CERTIFIED TEST DATA

TURBINE-DRIVEN GENERATOR SET

PACKAGE MODEL CGS001
ENGINE MODEL TAURUS 60S

PERFORMANCE ACCEPTANCE CERTIFICATE

CUSTOMER REFERENCE NO.: **YM53513 RW**

SOLAR PROJECT NO.: **70221**

CUSTOMER NAME:

SOLAR NAME: **PPS-2**

UNIT NO.: **2**

SERIAL NUMBERS

PACKAGE	ENGINE	GEARBOX	GENERATOR
TG01586	**1059T**	**MAY01-00803**	**011025-02**

PACKAGE ACCEPTANCE APPROVAL

Solar Turbines Incorporated at San Diego certifies that the equipment identified above was tested as described herein and found to meet applicable requirements of the Solar Project Definition, the engineering specifications and the contractual requirements.

STATIC TEST ENGINEER: U. Tran DATE: 10/1/01

PRODUCTION TEST ENGINEER: S. Rueter DATE: 7/12/01

MANAGER, PRODUCTION TEST ENGINEERING: T.M. Huang DATE: 1OCT01

PROJECT MANAGER: J. Plescia DATE: 10/1/01

TEST CONDITIONS AND TEST DATA

The generator package was tested with the turbine engine, reduction gearbox and generator mounted on the package base. The package controls were mounted on-skid and were used for the test.

The generator nameplate rating is 5,300 kw; rated voltage is 13,200 volts.

Full load for all package testing was determined by either the nameplate rating of the generator, or the engine performance curve adjusted for air inlet temperature, sea level and zero duct losses whichever was lower, per Solar Engineering Specification ES2091.

ITEM 1. ACCEPTANCE TEST

The attached figures labeled "Control Console Hardware Verification", "Universal Generator Set Acceptance Test" and "Final Visual Acceptance Test" are the specific test agenda for this unit. They were prepared to reflect contractual requirements and compliance with Solar Engineering Specifications ES2091 and ES2220.

ITEM 2. TURBINE ENGINE PERFORMANCE

The attached figure labeled "Taurus 60S, T7300 One-Shaft Engine Performance, Nat. Gas Fuel" depicts engine performance test data as noted on the computer analysis printout. The upper portion shows measured parameters and the lower portion shows calculated results corrected to conditions of standard temperature, sea level, and zero duct losses. The acceptance criteria for the engine performance results is contained in ES2091.

Based on the T5/T3 ratio determined during the engine performance test, the software base T5 with SIV open is 1229 degrees Fahrenheit and T5 with SIV closed is 1255 degrees Fahrenheit.

The attached table labeled "Engine K-values" consists of data points required for customer's software.

ITEM 3. FREQUENCY (SPEED) AND VOLTAGE REGULATION

The attached figure labeled "Frequency (Speed) and Voltage Regulation" shows the regulation of this unit with the speed governor and voltage regulator adjusted for isochronous operation. Regulation was verified at each load point after all transients had decayed, as the load was varied from no load to full load to no load.

ITEM 4. OPERATING PARAMETERS

The attached figure labeled "Operating Parameters - Taurus Generator Set" provides "new condition" operating parameters for comparative purposes. Data was compiled from various load runs after engineering evaluation.

ITEM 5. VIBRATION DATA

The attached figures labeled "Machinery Vibration Signature" are the spectrum plots for each vibration probe recorded during the engine full load run.

ITEM 6. SUDDEN LOAD TESTS

The attached digitized trace shows the sudden load testing of this unit at 1500 KW on-load and 3300 KW off-load corrected to sea level and zero duct losses per Solar Engineering Specification ES2220.

Frequency (speed) deviation during load application did not exceed the specification limit of minus 5.0 percent from rated speed and recovery was within a plus or minus 0.50 percent band within 15.0 seconds. Frequency deviation during load rejection was within 7.0 percent and recovery was within a plus or minus 0.50 percent band within 10.0 seconds.

Voltage deviation during load application did not exceed specification limit of plus or minus 17.0 percent from rated voltage and recovery was within a plus or minus 5.0 percent band within 2.0 seconds for this high performance generator. Voltage deviation during load rejection was within plus or minus 22.0 percent and recovery was within a plus or minus 5.0 percent band within 2.0 seconds.

