 PM

SOURCE: DIESEL FUEL FIRED BOILER (10%)
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - STEAM PLANT

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| TOTAL PARTICULATE..... | 1.66 | 0.21 | 0.18 | 0.01 | 0.00 | 1.66 | 0.18 |
| PM-10 ..... | 1.66 | 0.21 | 0.18 | 0.01 | 0.00 | 1.66 | 0.18 |
| SOx..... | 99.06 | 12.48 | 10.65 | 0.31 | 0.00 | 99.06 | 10.65 |
| NOx..... | 16.65 | 2.10 | 1.79 | 0.05 | 0.00 | 16.65 | 1.79 |
| CO..... | 4.16 | 0.52 | 0.45 | 0.01 | 0.00 | 4.16 | 0.45 |
| VOC, NON-METHANE..... | 0.17 | 0.02 | 0.02 | 0.00 | 0.00 | 0.17 | 0.02 |
| VOC, METHANE..... | 0.04 | 0.01 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 1 EXTERNAL COMBUSTION SOURCES
'UEL OIL COMBUSTION
1.3-1 UNCONTROLLED EMISSION FACTORS FOR FUEL OIL COMBUSTION
.LL TYPE: DIESEL FUEL #2

EMISSION FACTOR IN LB PER THOUSAND GAL

| | | | |
|---|---|---|---|
| TOTAL PARTICULATE..... | 2.00 | LB/K GAL | TABLE 1.3-1 |
| PM-10 ..... | 2.00 | LB/K GAL | TABLE 1.3-1 |
| SOx..... | 0.85 | LB/MM BTU | SECTION 4.2 OF UACR |
| NOx..... | 20.00 | LB/K GAL | TABLE 1.3-1 |
| CO..... | 5.00 | LB/K GAL | TABLE 1.3-1 |
| VOC, NON-METHANE..... | 0.20 | LB/K GAL | TABLE 1.3-1 |
| VOC, METHANE..... | 0.05 | LB/K GAL | TABLE 1.3-1 |
| TOTAL POWER RATING..... | 116542.00 | K BTU/HR | FROM NOI |
| HOURLY FUEL CONSUMPTION... | 0.83 | K GAL/HR | (TOTAL POWER RATING)/(0.14 MM BTU/GAL)/(1000) |
| ANNUAL FUEL CONSUMPTION... | 178.98 | K GAL/YR | (TOTAL POWER RATING)/(0.14 MM BTU/GAL)/(1000)* (ANNUAL OPERATING HOUR)*(OPERATING FACTOR) |
| OPERATING FACTOR..... | 5 | % | FROM NOI, DEPENDING ON THE AVAILABILITY OF NATURAL GAS |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY..... | | HRS/DAY | |
| DAYS PER WEEK..... | | DAYS/WEEK | |
| WEEKS PER YEAR..... | | WEEKS/YR | |
| HOURS PER YEAR..... | 4300.00 | HRS/YR | FROM NOI |

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NET EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE (PRE-MOD) .. | 0.53 | 0.07 | 2.32 | 0.07 | 0.00 | 0.53 | 2.32 |
| VOC non MATHANE (POST-MOD) . | 0.36 | 0.05 | 1.59 | 0.05 | 0.00 | 0.36 | 1.59 |
| NET EMISSION | -0.17 | -0.02 | -0.73 | -0.02 | 0.00 | -0.17 | -0.73 |

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.53 | 0.07 | 2.32 | 0.07 | 0.00 | 0.53 | 2.32 |

SOUCE INCLUDED:

TANK 10873 - SINGLE SEAL
TANK 10885 - SINGLE SEAL

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10873 - SINGLE SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | | | CONTROLLED | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.12 | 0.02 | 0.55 | 0.02 | 0.00 | 0.12 | 0.55 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

| | | | |
|---|---|---|---|
| LOSS ..... | 1090.55 | LBS/YR | LR+LW+LF+LD |

LR (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16

| | | | |
|---|---|---|---|
| LR ..... | 418.53 | LBS/YR | KS*V^n*P*D*MV*KC |
| KS ..... | 3.00 | | SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL |
| V ..... | 8.00 | MPH | AVERAGE WIND SPEED AT TANK SITE, FROM NOI |
| n ..... | 0.00 | | SEAL RELATED WIND SPEED EXPONENT |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| D ..... | 63.00 | FEET | TANK DIAMETER, FRMO NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LW ..... | 43.11 | LBS/YR | ((0.943)*Q*C*WL/D)*(1+(NC*FC/D)) |
| Q ..... | 300000.00 | BBL/YR | THROUGHPUT (bbl/year), FROM NOI |
| C ..... | 0.0015 | bbl/ft 2 | SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5 |
| WL ..... | 6.40 | LBS/GAL | AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2 |
| D ..... | 63.00 | FEET | TANK DIAMETER, FRMO NOI |
| NC ..... | 0.00 | | NUMBER OF COLUMN, NOTE 3 PG. 4.3-19 |
| FC ..... | 1.00 | | EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19 |
| LF ..... | 628.91 | LBS/YR | FF*D*P*MV*KC |
| FF ..... | 284.00 | LB-M/FT YR | TOTAL DECK FITTING LOSS FACTOR |

| | | | |
|---|---|---|---|
| | | | (LB-MOLE/FEET YEAR), FROM NOI |
| | | | (NF1*KF1)+(NF2*KF2) .... + (NFN*KFN) |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LD ..... | 0.00 | LBS/YR | KD*SD*D^2*P*MV*KC |
| KD ..... | 0.00 | LB-M/FT YR | DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR |
| | | | WELDED DECK |
| | | | (LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25 |
| SD ..... | 0.20 | FT/FT2 | DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25 |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 24 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 7 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| S PER YEAR ..... | 8736 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

,LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10885 - SINGLE SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.41 | 0.05 | 1.78 | 0.05 | 0.00 | 0.41 | 1.78 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

| | | | |
|---|---|---|---|
| LOSS ..... | 3550.32 | LBS/YR | LR+LW+LF+LD |

LR (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16

| | | | |
|---|---|---|---|
| LR ..... | 1379.83 | LBS/YR | KS*V^n*P*D*MV*KC |
| KS ..... | 6.70 | | SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL |
| V ..... | 8.00 | MPH | AVERAGE WIND SPEED AT TANK SITE, FROM NOI |
| n ..... | 0.00 | | SEAL RELATED WIND SPEED EXPONENT |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LW ..... | 64.25 | LBS/YR | ((0.943)*Q*C*WL/D)*(1+(NC*FC/D)) |
| Q ..... | 660000.00 | BBL/YR | THROUGHPUT (bbl/year), FROM NOI |
| C ..... | 0.0015 | bbl/ft 2 | SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5 |
| WL ..... | 6.40 | LBS/GAL | AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2 |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| NC ..... | 0.00 | | NUMBER OF COLUMN, NOTE 3 PG. 4.3-19 |
| FC ..... | 1.00 | | EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19 |
| LF ..... | 803.85 | LBS/YR | FF*D*P*MV*KC |
| FF ..... | 363.00 | LB-M/FT YR | TOTAL DECK FITTING LOSS FACTOR |

| | | | |
|---|---|---|---|
| | | | (LB-MOLE/FEET YEAR), FROM NOI |
| | | | (NF1*KF1)+(NF2*KF2) .... + (NFN*KFN) |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LD ..... | 1302.40 | LBS/YR | KD*SD*D^2*P*MV*KC |
| KD ..... | 0.34 | LB-M/FT YR | DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR |
| | | | (LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25 |
| SD ..... | 0.20 | FT/FT2 | DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25 |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 24 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 7 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 8736 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

ROLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 0
DATE: 0
TIME: 0

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.36 | 0.05 | 1.59 | 0.05 | 0.00 | 0.36 | 1.59 |

SOUCE INCLUDED:

