Section I: AQMD BACT Determinations

Application No.: 386536

Equipment Category – Air Start Unit

1. GENERAL INFORMATION

DATE: 3/31/2004

A. MANUFACTURER: Mak Gessellschaft mbH

B. TYPE: Portable, Gas Turbine Driven

C. MODEL: MSU-200

D. STYLE:

E. APPLICABLE AQMD RULES:

F. COST: $ (NA) SOURCE OF COST DATA:

G. OPERATING SCHEDULE: 4 HRS/DAY 7 DAYS/WK 52 WKS/YR

2. EQUIPMENT INFORMATION

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A. FUNCTION: Produces compressed air to startup aircraft engines. Used when aircraft auxilliary power unit is unavailable.

B. MAXIMUM HEAT INPUT: 6.5 MMBtu/hr

C. MAXIMUM THROUGHPUT: 396 bhp

D. BURNER INFORMATION: NO.: TYPE:

E. PRIMARY FUEL: Diesel

F. OTHER FUEL: None

G. OPERATING CONDITIONS: Intermittent

3. COMPANY INFORMATION

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A. NAME: United Airlines

B. SIC CODE: 4581

C. ADDRESS: 6020 Avion Drive
CITY: Los Angeles STATE: CA ZIP: 90045

D. CONTACT PERSON: Arthur Cottrell

E. PHONE NO.: 310-342-8404

4. PERMIT INFORMATION

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A. AGENCY: SCAQMD

B. APPLICATION TYPE: new construction

C. AGENCY CONTACT PERSON: Hemang Desai

D. PHONE NO.: 909-396-2596

E. PERMIT TO CONSTRUCT/OPERATE INFORMATION: P/C NO.: 386536 ISSUANCE DATE: 9/26/2001
☐ CHECK IF NO P/C P/O NO.: F65862 ISSUANCE DATE: 1/27/2004

F. START-UP DATE: May 16, 2001.

5. EMISSION INFORMATION

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A. PERMIT

A1. PERMIT LIMIT: Facility is in RECLAIM for NOx. Limits on CO and PM are 2000 ppm (Rule 407) and 0.1 gr/scf (Rule 409), respectively. Sulfur in fuel is limited to .05% (wt.). Operation of this gas turbine is limited to 1418 hours per year.

5. EMISSION INFORMATION

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A2. BACT/LAER DETERMINATION: g/bhp-hr: NOx-2.35, CO-3.43, VOC-0.94. Not required in permit, but used for AQMD Regulation XIII (NSR) calculations.

A3. BASIS OF THE BACT/LAER DETERMINATION: Achieved in Practice, based on manufacturer's specification for this model..

B. CONTROL TECHNOLOGY

B1. MANUFACTURER/SUPPLIER: Mak Gesselschaft mbH supplies the air starter unit (Model No. MSU 200). It includes a gas turbine manufactured by Hamilton Sunstrand (Model No. PH-47 C 3).

B2. TYPE: Aero-derivative gas turbine

B3. DESCRIPTION: The compressed air is produced by the gas turbine air compressor. Part of the compressed air is diverted from the compressor to the aircraft being started.

B4. CONTROL EQUIPMENT PERMIT APPLICATION DATA: P/C NO.: ISSUANCE DATE:
P/O NO.: ISSUANCE DATE:

B5. WASTE AIR FLOW TO CONTROL EQUIPMENT: FLOW RATE:
ACTUAL CONTAMINANT LOADING: BLOWER HP:

B6. WARRANTY: Manufacturer data sheet (g/hp-hr): NOx-2.35, CO-3.43, RHC-0.94, PM-0.15, PM10-0.145

B7. PRIMARY POLLUTANTS: NOx, CO, VOC, PM, PM10, SOx

B8. SECONDARY POLLUTANTS: None

B9. SPACE REQUIREMENT:

B10. LIMITATIONS:

B11. UNUSED

B12. OPERATING HISTORY: This unit was originally placed in service in 1997 in Chicago. It was relocated to LAX in 2001, and has been in service there since May 2001. Typical use is approximately 5 to 10 minutes per start. Average usage rate has been about 17 hrs/mo.

B13. UNUSED

B14. UNUSED

C. CONTROL EQUIPMENT COSTS

C1. CAPITAL COST: ☐ CHECK IF INSTALLATION COST IS INCLUDED IN EQUIPMENT COST
EQUIPMENT: $ INSTALLATION: $ (NA) SOURCE OF COST DATA:

C2. ANNUAL OPERATING COST: $ (NA) SOURCE OF COST DATA:

D. DEMONSTRATION OF COMPLIANCE

D1. STAFF PERMFORMING FIELD EVALUATION:
ENGINEER'S NAME: INSPECTOR'S NAME: Harold Rank DATE: 2/3/2004

D2. COMPLIANCE DEMONSTRATION: Routine inspection

D3. VARIANCE: NO. OF VARIANCES: None DATES:
CAUSES:

D4. VIOLATION: NO. OF VIOLATIONS: None DATES:
CAUSES:

D5. MAINTENANCE REQUIREMENTS:

D6. UNUSED

5. EMISSION INFORMATION

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D7. SOURCE TEST/PERFORMANCE DATA RESULTS AND ANALYSIS:

DATE OF SOURCE TEST: 3/26/03, 10/3/03

CAPTURE EFFICIENCY:

DESTRUCTION EFFICIENCY:

OVERALL EFFICIENCY:

SOURCE TEST/PERFORMANCE DATA:

	3/26/03	10/3/03
O2, % (vol., dry)	19.09	19.46
CO2, % (vol., dry)	1.2	1.4
Flue gas flow rate, dscfm	4,145	5,164
Fuel flow rate, gph	18	18
NOx, ppmvd@15%O2	66	77
CO, ppmvd@15%O2	97	191
NMHC, ppmvd@15%O2	89.3	NM

OPERATING CONDITIONS: 18 gph fuel flow is 40% rated fuel input.

TEST METHODS: AQMD Methods 100.1 and 25.3 were used. Method 100.1 was run for one hour, and Method 25.3 sampling time was 40 minutes. AQMD's Monitoring & Source Test Engineering (M&STE) group rejected the NOx and CO measurements in the March test, and these tests were repeated in Ocober. M&STE accepted the October test.

6. COMMENTS

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Assuming that the engine power level is proportional to fuel input rate, the apparent g/hp-hr emissions based on the October data for NOx and CO and the March VOC data are: NOx-2.03, CO-3.08, VOC-0.82. These results support the manufacturer's emissions specification.

The limit on fuel sulfur will drop from .05 to .0015 % (wt.) for fuel purchased after May 31, 2004 (Rule 431.1).