ITEM 7. DRY EMISSIONS

The attached figures labeled "Dry Emissions" document the results of emissions testing without water injection. The component concentration levels are corrected to 15% oxygen and ISO conditions per Solar ES9-97. The NOx and CO emissions limits are 20 ppm and 40 ppm, respectively.

ITEM 1. ACCEPTANCE TEST

Solar® Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	**Page:** 1 of 3	**Date**·04/17/01
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OPERATION	**TITLE**	**PURPOSE OF OPERATION**	**STAMP**
5	Console Wiring and Shortages (Can)	To ensure that the console components and wiring are in accordance with the legal wiring diagram Verify that any missing components are recorded in the test log and placed on order	945
7	Allen Bradley Module Switches and Jumper Settings	Verify that the switches and jumpers on the A/B modules and the backplane of the PLC rack are set in accordance with the electrical schematic Also, verify that all modules are correctly positioned in the rack	734
8	Horn/Hour Meter/Start Counter Disconnect	To disable the alarm horn, hour meter, and start counter during test	734
10	Connect External DC Power	To search for any "short" circuits between OVDC and frame, and 24VDC and frame before applying DC power to the control console Also, verify that each circuit breaker powers its respective circuit/bus only per electrical print	734
12	Prepare Programming Terminal and Load PLC Program	Connect the programming terminal (PC) to the control console PLC and load the project application software to the PLC	734
15	Load Display Program (TT2000)	Load the display software into the control console display terminal/computer Set switch and jumper setting for Z501 per schematic sheet 9 and make sure PLC communicate to Z501	316
16	Load Display Program (PV1000)	Load the display software into the control console Panel View 900	734
21	PLC LED's All Green	Verify no communication error exists between the PLC and the display	734
22	Clear All Malfunctions	To lock-up the backup relay system	734
24	Block Transfer Error - Controlnet	To verify the correct alarm and/or shutdown functionality associated with ControlNet communication errors for units with CAN or ACNR modules	734
49	Lamp Test	To verify the lamps on the turbine control panel are operational	945

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

Solar Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	Page: 2 of 3	Date:04/17/01
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OPERATION	TITLE	PURPOSE OF OPERATION	STAMP
63	Alarm Horn	To verify the horn is sounded on any alarm or shutdown condition and silenced when the alarm/shutdown condition is cleared or when "horn silence" or reset is selected	945
75	24 Vdc Voltage Divider	To verify the accuracy of the 24 Vdc measurement resistor network with a calibrated meter	945
95	Backup System (IPG)	Verify the basic IPG backup system	945
115	T37 Keyboard Commands	To verify that the display terminal's two sealed-membrane keypads (the Function Keypad and the numeric Keypad) are functional	316
116	Printer/Logger	To verify that the printer and data logging functions are operable	316
117	Set Console Timers	To verify that all electrical timers are set per the legal drawing and torque painted	734
130	A/C Visual Inspection	To verify the correct selection of the A/C meters and their proper wiring	726
131	A/C Simulator Hookup	To provide a consistent and logical method for connecting the A/C simulator	726
132	A/C LSM Module Verification (Hardware)	To verify that the LSM is installed and functions properly	726
133	A/C Metering Accuracy	To verify the accuracy of the AC meters and the CRT displayed AC parameters	726
134	A/C Voltage Droop Verification	To verify initial setup of the voltage droop feature of the Basler voltage regulator	726

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Solar® Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	**Page:** 3 of 3	**Date:**04/17/01
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OPERATION	**TITLE**	**PURPOSE OF OPERATION**	**STAMP**
135	A/C KVAR/P F Control	To verify the Basler KVAR/PF controller is operating properly	726
136	A/C Motorized Voltage Adjust	To verify that the motorized potentiometer and associated control assembly function correctly	726
137	A/C Voltage Regulator	To verify the circuitry and operation of the voltage regulator	726
139	A/C Single Unit Auto Sync (Hot Bus)	To verify the unit will automatically synchronize with a live bus	726
140	A/C Single Unit Auto Sync (Dead Bus)	The purpose of this operation is to verify statically that the control console is tuned to automatically synchronize to a dead bus	VE 55
150	Clear Open Discrepancies	To verify all operations have been performed and the Automated Test Log (ATL) is reviewed	316
152	Legal Drawings Clear	To verify all changes shown on the legal electrical drawing have been performed and the legal drawing is signed by the test engineer	734
154	Console Complete and Authorized for Disconnect	To obtain authorization from test engineer to disconnect the turbine controls and verify all test equipment and accessories are disconnected	734
159	Load PLC Program	To ensure the latest revision of the controls software is downloaded to the PLC	734
165	Test Cell Acceptance (New Production)	To ensure the package test engineer has accepted the turbine controls by signing the test verification sheet	734