TANK 10873 - DUAL SEAL
TANK 10885 - DUAL SEAL

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10873 - DUAL SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | | | CONTROLLED | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.09 | 0.01 | 0.40 | 0.01 | 0.00 | 0.09 | 0.40 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

| | | | |
|---|---|---|---|
| LOSS ..... | 791.15 | LBS/YR | LR+LW+LF+LD |
| (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16 | | | |
| LR ..... | 223.22 | LBS/YR | KS*V^n*P*D*MV*KC |
| KS ..... | 1.60 | | SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL |
| V ..... | 8.00 | MPH | AVERAGE WIND SPEED AT TANK SITE, FROM NOI |
| n ..... | 0.00 | | SEAL RELATED WIND SPEED EXPONENT |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| D ..... | 63.00 | FEET | TANK DIAMETER, FRMO NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LW ..... | 43.11 | LBS/YR | ((0.943)*Q*C*WL/D)*(1+(NC*FC/D)) |
| Q ..... | 300000.00 | BBL/YR | THROUGHPUT (bbl/year), FROM NOI |
| C ..... | 0.0015 | bbl/ft 2 | SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5 |
| WL ..... | 6.40 | LBS/GAL | AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2 |
| D ..... | 63.00 | FEET | TANK DIAMETER, FRMO NOI |
| NC ..... | 0.00 | | NUMBER OF COLUMN, NOTE 3 PG. 4.3-19 |
| FC ..... | 1.00 | | EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19 |
| LF ..... | 524.83 | LBS/YR | FF*D*P*MV*KC |
| FF ..... | 237.00 | LB-M/FT YR | TOTAL DECK FITTING LOSS FACTOR |

| | | | |
|---|---|---|---|
| | | | (LB-MOLE/FEET YEAR), FROM NOI |
| | | | (NF1*KF1)+(NF2*KF2) .... + (NFN*KFN) |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LD ..... | 0.00 | LBS/YR | KD*SD*D^2*P*MV*KC |
| KD ..... | 0.00 | LB-M/FT YR | DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR |
| | | | WELDED SEAM |
| | | | (LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25 |
| SD ..... | 0.20 | FT/FT2 | DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25 |
| D ..... | 63.00 | FEET | TANK DIAMETER, FRMO NOI |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 24 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 7 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| S PER YEAR ..... | 8736 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: JP-4
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TANK 10885 - DUAL SEAL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - TANK FARM

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.27 | 0.03 | 1.20 | 0.03 | 0.00 | 0.27 | 1.20 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.3 STORAGE OF ORGANIC LIQUIDS
EQUATION 3 TOTAL LOSSES FROM FLOATING ROOF TANKS
PAINT TYPE: INTERNAL FLOOTING ROOF

LBS/YR = EQUATION 3 FROM PG. 4.3-15

| | | | |
|---|---|---|---|
| LOSS ..... | 2395.92 | LBS/YR | LR+LW+LF+LD |
| (RIM SEAL LOSS) = EQUATION 4 FROM PG. 4.3-16 | | | |
| LR ..... | 329.51 | LBS/YR | KS*V^n*P*D*MV*KC |
| KS ..... | 1.60 | | SEAL FACTOR (LB-MOLE/(FT*(MI/HR)^N*YR)), FROM TABLE 4.3-4 - LIQUID MOUNTED RESILIENT SEAL WITH RIM MOUNTED SECONDARY SEAL |
| V ..... | 8.00 | MPH | AVERAGE WIND SPEED AT TANK SITE, FROM NOI |
| n ..... | 0.00 | | SEAL RELATED WIND SPEED EXPONENT |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LW ..... | 64.25 | LBS/YR | ((0.943)*Q*C*WL/D)*(1+(NC*FC/D)) |
| Q ..... | 660000.00 | BBL/YR | THROUGHPUT (bbl/year), FROM NOI |
| C ..... | 0.0015 | bbl/ft 2 | SHELL CLINGAGE FACTOR (bbl/1000 ft2), AP-42 TABLE 4.3-5 |
| WL ..... | 6.40 | LBS/GAL | AVERAGE ORGANIC LIQUID DENSITY (LB/GAL), FROM AP-42, TABLE 4.3-2 |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| NC ..... | 0.00 | | NUMBER OF COLUMN, NOTE 3 PG. 4.3-19 |
| FC ..... | 1.00 | | EFFECTIVE COLUMN DIAMETER, NOTE 4 PG. 4.3-19 |
| LF ..... | 699.77 | LBS/YR | FF*D*P*MV*KC |
| FF ..... | 316.00 | LB-M/FT YR | TOTAL DECK FITTING LOSS FACTOR |

| | | | |
|---|---|---|---|
| | | | (LB-MOLE/FEET YEAR), FROM NOI |
| | | | (NF1*KF1)+(NF2*KF2) .... + (NFN*KFN) |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |
| LD ..... | 1302.40 | LBS/YR | KD*SD*D^2*P*MV*KC |
| KD ..... | 0.34 | LB-M/FT YR | DECK SEAM LOSS PER UNIT SEAM LENGTH FACTOR |
| | | | (LB-MOLE/FEET YEAR), FROM AP-42, PG. 4.3-25 |
| SD ..... | 0.20 | FT/FT2 | DECK SEAM LENGTH FACTOR (FT/FT2), FROM AP-42, PG. 4.3-25 |
| D ..... | 93.00 | FEET | TANK DIAMETER, FRMO NOI |
| P ..... | 0.03 | | (PT/PA)/((1+(1-PT/PA)^0.5)^2) |
| | | | PT = TRUE VAPOR PRESSURE (1.3 PSIA), FROM FIGURE 4.3-6 |
| | | | PA = AVERAGE ATMOSPHERIC PRESSURE (12.4 PSIA), FROM NOI |
| MV ..... | 80.00 | LB/LB-MOLE | AVERAGE VAPOR MOLECULAR WEIGHT, FROM NOTE 1 OF EQUATION 1 |
| KC ..... | 1.00 | | PRODUCT FACTOR, FROM NOTE 3 PG. 4.3-16 |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 24 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 7 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| PER YEAR ..... | 8736 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 514
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: HYDRAULIC FLUID WASTE RECLAMATION UNITS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 514

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 1.08 | 0.14 | 1.13 | 0.03 | 95.00 | 21.63 | 22.50 |

| ION FACTORS (IN LBS/GAL) | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 10.00 | LBS/GAL | FROM NOI |

| | | | |
|---|---|---|---|
| TOTAL WASTE FLUID PROCESSED IN YEAR .. | 30000.00 | GAL/YR | FROM NOI, TOTAL WASTE FLUID INCLUDED CONTAMINATION AND OTHER FLUIDS |
| PERCENTAGE OF CONTAMINATION ..... | 15.00 | % | FROM NOI |
| CONTAMINATION PROCESSED IN HOUR ..... | 2.16 | GAL/HR | (CONTAMINATION PROCESSED IN YEAR)/(ANNUAL OPERATING HOURS) |
| CONTAMINATION PROCESSED IN YEAR ..... | 4500.00 | GAL/YR | (TOTAL WASTE FLUID PROCESSSED IN YEAR)* (PERCENTAGE OF CONTAMINANTS) |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR | 52 | WEEKS/YEAR | FROM NOI |
| S PER YEAR | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 514

DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: VOC PPM CALC. FOR HYDRALIC FLUID WASTE RECLAMATION UNITS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 514

| POLLUTANT | VOC | |
|---|---|---|
| LB/HR ..... | 1.08 | FROM CALCS ABOVE |
| LBS/LB MOLE ..... | 139.00 | LBS/LB MOLE |
| CONSTANT ..... | 60.00 | MIN/HR |
| FLOW RATE ..... | 20000.00 | DSCF/MIN |
| CONSTANT ..... | 0.00259 | LB MOL/DSCF |

LB/MIN = (LB/HR)/(60 MIN.HR)

= ..... 0.02

PPM = (LB/MIN)/((DSCF/MIN)(LB MOLE/DSCF)(LB/LB MOLE)(1/1X10^6))

= ..... 2.50 PPMV

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PAINT SPRAY BOOTH EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.18 | 0.02 | 0.18 | 0.01 | 85.00 | 0.18 | 0.18 |

SOUCE INCLUDED:

URETHANE
MISCELLANEOUS

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: URETHANE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.16 | 0.02 | 0.17 | 0.00 | 0.00 | 0.16 | 0.17 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

AL OF VOC = VOC, vol % FROM PG. 4.2.2.1-3

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 6.80 | LBS/GAL | V(%)*(COATING DENSITY)/100 |
| V(%) ..... | 80.00 | % | FROM NOI |
| COATING DENSITY ..... | 8.50 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.02 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 50.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: MISCELLANEOUS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 |

LBS/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 6.00 | LBS/GAL | FROM NOI |
| VOC CONTENT..... | 6.00 | LBS/GAL | FROM NOI |

| | | | |
|---|---|---|---|
| GAL/HR ..... | 0.00 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 5.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL LAB HOODS EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.29 | 0.04 | 0.31 | 0.01 | 85.00 | 1.97 | 2.04 |

SOUCE INCLUDED:

XYLENE
NAPTHA ALIPHATIC
ISOPROPHYL ALCOHOL

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: XYLENE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.11 | 0.01 | 0.11 | 0.00 | 85.00 | 0.71 | 0.73 |