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

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STATION 3 OPERATIONS				
OPER NO	OPERATION	REV DATE	DESCRIPTION	STAMP
SKID TEST OPERATIONS				
2000	SAFETY INSTRUCTIONS AND FAMILIARIZATION	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE OPERATOR IS FULLY AWARE OF THE PROJECT REQUIREMENTS AND GENERAL SAFETY PRECAUTIONS TO BE FOLLOWED WHEN OPERATING TURBO MACHINERY IN SUPPORT OF PRODUCTION TEST OPERATIONS	799
2002	SKID INSPECTION	8/98	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY INSPECTION OF THE SKID FOR PROPER ASSEMBLY AND COMPLETENESS	719
2005	SHORTAGES	9/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT ALL SHORTAGES ARE RECOGNIZED AND DOCUMENTED	
2020 (AC)	LUBE OIL TANK AND CIRCULATION HEATER CHECK	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PART NUMBER AND INTEGRITY OF THE LUBE OIL TANK AND CIRCULATION HEATERS, AS APPLICABLE	726
2025 (AC)	AC MOTOR SPACE HEATERS	4/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE DC RESISTANCE AND VERIFY CONTINUITY OF EACH PACKAGE MOTOR SPACE HEATER	26
2030 (AC)	GENERATOR SPACE HEATER	5/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE INTEGRITY OF THE GENERATOR SPACE HEATERS	26
2035 (AC)	GENERATOR WINDING INSULATION RESISTANCE	5/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE INSULATION RESISTANCE OF THE GENERATOR WINDINGS	726
2040 (AC)	GENERATOR EXCITER FIELD DC RESISTANCE	5/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE DC RESISTANCE OF THE GENERATOR'S EXCITER FIELD	726
2045	VIBRATION SYSTEM INSTALLATION VERIFICATION	3/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PROPER INSTALLATION OF THE VIBRATION SYSTEM COMPONENTS	799
2050	PRELIMINARY FACILITY ATTACHMENTS	12/98	THE PURPOSE OF THIS OPERATION IS TO PREPARE VARIOUS PACKAGE SYSTEMS AND CONNECTIONS FOR HOOKUP IN THE TEST CELL	799
2055	INSTRUMENTATION HOOKUP I	4/99	THE PURPOSE OF THIS OPERATION IS TO PROVIDE GUIDELINES FOR THE HOOKUPS AND INSTALLATION OF FACILITY HARNESSES AND TEST EQUIPMENT	799
2060	CIRCUIT TO GROUND RESISTANCE CHECK	10/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE IS A MINIMUM RESISTANCE BETWEEN ANY CIRCUIT AND SKID GROUND	
2085	PACKAGE ELECTRICAL END DEVICES	7/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE ACCURACY OF THE PACKAGE MOUNTED END DEVICES THROUGH THE ELECTRICAL INTERCONNECT	753
2090	SKID INTERCONNECT AND SKID DC POWER HOOKUP	6/00	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT THE CORRECT INTERCONNECTS AND DC POWER HOOKUPS ARE HOOKED UP PER THE "LEGAL" WIRING DIAGRAM	
CONSOLE/CONTROL SYSTEMS TEST OPERATIONS				
2100	OUTPUT MODULE WIRING VERIFICATION	5/00	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT NONE OF THE OUTPUT CIRCUITS FROM THE PLC ARE SHORTED TO "0V" OR GROUND	
2130	CONSOLE/SKID LOCKUP	7/97	THE PURPOSE OF THIS OPERATION IS TO PREPARE THE CONSOLE AND SKID FOR TESTING	

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STATION 3 OPERATIONS				
OPER NO	OPERATION	REV DATE	DESCRIPTION	STAMP
2065 (AC)	CSA INSULATION DIELECTRIC STRENGTH TEST	5/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT INSULATION BREAKDOWN DID NOT OCCUR WHEN PACKAGE WIRING WAS PULLED THROUGH CONDUIT	
2135	OFF/LOCAL/REMOTE SWITCH (S101)	7/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT WHEN THE OFF/LOCAL/REMOTE SWITCH (S101) IS IN THE OFF MODE, THE UNIT DOES NOT RESPOND TO THE START SIGNAL AND LOCKOUT SHUTDOWN IS ANNUNCIATED	

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STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2300	SKID SUPPORT LOCATION	5/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE SKID SUPPORTS ARE UNDER THE CUSTOMERS BOLT-DOWN POINTS	799
2305	FACILITY INLET/EXHAUST ATTACHMENTS	4/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE INSTRUCTION TO ATTACH THE FACILITY INLET AND EXHAUST DUCTS TO THE PACKAGE	799
2315	PLC SOFTWARE REVISION PROCEDURE	4/97	THE PURPOSE OF THIS OPERATION IS TO OUTLINE THE PROCEDURE FOR INSTALLING NEW SOFTWARE REVISIONS TO THE PROGRAM LOGIC CONTROLLER (PLC)	799
2320	SOFTWARE LOADING	4/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT THE SOFTWARE IS LOADED PROPERLY	799
2325	FACILITY OIL FILTER INSTALLATION	3/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE GUIDELINES FOR THE INSTALLATION OF FACILITY EQUIPMENT FOR TEST MEASUREMENT AND PACKAGE OIL SYSTEM PROTECTION	[illegible]
2330	LOW LUBE OIL LEVEL AL/SD AND LUBE TANK FILL	9/97	THE PURPOSE OF THIS OPERATION IS TO FILL THE LUBE OIL TANK AND VERIFY THE LOW OIL LEVEL SWITCH FUNCTIONS PROPERLY	[illegible]
2345	SKID FAST STOP	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE SKID FAST STOP PUSH-BUTTON SHUTS THE UNIT DOWN AND THE ASSOCIATED DISPLAY MESSAGES ARE DEPICTED ON THE DISPLAY MONITOR	[illegible]
2350	IGV CALIBRATION (SOLONOX)	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE IGV'S ARE CALIBRATED CORRECTLY IF THE IGV'S ARE SUSPECTED TO BE INCORRECTLY CALIBRATED DEPT 377 (ENGINE BUILD) SHOULD BE REQUESTED TO RECALIBRATE THE IGV'S	448
2355	GEARBOX/ENGINE INSTALLATION	7/95	THE PURPOSE OF THIS OPERATION IS TO INSTALL ENGINE AND/OR GEARBOX ON THE SKID CORRECTLY EFFICIENTLY AND SAFELY	799
2360 (AC)	GENERATOR LOAD CABLE HOOKUP	6/00	THE PURPOSE OF THIS OPERATION IS TO SAFELY ATTACH THE GENERATOR LOAD CABLES TO THE FACILITY LOAD TESTING NETWORK	726
2365 (AC)	FACILITY LOAD TESTING SETUP	5/00	THE PURPOSE OF THIS OPERATION IS TO SETUP THE FACILITY LOAD TESTING CIRCUIT BREAKER OVERCURRENT TRIP RELAYS AND PREPARE THE FACILITY LOAD BANKS FOR TESTING	726
2370	FACILITY HOOKUP (TESTCELL)	12/98	THE PURPOSE OF THIS OPERATION IS TO CONNECT VARIOUS PACKAGE SYSTEMS TO TEST CELL FACILITIES	[illegible]
2375	FACILITY COMPUTER LOADING	3/00	THE PURPOSE OF THIS OPERATION IS TO LOAD THE SALES ORDER SPECIFIC TEST DEFINITION PROGRAM INTO THE FACILITY COMPUTER SYSTEM	[illegible]
2385	INSTRUMENTATION HOOKUP II	6/95	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT INSTRUMENTATION HOOKUPS ARE PERFORMED SAFELY AND PROPERLY	[illegible]
2390 (AC)	GENERATOR FACILITY INTERCONNECTS	6/00	THE PURPOSE OF THIS OPERATION IS TO COMPLETE THE GENERATOR FACILITY AC HARNESS CONNECTIONS	726
2395	FACILITY VIBRATION MONITOR VERIFICATION	3/00	THE PURPOSE OF THIS OPERATION IS TO CONNECT THE FACILITY VIBRATION MONITOR SYSTEM AND SET THE APPROPRIATE ALARM AND SHUTDOWN SETPOINTS	[illegible]
2400	ZERO INSTRUMENTATION CHECK	2/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL INSTRUMENTATION READINGS MEET THE FACILITY COMPUTERS ZERO CHECK CONDITIONS	448