LBS/GAL OF VOC = SOLVENT DENSITY,

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 7.34 | LBS/GAL | SOLVENT DENSITY |
| SOLVENT DENSITY..... | 7.34 | LBS/GAL | FROM CHEMICAL ENGINEERING HANDBOOK |

| | | | |
|---|---|---|---|
| R ..... | 0.10 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 200.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NAPTHA ALIPHATIC
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | | | CONTROLLED | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.05 | 0.01 | 0.05 | 0.00 | 85.00 | 0.31 | 0.32 |

LBS/GAL OF VOC = SOLVENT DENSITY

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 6.40 | LBS/GAL | SOLVENT DENSITY |
| SOLVENT DENSITY..... | 6.40 | LBS/GAL | FROM AP-42 TABLE 4.3-2, JET NAPTHA |
| ..... | 0.05 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 100.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

)LLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 5N
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: ISOPROPHYL ALCOHOL
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 5N

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 0.14 | 0.02 | 0.15 | 0.00 | 85.00 | 0.95 | 0.99 |

LBS/GAL OF VOC = SOLVENT DENSITY

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 6.60 | LBS/GAL | SOLVENT DENSITY |
| SOLVENT DENSITY..... | 6.60 | LBS/GAL | FROM CHEMICAL ENGINEERING HANDBOOK |

| | | | |
|---|---|---|---|
| ; ..... | 0.14 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| _/YR ..... | 300.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NET EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE (PRE-MOD) .. | 19.22 | 2.42 | 19.99 | 0.57 | 0.00 | 19.22 | 19.99 |
| VOC non MATHANE (POST-MOD) . | 16.91 | 2.13 | 17.59 | 0.51 | 0.00 | 16.91 | 17.59 |
| NET EMISSION | -2.31 | -0.29 | -2.40 | -0.07 | 0.00 | -2.31 | -2.40 |

SOUCE INCLUDED:
TOTAL PRE-MODIFICATION EMISSION ESTIMATE
TOTAL POST-MODIFICATION EMISSION ESTIMATE

.OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL PRE-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 19.22 | 2.42 | 19.99 | 0.57 | 0.00 | 19.22 | 19.99 |

SOUCE INCLUDED:

POLYURETHANE
EPOXY POLYAMIDE PRIMER (1600 AND 375 GALLONS/YEAR)
NITROCELLULOSE LACQUER
MISCELLANEOUS

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: EPOXY POLYAMIDE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 4.46 | 0.56 | 4.64 | 0.13 | 0.00 | 4.46 | 4.64 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 5.80 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 10.50 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.77 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 1600.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: TOTAL POST-MODIFICATION EMISSION ESTIMATE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 16.91 | 2.13 | 17.59 | 0.51 | 0.00 | 16.91 | 17.59 |

SOUCE INCLUDED:

POLYURETHANE
EPOXY POLYAMIDE PRIMER (375 GALLONS/YEAR)
WATER REDUCIBLE PRIMER
NITROCELLULOSE LACQUER
MISCELLANEOUS

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: POLYURETHANE
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 10.39 | 1.31 | 10.81 | 0.31 | 0.00 | 10.39 | 10.81 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

AL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 4.70 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 9.20 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 2.21 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 4600.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

JLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: EPOXY POLYAMIDE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | | CONTROLLED | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 1.05 | 0.13 | 1.09 | 0.03 | 0.00 | 1.05 | 1.09 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 5.80 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 10.50 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.18 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 375.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: WATER REDUCIBLE PRIMER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 2.15 | 0.27 | 2.24 | 0.06 | 0.00 | 2.15 | 2.24 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 2.80 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 8.90 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.77 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 1600.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

ILLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: NITROCELLULOSE LACQUER
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| POLLUTANT | LBS/HR | HOURLY GRAMS/SEC | TONS/YR | ANNUAL GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 1.44 | 0.18 | 1.50 | 0.04 | 0.00 | 1.44 | 1.50 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 4.80 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 8.00 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.30 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 625.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

:OLLED AND UNCONTROLLED EMISSION ESTIMATES FOR:

FILE: 220
DATE: FEB-14-90
TIME: 9:00 AM

SOURCE: MISCELLANEOUS
COMPANY NAME: DEPT. OF THE AIR FORCE
LOCATION: HILL AFB - BUILDING 220

| | CONTROLLED | | | | | UNCONTROLLED | |
|---|---|---|---|---|---|---|---|
| | | HOURLY | | ANNUAL | | | |
| POLLUTANT | LBS/HR | GRAMS/SEC | TONS/YR | GRAMS/SEC | % CNTRL | LBS/HR | TONS/YR |
| VOC non METHANE ..... | 1.88 | 0.24 | 1.95 | 0.06 | 0.00 | 1.88 | 1.95 |

AP-42 FOURTH EDITION SEPT. 1985 VOLUME 1
SECTION 4 EVAPORATION LOSS SOURCES
4.2 SURFACE COATING
TABLE 4.2.2.1-1 VOC EMISSIONS FOR UNCONTROLLED SURFACE COATING
PAINT TYPE: CONVENTIONAL

LBS/GAL OF VOC = VOC CONTENTS OF COATING

| | | | COMMENTS |
|---|---|---|---|
| VOC non METHANE ..... | 6.00 | LBS/GAL | FROM NOI |
| V(%) ..... | | % | |
| COATING DENSITY ..... | 9.00 | LBS/GAL | FROM NOI |
| GAL/HR ..... | 0.31 | GAL/HR | (GAL/YR)/(HOURS/DAY)/(DAYS/WEEK)/(WEEKS/YR) |
| GAL/YR ..... | 650.00 | GAL/YR | FROM NOI |

HOURS OF OPERATION

| | | | |
|---|---|---|---|
| HOURS PER DAY ..... | 8 | HOURS/DAY | FROM NOI |
| DAYS PER WEEK ..... | 5 | DAYS/WEEK | FROM NOI |
| WEEKS PER YEAR ..... | 52 | WEEKS/YEAR | FROM NOI |
| HOURS PER YEAR ..... | 2080 | HOURS/YEAR | (HOURS/DAY)*(DAYS/WEEK)*(WEEKS/YEAR) |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

RECEIVED
JUN 28 1990
AIR QUALITY

JUN 22 1990

Ref: 8AT-AP

Mr. David Kopta
Engineering Unit Manager
Bureau of Air Quality
Utah Department of Health
P.O. Box 16690
Salt Lake City, Utah 84116-0690

Dear Dave:

Upon review of the May 22, 1990, Notice of Intent to approve five projects at Hill Air Force Base (Installation of Steam Boilers, Vapor Seals for JP-4 STorage Tanks, Waste Hydraulic Fluid Reclamation Units, a Paint Spray Booth, Lab Hoods, and a Paint Spray Hanger), EPA has the following comments:

1. The proposed approval order Condition 4.G, for the paint spray hanger at building 220, should include the usage of 375 gallons/year of epoxy polyamide primer.

2. Although the proposed approval order Condition 5, for the hydraulic fluid waste reclamation unit, states that the condenser must be 95% effective, there is no requirement to demonstrate this efficiency, such as through performance testing. The efficiency of the condenser may be determined by monitoring solvent input to the condenser, and solvent recovery. Condition 5 only requires monitoring the amount of hydraulic fluid processed, and the amount of solvent recovered from the condenser. In addition to these parameters, HAFB should be required to periodically measure and record the solvent content of the hydraulic fluid being processed. The State should add this requirement to Condition 5, and also require the calculation of solvent emissions to the air, on a 12-month rolling monthly basis.

3. The requirements for solvent degreasing, in Condition 11, should be updated to reflect the revised UACR 4.9.4.A.

Please contact Mindy Mohr at (303) 294-7539 with any questions regarding our comments.

Sincerely,

John T. Dale for

Marius J. Gedgaudas, Chief
Compliance Section

4.2.4-809

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2405

JUN 22 1990

Ref: 8AT-AP

Mr. David Kopta
Engineering Unit Manager
Bureau of Air Quality
Utah Department of Health
P.O. Box 16690
Salt Lake City, Utah 84116-0690

Dear Dave:

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1. The proposed approval order Condition 4.G, for the paint spray hanger at building 220, should include the usage of 375 gallons/year of epoxy polyamide primer.

2. Although the proposed approval order Condition 5, for the hydraulic fluid waste reclamation unit, states that the condenser must be 95% effective, there is no requirement to demonstrate this efficiency, such as through performance testing. The efficiency of the condenser may be determined by monitoring solvent input to the condenser, and solvent recovery. Condition 5 only requires monitoring the amount of hydraulic fluid processed, and the amount of solvent recovered from the condenser. In addition to these parameters, HAFB should be required to periodically measure and record the solvent content of the hydraulic fluid being processed. The State should add this requirement to Condition 5, and also require the calculation of solvent emissions to the air, on a 12-month rolling monthly basis.

3. The requirements for solvent degreasing, in Condition 11, should be updated to reflect the revised UACR 4.9.4.A.

Please contact Mindy Mohr at (303) 294-7539 with any questions regarding our comments.

Sincerely,

John T. Dale for

Marius J. Gedgaudas, Chief
Compliance Section

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

RECEIVED
NOV 28 1989
AIR QUALITY

22 NOV 1989

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

RE: Notice of Intent to Construct, Paint Spray Hangar Modification, Bldg 220

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 777-7651.

Sincerely

James R. VanOrman

JAMES R. VAN ORMAN
Director
Envrntl Mgt Dir

1 Atch
Notice of Intent to Construct

Notice of Intent to Construct
Modification of Aircraft Paint Hangar, Bldg 220
Hill Air Force Base, Utah

1. PROJECT DESCRIPTION:

We propose to modify our existing aircraft paint hangar in building 220. The existing paint hangar is a grand-fathered source that was built in the 50's and therefore, we currently do not have an air quality permit for this source. Please refer to your Approval Order dated Dec 28, 1987 for corrosion control building 220, where three new paint booths were permitted. Those paint booths were as a result of conversion of aircraft chemical stripping areas into paint booths. Existing paint hangar waterfall troughs and piping is corroded out. These troughs and piping will be replaced by Devilbiss modular turboclean chambers complete with pumps, nozzles, associated piping, controls and sludge disposal. A manufacturer's bulletin on these turboclean chamber units is attached (Atch 1). There will be a total of 9 units including 2 exhaust fans per unit. Based on a volumetric flow rate of 18,500 cubic feet per minute (CFM) per fan, total exhaust volume will be approximately 333,000 CFM. The points of discharge will be approximately 52 feet above ground. A face velocity of at least 100 feet per minute (FPM) shall be maintained across the crossectional area of each unit. The paint hangar can accomodate up to three aircrafts for painting at one time and hangar can be split into three painting areas using movable partitions.

2. AIR EMISSIONS:

Air emissions from painting operations include hydrocarbons and particulates. 80-90% of painting in the hangar involves painting exterior of aircraft and related components. Only a limited number of miscellaneous items will be painted. According to Utah Air Conservation Regulation 4.9.6.g.(1)(g) painting exterior of airplanes is 'exempt' from VOC regulation under miscellaneous metal parts and products VOC emissions. Also, as stated above, these emissions have existed over the years since these sources were grand-fathered. We are not adding any new emissions as a result of this modification. In fact, the overall emissions will be reduced due to (a) substitution of solvent base primer with water reducible primer and (b) using high volume low pressure (HVLP) paint guns to increase the transfer efficiency of paint guns. Particulate emissions are controlled using waterfalls, reduction in hydrocarbon emissions is estimated as follows:

Approximate Paint Usage:

| | | |
|---|---|---|
| Polyurethane | 4600 | gals/year |
| Epoxy Polyamide Primer | 375 | gals/year |
| Water Reducible Primer | 1600 | gals/year |
| Nitrocellulose Lacquer | 625 | gals/year |
| Miscellaneous | 650 | gals/year |

Average VOC content of paints

| Paint | VOC (lbs/gal) | Density (lbs/gals) |
|---|---|---|
| Polyurethane | 4.7 | 9.2 |
| Epoxy Polyamide Primer | 5.8 | 10.5 |

| | | |
|---|---|---|
| Water Reducible Primer | 2.8 | 8.9 |
| Nitrocellulose Lacquer | 4.8 | 8.0 |
| Miscellaneous | 6.0 | 9.0 |

Hydrocarbon emission before modification:

4600x4.7 + 1600x5.8 + 375x5.8 + 625x4.8 + 650x6/2000 = 20 tons/year

Hydrocarbon emissions after modification:

4600x4.7 + 1600x2.8 + 375x5.8 + 625x4.8 + 650x6/2000 = 17.6 tons/year

Hydrocarbon reduction due to this modification:

20-17.6 = 2.4 tons/year

Reduction in hydrocarbon emissions due to increase in transfer efficiency is not shown above. It is estimated that the transfer efficiency of HVLP system could be 60-70% as compared with 30-40% for the conventional type spray gun. This increase in transfer efficiency will reduce overall paint consumption thereby reducing emissions to the atmosphere. A manufacturer's bulletin on HVLP system is attached (Atch 2). Manufacturer claims transfer efficiency as high as 90% on certain workpieces.

3. <u>AIR CLEANING DEVICES</u>:

Paint particulate emissions will be controlled by waterfalls. Hydrocarbon emissions are controlled by substituting solvent base primer by water reducible primer and by using HVLP system spray gun. No other control devices are proposed due to high cost of controlling diluted hydrocarbon air stream from the paint hangar. This is illustrated by the cost analysis for carbon adsorption units as follows:

Total volume of gas flow to be treated = 330,000 CFM. According to EPA article 'Recovery of Volatile Organics for Industrial Sources' by James T. Spivey, Typical capital costs for conventional steam-generated systems are $15-20/CFM. For large volumes, use $10/CFM. Capital cost of carbon adsorption units = $3,300,000. Annualized cost assuming 20 years life at 8% rate:

= $3,300,000 x Capitol Recovery Factor
= $3,300,000 x 0.1019
= $ 336,270

Annual operating costs including labor, utilities, and carbon regeneration:

Assume at 15% = $ 495,000

Assuming 90% efficiency, pollutant reduction = 17.6x.9 = 15.84 tons/year

Cost $/ton pollutant = $ $\frac{831,270}{15.84}$
= $ 52,480 $/ton pollutant

4. <u>EMISSION POINTS</u>:

There will be eighteen exhaust stacks discharging approximately 330,000 CFM into the atmosphere. Point of discharge will be about 52 feet above grade.

5. SAMPLE POINTS:

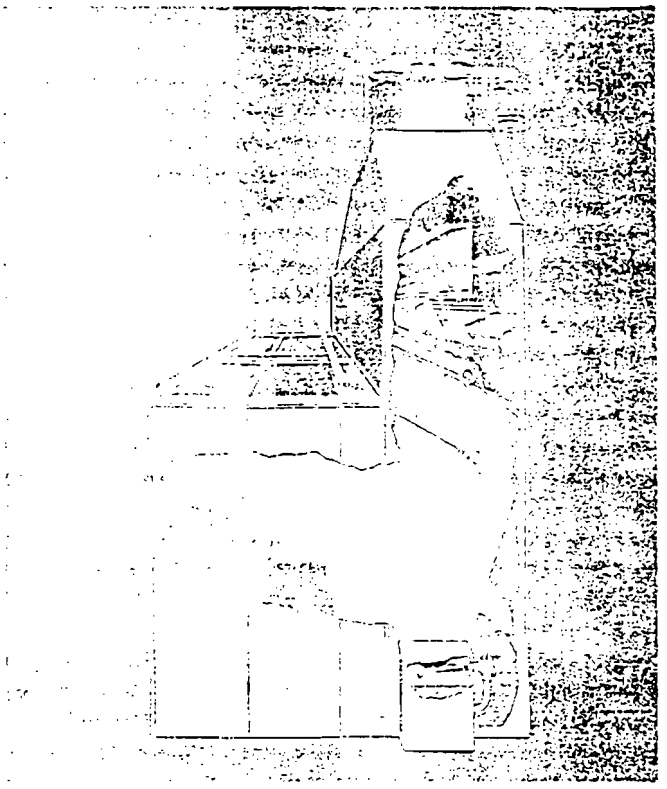
No sampling points are provided.