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STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2410 (AC)	AC MOTOR CONNECTION	8/98	THE PURPOSE OF THIS OPERATION IS TO PROVIDE A SAFE PROCEDURE FOR THE WIRING OF THE PACKAGE AC MOTOR CONNECTIONS	726
2415 (AC)	VFD CONFIGURATION	5/99	THE PURPOSE OF THIS OPERATION IS TO SAFELY SET UP AND CONFIGURE ALL PACKAGE VARIABLE FREQUENCY DRIVES (VFD'S)	726
2420	PRELUBE PACKAGE	3/00	THE PURPOSE OF THIS OPERATION IS TO MAKE PRELIMINARY CHECKS AND ADJUSTMENTS TO LUBE OIL SYSTEM PRIOR TO FIRST CRANK	448
2430	AUX AND B/U LUBE OIL PUMP SHUTDOWNS	7/00	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF THE AUXILIARY AND BACKUP LUBE PUMPS AND ASSOCIATED SOFTWARE LOGIC	799
2440	LIQUID FUEL SYSTEM LEAK TEST	6/99	THE PURPOSE OF THIS OPERATION IS TO LEAK TEST MOST OF THE LIQUID FUEL SYSTEM PRIOR TO STARTING THE UNIT IN LIQUID FUEL	
2445	GAS FUEL SYSTEM LEAK TEST	6/99	THE PURPOSE OF THIS OPERATION IS TO CHECK THE GAS FUEL SYSTEM FOR LEAKS PRIOR TO CONNECTING THE NATURAL GAS TO THE SYSTEM DURING THIS TEST THE PILOT AIR SUPPLY PRESSURE AND TORCH PRESSURE WILL BE SET PER THE MECHANICAL LEGAL DRAWINGS	799
2450	PECC FUEL VALVE SETUP	4/97	THE PURPOSE OF THIS OPERATION IS TO STATICALLY VERIFY THE PROPER OPERATION OF THE PECC GAS FUEL CONTROL VALVE	448
2462	"AFI" AND "FORCE" SEARCH	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE PROGRAM AND CONSOLE ARE CHECKED FOR AFI'S, FORCE'S AND TEST JUMPERS WHICH WERE INSTALLED OR OVERLOOKED DURING THE STATIC PORTION OF TESTING AND REMOVE THEM IF POSSIBLE, BEFORE CRANKING THE ENGINE	799
SPEC OP "A"	T60 ADRE DATA MONITORING	12/00	THE PURPOSE OF THIS OPERATION IS TO SETUP THE ADRE FOR VIBRATION MONITORING OF T60 SINGLE SHAFT ENGINES	N/A TE 75
2465	AIR INLET INSPECTION	9/98	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE AIR INLET DUCT IS CLEAN AND FREE OF FOREIGN OBJECTS AND DEBRIS	
TEST ENGINEER OR TEAM LEADER'S INITIALS, UNIT READY TO CRANK				
2470	FIRST CRANK	4/00	THE PURPOSE OF THIS OPERATION IS TO CONDUCT THE UNIT'S "FIRST CRANK"	799
2475	FIRST LIGHT OFF	4/00	THE PURPOSE OF THIS INSTRUCTION IS TO PROVIDE FOR AN ORDERLY AND DOCUMENTED PROCEDURE FOR PERFORMING "FIRST LIGHT-OFF"	448
2480	OVERSPEED	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE THREE SEPARATE OVERSPEED SHUTDOWNS, PLC CONTROLLED INSTANTANEOUS AND DELAYED AND THE SEPARATE SKID MOUNTED BACK-UP OVERSPEED MONITOR	448
2485	NGP SPEED LOSS SHUTDOWN	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT UPON LOSS OF ONE SPEED PICKUP CONDUCTOR, THE UNIT WILL SHUTDOWN	448
2490	FUEL VALVE FAIL (GAS AND DUAL FUEL)	6/00	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF BOTH THE PRIMARY AND SECONDARY FUEL VALVES	448
2495	OIL PRESSURE ALARM AND SHUTDOWN	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY PROPER ALARM AND SHUTDOWN RESPONSES TO LOW LUBE OIL PRESSURE CONDITION	448