6. OPERATING SCHEDULE:

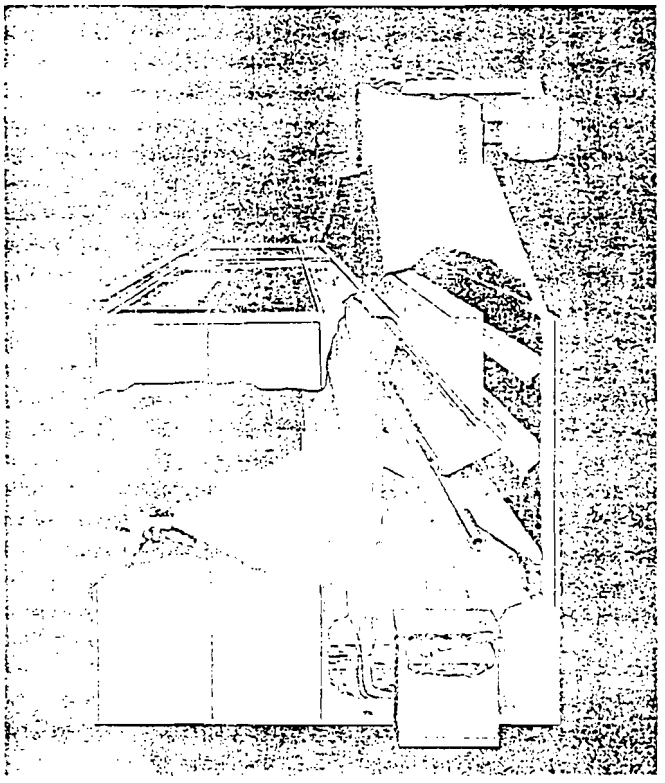
This facility will normally be operated three 8-hour shifts a day, 5 days a week, 52 weeks a year.

model
TEX 1410-150-M

DEVILBISS



Elevated Chamber



Low Chamber

## *Elevated and Low Type TURBOCLEAN Chambers*

Both types are available in 24", 36" and 48" air washers. The chambers provide the following sufficient washing capacity:

24" chamber—Up to 1000 cfm per foot of width 28 GPM.
36" chamber—Up to 1400 cfm per foot of width 28 GPM.
48" chamber—Up to 2000 cfm per foot of width 56 GPM.

## *Elevated Type*

- Elevated chambers are preferred whenever sufficient ceiling height is available (minimum of 14 ft).
- It is designed for applications where overspray is directed horizontally at waist level or higher and allows for effective pickup of the excess overspray and elimination of the rebound from a flat floodsheet.
- Recommended for work hung from monorail conveyors.
- Air is washed twice—passing through a flood sheet of water and then scrubbed and agitated in a dense, overlapping spray pattern from the nozzles.
- Three air velocities: 100, 125 and 150 fpm.
- Entire volume of water on wash down sheet.
- Very low resistance to air flow.
- Convenient inspection and clean-out doors.

## *Low Type*

- Low type chambers are employed where building ceiling heights restrict the use of elevated type—minimum of 10 ft. 6 in. ceiling height required.
- Air is washed twice—passing through the curtain of water from wash down sheet—scrubbed and agitated in dense, overlapping spray from nozzles.
- Three air velocities—100, 125 and 150 fpm.
- Water flow on wash down sheet traps paint, keeps surface clean and provides first stage washing.
- Convenient inspection and clean-out doors.

(9 units, 6 exhaust fans/unit.
18,900 CFM/fan
770 gpm
desludging unit for Sump.

ATCH-1



Atch 1

### *TURBOCLEAN Spray Booth*

The *TURBOCLEAN* spray booth is a unique, patented water wash spray booth technology available only from DeVilbiss.

### *What A TURBOCLEAN Spray Booth Does*

It works to continually breakup paint accumulating on the surface of the tanks into minute, easier to handle solid particles of paint. As a result of this reduction, the need for skimming the water decreases as well as maintenance costs and the need for sludge containers.

### *How A TURBOCLEAN Spray Booth Can Help You*

The DeVilbiss *TURBOCLEAN* spray booth can greatly reduce:

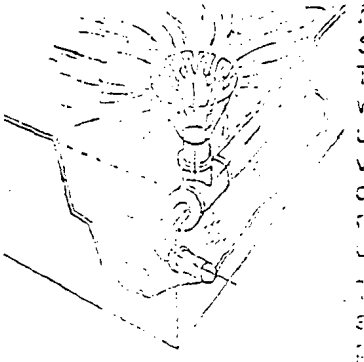
**Sludge Disposal.**
The *TURBOCLEAN* action removes the liquid from the paints and reduces it to the smallest solid particles. When this occurs, it creates a waste "carpet" on the bottom of the tank representing only 1/8 th to 1/10 th of the original volume of the paint sprayed into the booth.

**Obnoxious Odors Around Booth—Improving Working Conditions.**
The continuous aeration in the *TURBOCLEAN* booth maintains a high level of dissolved oxygen in the water. This eliminates stagnation and prevents the growth of odor-causing anaerobic bacteria.

**Pump and Nozzle Clogging.**
The patented venturi cone is located adjacent to the pump intake and provides protection for the pumps and nozzles against clogging. This greatly reduces booth downtime — and more booth "uptime" means more productivity for you.

**Compound Usage.**
Its unique water washing action causes a more complete breakdown of paint particles. By decreasing the need for chemical compound breakdown, total booth operating costs are reduced.

**Booth Maintenance Costs.**
It decreases the need for frequent skimming. Regular cleanup of the booth can be extended for weeks or even months. Add to this reduced waste disposal and you'll see how a *TURBOCLEAN* spray booth can pay for itself in a very short time.



### *How A TURBOCLEAN Spray Booth Works*

The *TURBOCLEAN* water wash booth uses the unique, patented Dehon venturi cone to provide a continual mixing action, reducing the surface build-up of paint.

This circulating and mixing action is created by water, pumped from the booth pump into the venturi cone. Water and paint are pulled from the surface of the tank down through the cone, into a sale, separation tank. Water and paint are recirculated and passed under a surface baffle separating the cones from the safe area. As the water and paint particles pass through the cone, they are broken down repeatedly until only minute paint particles are left. These solids, in many cases, eventually sink to the bottom where they form a cohesive, easily removed "carpet".

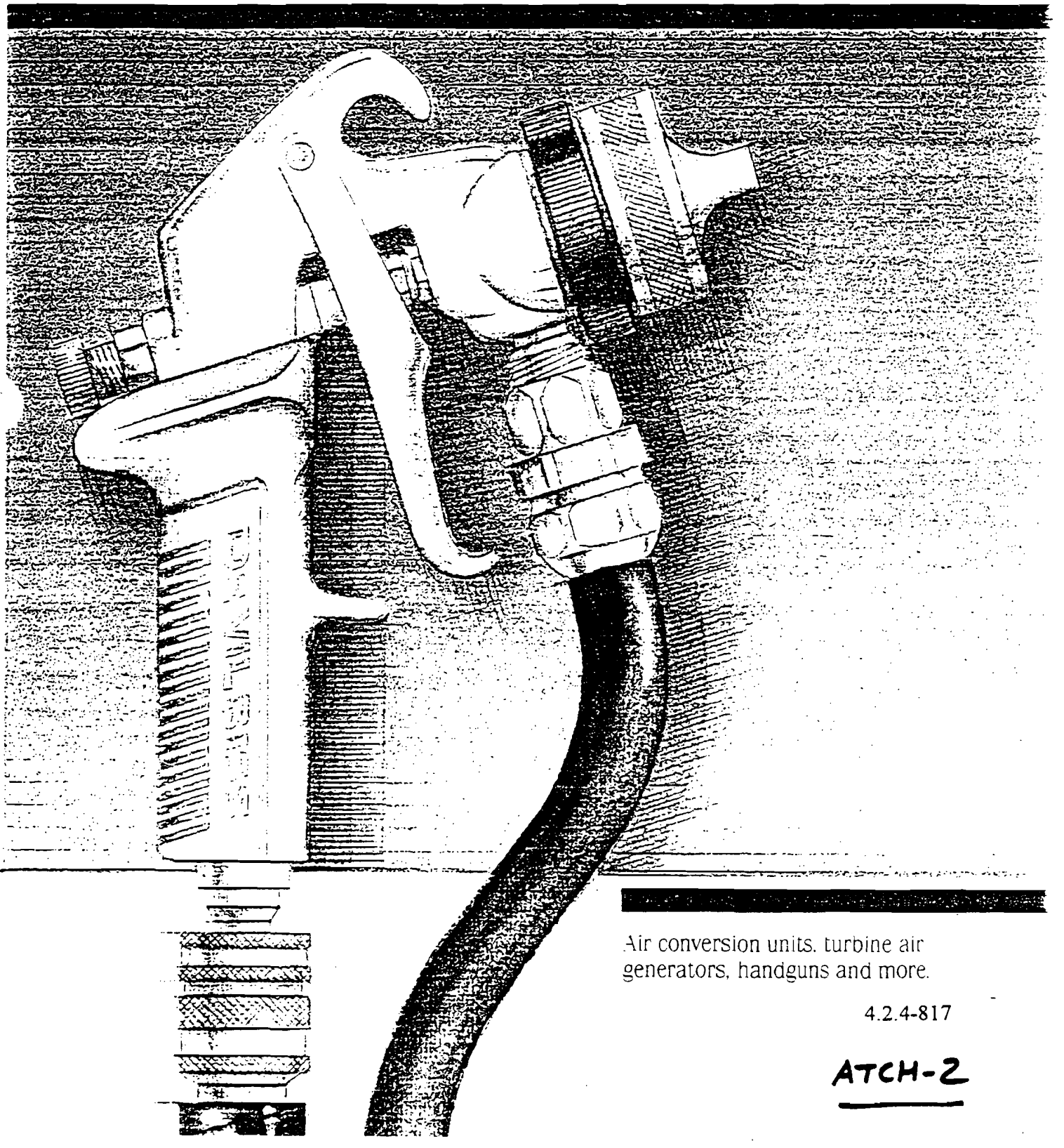
The *TURBOCLEAN* "carpet" is made up entirely of the solid non-volatile part of the paint. It is a nonflammable, non-sticky waste—a great environmental improvement in the booth area as compared with the sticky, hazardous, difficult to clean paint which accumulates in most water tanks. The action of the *TURBOCLEAN* cone mixes air in water, thus maintaining a high level of oxygen. This flow of oxygenated water around the tank at all levels reduces stagnation and helps prevent the growth of anaerobic bacteria. It is this bacteria that causes the typical foul odor associated with old style water wash booths.

Not all paints can be made to sink. Some of them float on water. To isolate and handle these particles, a controlled flotation zone is provided in the tank, trapping any particles that won't sink and permitting their removal when necessary. Thus, the *TURBOCLEAN* booth greatly improves the treatment of all types of paints including primers, top coats, enamels, epoxys, urethanes and water reducibles.

DEVILBISS

# HVLP System 89™

## Complete systems for industrial High Volume. Low Pressure applications.



Air conversion units, turbine air generators, handguns and more.

4.2.4-817

ATCH-2

# What's the best HVLP system for you? Here are some guidelines for choosing an HLVP system.

Convenient adjustment for fan pattern size.

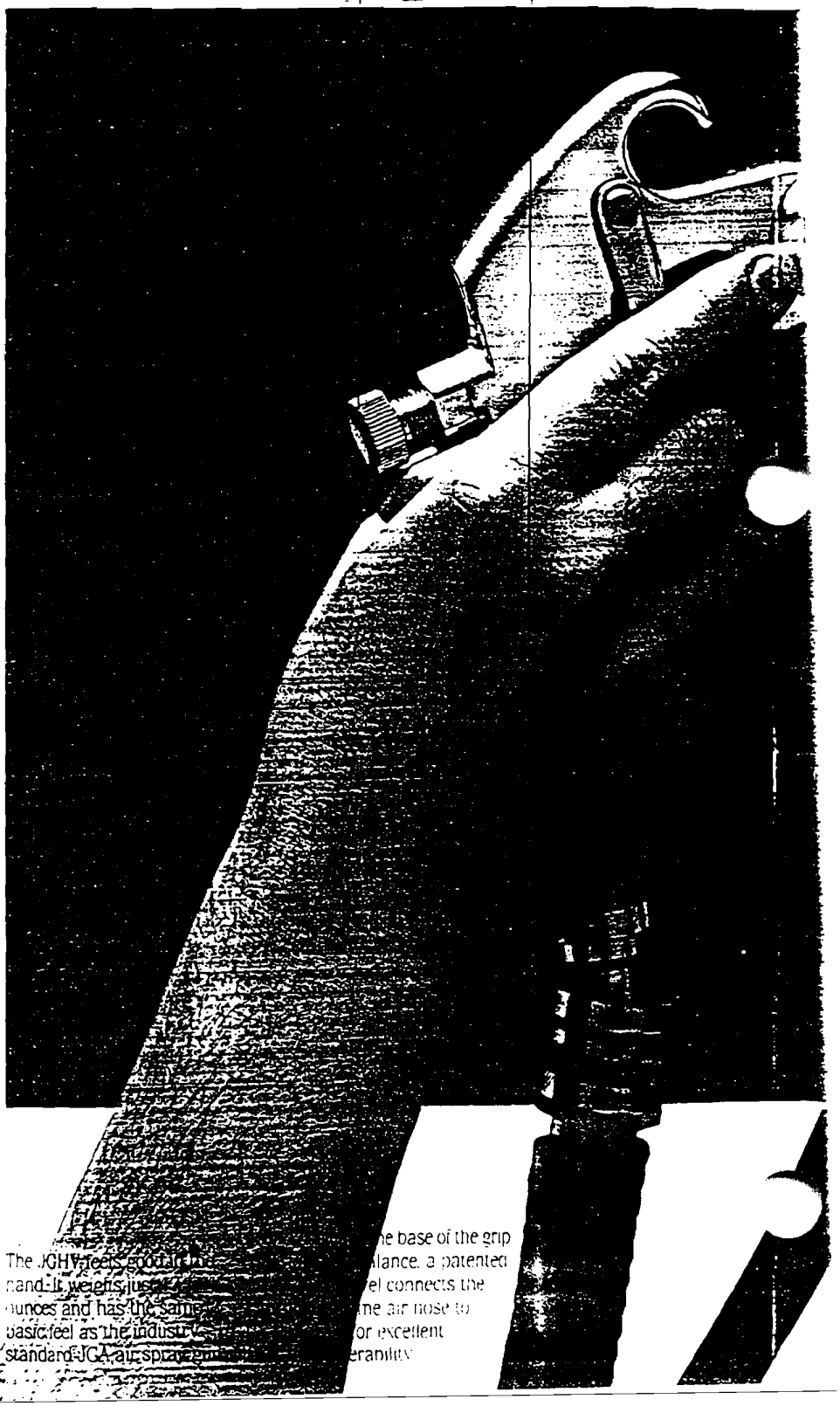
An insulated Nylon 11 plastic grip keeps the operator's hand comfortable when spraying with high temperature air.

**High-production, continuous-duty.** For high-volume industrial use, you need the system that's productive hour after hour and day after day. You need a DeVilbiss wall-mounted Air Conversion Unit with pressure tank or piston pump fluid supply.

These systems can handle one or two guns per air source, continuously providing up to 10 psi. They can be ordered with heavy-duty air heaters. (Air Conversion Units without heat can be mounted inside the spray booth.) At maximum pressure, they handle higher solids levels than other HVLP systems. And no turbine unit is required.

**Medium-low production, portability.** Air Turbine Units need no compressed air supply. They need no air heater because the turbine heats the air. They simply plug into standard 110 volt power supplies. When used with cup-fed guns or with a two-gallon pressure tank, they go anywhere: just plug them in and you're ready to go.

When properly installed, used, and maintained, all DeVilbiss HVLP systems are designed to meet or exceed insurance industry safety standards.



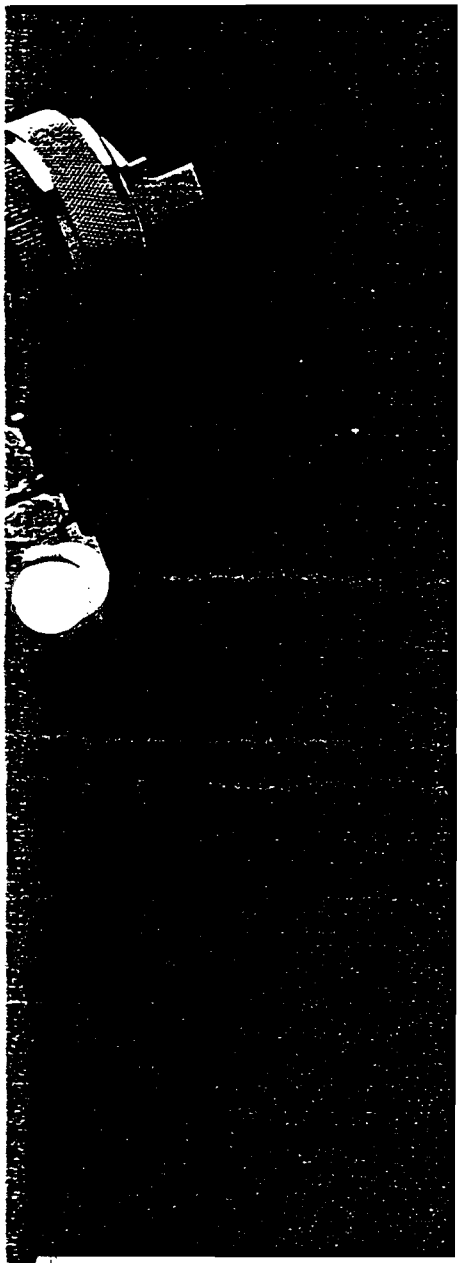
The JGHV feels good in the hand. It weighs just [illegible] ounces and has the same basic feel as the industry standard JGA air spray gun.