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STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2497	HIGH LUBE OIL HEADER TEMPERATURE ALARM AND SHUTDOWN	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PROPER ALARM AND SHUTDOWN RESPONSES TO HIGH LUBE OIL HEADER TEMPERATURE CONDITIONS	448
2500	MANUAL COOLDOWN AND FAST STOP	6/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE FOR AN ORDERLY AND DOCUMENTED PROCEDURE FOR PERFORMING BOTH A MANUAL COOLDOWN AND FAST STOP	448
2530	T5 TEMPERATURE TOPPING, SETPOINT, AND CONTROLS	6/00	THE PURPOSE OF THIS OPERATION IS TO INSURE THAT THE FUEL SYSTEM FUNCTIONS PROPERLY IN ORDER TO RELIABLY START THE PACKAGE AND ALSO PREVENT A HIGH TEMP S/D	448
2545 (AC)	PMG VOLTAGE AND FREQUENCY CHECK	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT PRIOR TO VOLTAGE BUILD THE GENERATOR'S PMG PRODUCES THE PROPER VOLTAGE AND FREQUENCY	760
2550 (AC)	VOLTAGE BUILD-UP	6/00	THE PURPOSE OF THIS OPERATION IS TO PERFORM THE INITIAL VOLTAGE BUILD	760
2560	BLEED VALVE SEQUENCE	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE BLEED VALVE OPENS AND CLOSES IN THE CORRECT SEQUENCE AND SPEED OR LOAD VALUES	448
2575	GEARBOX AND ENGINE BREAK-IN	2/01	THIS OPERATION DETAILS THE PROCEDURE FOR THE GEARBOX BREAK-IN RUNS AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION	799
2580	ENGINE ACCEPTANCE	2/01	THIS OPERATION DETAILS THE PROCEDURE FOR THE ENGINE ACCEPTANCE RUN(S) AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION	448
2585	EMISSIONS	2/01	THIS OPERATION DETAILS THE PROCEDURE FOR THE ENGINE EMISSIONS RUN(S) AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION	448
2590	GENERATOR WINDING RTD VERIFICATION	6/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE AND RECORD ALL GENERATOR WINDING RTD READINGS	448
2610	PRELIMINARY LEAK CHECK	6/00	THE PURPOSE OF THIS OPERATION IS TO IDENTIFY AND FIX AS MANY AIR OIL, FUEL OR WATER LEAKS AS POSSIBLE BEFORE CONTINUED TESTING	448
2620	MOTOR ROTATION ARROW VERIFICATION	6/00	THE PURPOSE OF THIS INSTRUCTION IS TO ENSURE THAT THE MOTOR ROTATION ARROWS ARE CORRECTLY INSTALLED NEAR EACH MOTOR OR MOTOR/PUMP COMBINATION AND THEY ARE ACCURATE IN THEIR DEPICTION	448
2625 (AC)	VOLTAGE AND SPEED RANGE ADJUST	6/00	THE PURPOSE OF THIS OPERATION IS TO MANUALLY VERIFY PACKAGE VOLTAGE AND SPEED ADJUSTABILITY	506
2630 (AC)	SPEED DROOP	6/00	THE PURPOSE OF THIS OPERATION IS TO ADJUST AND VERIFY THE OPERATION OF THE SPEED DROOP FEATURE OF THE GENERATOR CONTROL SYSTEM	506
2635 (AC)	SPEED ISOCH TO SPEED DROOP BUMPLESS TRANSFER	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE SPEED ISOCH TO SPEED DROOP BUMPLESS TRANSFER FEATURE	505
2645 (AC)	VOLTAGE DROOP	6/00	THE PURPOSE THIS OPERATION IS TO VERIFY THE VOLTAGE DROOP FEATURE OF THE VOLTAGE REGULATOR	506
2655 (AC)	SPEED AND VOLTAGE REGULATION	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT SPEED AND VOLTAGE ARE PROPERLY REGULATED OVER A RANGE OF LOAD POINTS	506