The base of the grip balance, a patented feel connects the fine air hose to for excellent [illegible]erability.

# JGHV: A DeVilbiss spray gun designed specifically for HVLP atomization.

...features forged ...m construction to ...industrial use. ...s steel fluid tip and ...oned needle extend ...

The JGHV gun provides excellent atomization. Pattern is infinitely adjustable from full fan to round.



At low pressure it's far more difficult to break-up paint into small particles. Most spray guns would do a marginal job. The JGHV is the exception.

DeVilbiss is not simply a hardware supplier: we're famous for atomization. We know how to design air caps, and we know how to apply paint.

At 2 to 10 psi, the JGHV provides consistent paint break-up. It generates a soft, even pattern that produces a uniform build. The JGHV has produced high quality finishes with solids levels as high as 55%, that's far higher than most low pressure systems can handle.

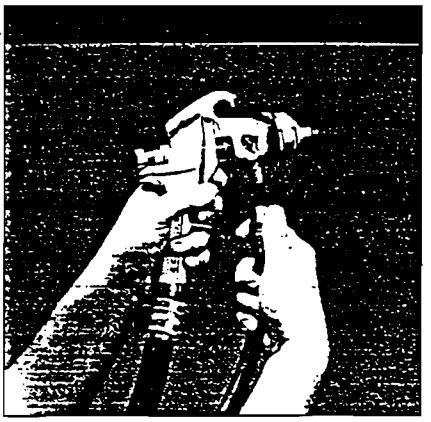
And yet, the JGHV doesn't compromise operator comfort. Its forged aluminum body and tough engineered plastic grip make it comfortable and light, with good balance, like the industry-standard JGA.

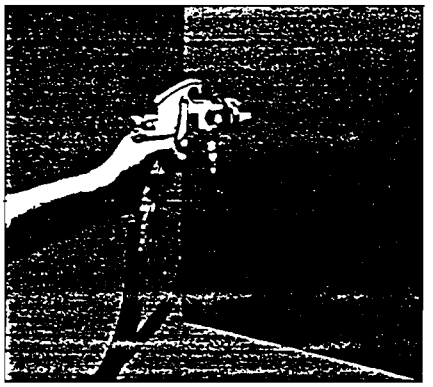
Because you can choose from a wide variety of tips and fluid caps, you can be sure there's one that's ideal for you. JGHV handles solvent-based and waterborne materials. It can be ordered with a 2-gallon pressure tank or with a Teflon-lined cup.

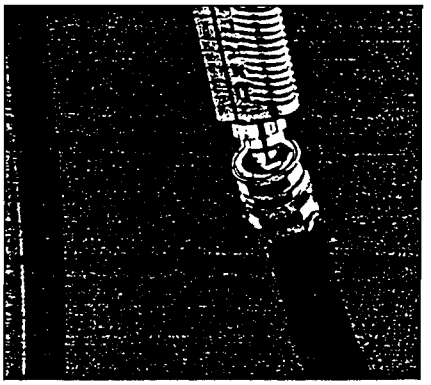
*Top right: One gun handles solvent or waterborne materials. It can be used with either pressure feed or suction feed with a simple air cap change.*

*Middle right: The JGHV produces high quality finishes with as little as 2 psi. At 10 psi, it handles medium-high solids.*

*Bottom right: A patented flexible, ball-type swivel connector provides complete maneuverability for getting into tight areas.*







The JGHV can use a DeVilbiss Teflon-lined cup or a pressure tank as shown here.

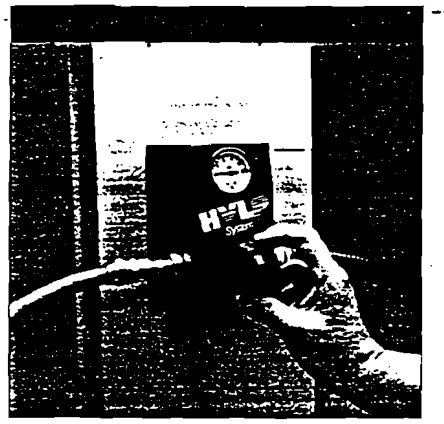
# With more air source options than any other supplier. DeVilbiss has an answer for every HVLP need.

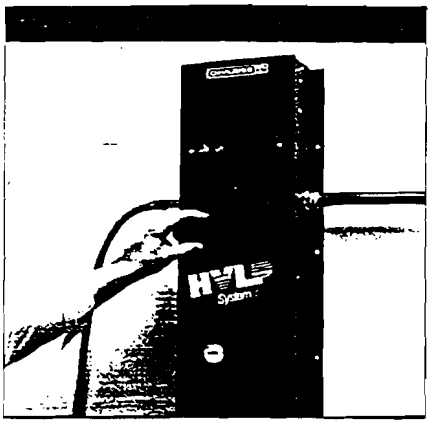
More than any other part of your HVLP system, the air source will limit your options and determine how you can use the equipment. DeVilbiss offers two basic systems and lots of options.

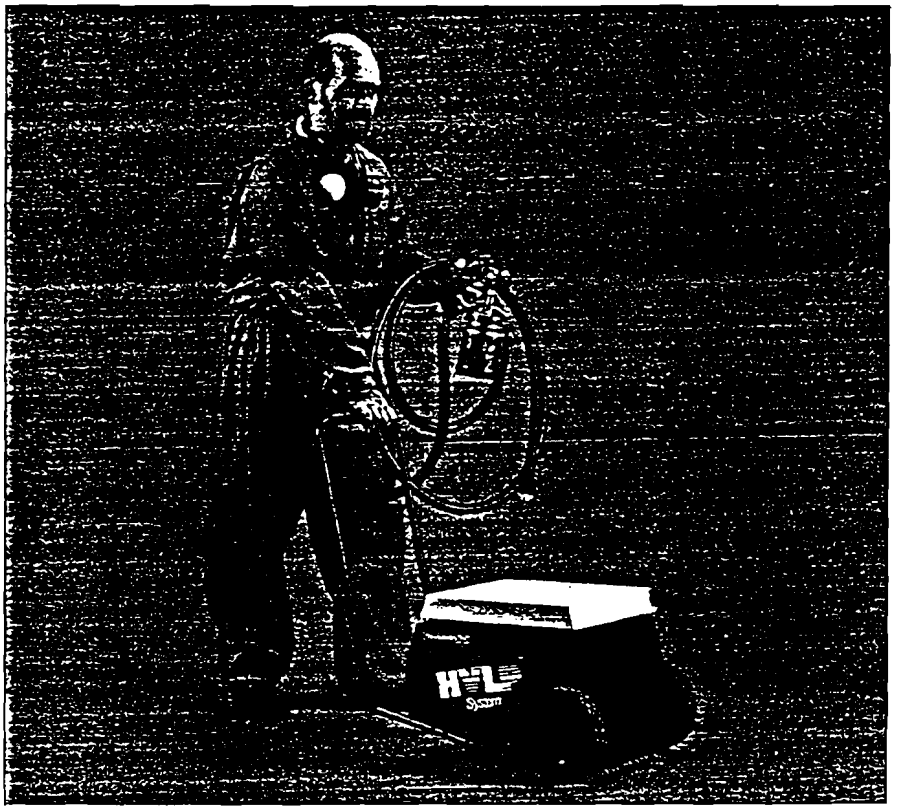
The first configuration is the Air Conversion Unit. This wall-mounted unit accepts high pressure air from any normal compressed air source and produces low pressure air for HVLP application.

It's designed for continuous-duty industrial applications where the utmost control is needed. Pressure is adjustable from 2 to 10 psi. To improve flash and tack time, it can be supplied with either a fixed- or adjustable-temperature heavy-duty air heater that offers fast warm-up and consistent air temperature. It can be used with one or two guns.

The most portable unit in the DeVilbiss line is the Air Turbine Unit (ATU). This system uses a heavy-duty three-stage turbine-air generator which requires no compressed air source, only a 110 volt AC power supply. Turbine units are placed outside the spray booth, spray room or designated hazardous locations.







*Top left: The model ACU-500 offers adjustable output pressure.*

*Top right: Two ACU models include heaters, the ACU-550 (shown) and the ACU-560 with adjustable heat.*

*Right: The portable ATU models are completely self-contained. Plug them into a standard 110 VAC power source and you're ready to paint.*

# High Volume Low Pressure: High transfer efficiency, and a lot more.

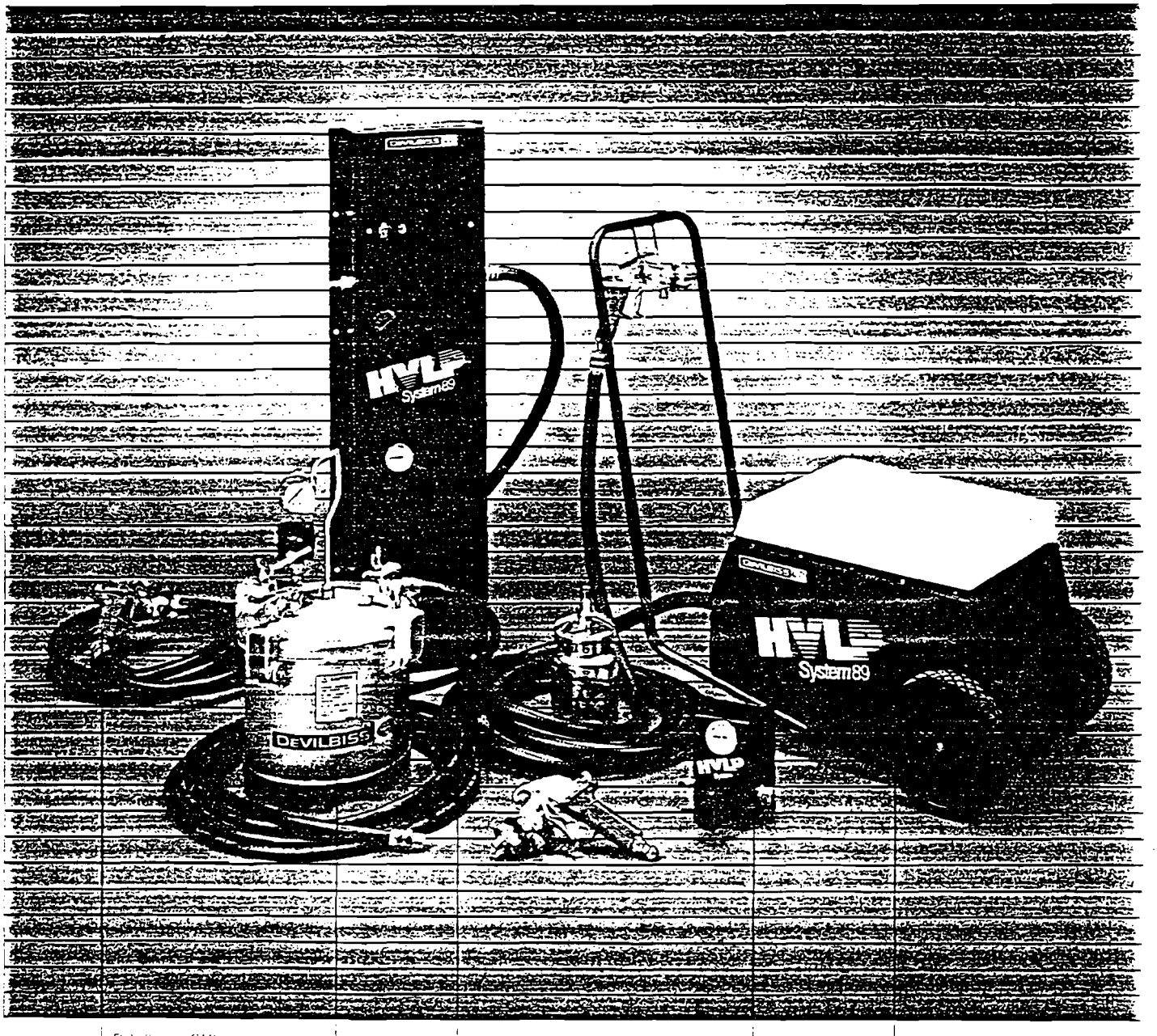
HVLP spray finishing uses a large volume of air delivered at a low pressure to atomize material into a very soft, low-velocity pattern.

Overspray, blow-back and particle bounce are virtually eliminated so transfer efficiency can be as high as 90% on certain workpieces.

Such high transfer efficiency improves painting performance as less material is wasted. The booth needs less maintenance. The environment surrounding the workplace are better off.

DeVilbiss is the first major industrial spray finishing supplier to address this high-performance spray technology.

The systems shown here are just a part of the commitment the company has made to HVLP. For information about these and specially engineered systems, contact your DeVilbiss representative today.




DeVilbiss JGHV guns are specially designed to provide excellent atomization at low pressures. Even with medium-high solids.

Air conversion units handle continuous-duty operation. They can be ordered with or without air heaters.

Systems are provided with either Teflon-lined material hoses or pressure tanks, or may be used with common material supply systems such as piston pumps.

Air conversion units provide continuous 2 to 10 psi air from conventional compressed air sources.

Portable DeVilbiss air turbine units are [illegible] three-stage turbines.

## SPECIFICATIONS:

| AIR CONVERSION UNITS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| AIR UNIT | | | | | | | | SPRAY GUN | |
| Model | Dimensions (Inches) | Input | | Output | | | Weight (Pounds) | Model | Tip Size |
| | | Voltage | PSI | PSI | CFM | Discharge Temp. | | | |
| ACU-500-16FF | 6 x 3 x 5 | n/a | 100 | 10 | 30 | Ambient | 3.5 | JGHV-503-16FF | .055 (1.4mm) |
| ACU-500-14FY | | | | | | | | JGHV-503-14FY | .039 (.98mm) |
| ACU-500-16DE | | | | | | | | JGHV-503-16DE | .070 (1.8mm) |
| ACU-550-16FF | 36 x 9 x 4 | 110V x 15A | 100 | 10 | 30 | 180° F | 50 | JGVH-503-16FF | .055 (1.4mm) |
| ACU-550-14FY | | | | | | | | JGHV-503-14FY | .039 (.98mm) |
| ACU-550-16DE | | | | | | | | JGHV-503-16DE | .070 (1.8mm) |
| ACU-560-16FF | 36 x 9 x 4 | 110V x 15A | 100 | 10 | 30 | to 210° F | 50 | JGHV-503-16FF | .055 (1.4mm) |
| ACU-560-14FY | | | | | | | | JGHV-503-14FY | .039 (.98mm) |
| ACU-560-16DE | | | | | | | | JGHV-503-16DE | .070 (1.8mm) |

Note: All ACU models allow the optional use of Teflon-lined paint cups (Model TLC-565) and 2½ gallon paint tanks (Model PT-530). All systems include a 30' air hose assembly.

| AIR TURBINES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| AIR UNIT | | | | | | | | SPRAY GUN | |
| Model | Dimensions (Inches) | Input | | Output | | | Weight (Pounds) | Model | Tip Size |
| | | Voltage | PSI | PSI | CFM | Discharge Temp. | | | |
| ATU-520-16FF | 20 x 14 x 12 | 110V x 15A | n/a | 4.5 | 16 | 180° F | 45 | JGHV-503-16FF | .055 (1.4mm) |
| ATU-520-14FY | | | | | | | | JGVH-503-14FY | .039 (.98mm) |
| ATU-530-16FF | 32 x 14 x 12 | 110V x 15A | n/a | 4.5 | 16 | 180° F | 55 | JGVH-503-16FF | .055 (1.4mm) |
| ATU-530-14FY | | | | | | | | JGVH-503-14FY | .039 (.98mm) |

Note: Each ATU-520 system includes Teflon-lined paint cup (Model TLC-565) and paint tanks are optional. Each ATU-530 system includes a 2½ gallon paint tank (Model PT-530) and paint cups are optional. All systems include a 30' air hose assembly.

## CAPS, TIPS AND NEEDLES:

| Tip Size | Fluid Tip | Air Cap | Needle |
|---|---|---|---|
| .028 (.70mm) | JGHV-60[illegible] | JGHV-16-12 | JGHV-404-G |
| .034 (.85mm) | JGHV-601-GX | JGHV-16-12 | JGHV-404-GX |
| .039 (.98mm) | JGHV-601-FY | JGHV-16-14 | JGHV-404-FY |
| .055 (1.4mm) | JGHV-601-FF | JGHV-16-14 | JGHV-404-FF |
| .070 (1.8mm) | JGHV-601-DE | JGHV-16-16 | JGHV-404-DE |

When ordering, specify air supply model, JGHV gun model and paint cup, supply tank and cap/tip options.

## HVLP INFORMATION:

DeVilbiss has made a major commitment to HVLP technology including research, application engineering, nationwide spare parts and service. As a result, DeVilbiss HVLP systems reflect our 100-year reputation as spray finishing and atomization experts.

Our free pamphlet (Form no. F-817) describes this new technology. Ask your DeVilbiss distributor for a copy, or call 1-800-DEV-4448.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Models and Specifications subject to change without notice
Patents pending.


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