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STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2665 (AC)	SINGLE UNIT SYNCHRONIZATION	11/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE UNITS ABILITY TO SYNCHRONIZE VOLTAGE, FREQUENCY AND PHASE ANGLE WITH A SIMULATED 3-PHASE BUS AND CLOSE THE OUTPUT BREAKER WHEN AN AUTOSYNCH OR MANUAL SNYC COMMAND IS INITIATED	506
2670	LOAD TRANSIENTS	12/00	THE PURPOSE OF THIS OPERATION IS TO DOCUMENT THE UNIT'S ABILITY TO RECOVER FROM AN EXTREME ON OR OFF LOAD CONDITION WITHIN SPECIFIED LIMITS	448
2680 (AC)	KW & EXPORT/IMPORT CONTROL	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE UNIT'S KW CONTROL FEATURE AND IMPORT/EXPORT CONTROL (IF APPLICABLE)	506
2685 (AC)	KVAR/PF CONTROL (ISLAND MODE)	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE KVAR/PF CONTROL WILL CHANGE GENERATOR VOLTAGE AS THE KVAR/PF SETPOINT IS VARIED	506
2695	F13/T4 PRELIMINARY SETPOINTS	6/00	THE PURPOSE OF THIS OPERATION IS TO DOCUMENT PRELIMINARY F13 AND T4 VALUES AT THE END OF SUDDEN LOADS IF SINGLE FUEL ONLY, AND AT THE END OF FUEL CHANGEOVERS IF THE UNIT IS DUAL FUEL	799
2700	START RELIABILITY AND ACCELERATION	4/97	THE PURPOSE OF THIS OPERATION IS TO DEMONSTRATE AND VERIFY THE CAPABILITY OF THE UNIT IN STARTING RELIABLY AND SUCCESSFULLY FOR FOUR CONSECUTIVE TIMES	IE 75
2705	CUSTOMER OBSERVE OPERATIONS	6/00	THE PURPOSE OF THIS OPERATION IS TO DEMONSTRATE FOR THE CUSTOMER ALL REQUIRED OPERATIONS PER THE PACKAGE APPLICATION CHECK SHEET (ACS) AND THE INSPECTION AND TEST PLAN (ITP)	N IE 75 A
2740	TEST CRANK	4/97	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF THE TEST CRANK FUNCTION FOR UNITS WITHOUT THE ON-CRANK WATER WASH OPTION	448
2745	WATER WASH (ON-CRANK AND ON-LINE)	6/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE FOR A DOCUMENTED AND ORDERLY PROCEDURE FOR TESTING THE PACKAGE WATER WASH SYSTEM(S)	448
2750	DATA TABULATION	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL OFFICIAL DATA REQUIRED FOR A PARTICULAR PROJECT HAS BEEN TAKEN AND THOROUGHLY CHECKED BY TECHNICIAN LEAD PERSON AND TE, AND CLEARLY DOCUMENTED IN THE PTI	799
TEST ENGINEER'S INITIALS, UNIT OK TO DEPREP				O.K. Per Chase 07:1 SM Con. with T.E. 6/2/01
2765	VIBRATION AND TEMP SUPPLEMENTARY DATA	4/97	THE PURPOSE OF THIS OPERATION IS TO PERFORM A VISUAL CHECK OF THE CONSOLE'S DATA DISPLAYS WHILE RUNNING	799
2770	FINAL LEAK CHECK I - PREP AND INITIAL VISUAL	4/97	THE PURPOSE OF THIS OPERATION IS TO PREPARE UNIT FOR FINAL LEAK CHECK	
2775	FINAL LEAK CHECK II - FUEL SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO FUEL LEAKS PRESENT ON THE UNIT PRIOR TO PACKAGE PULL	
2780	FINAL LEAK CHECK III - AIR SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO AIR LEAKS ON THE UNIT PRIOR TO PACKAGE PULL	
2785	FINAL LEAK CHECK IV - OIL SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO OIL LEAKS ON THE UNIT IN IT'S FIELD CONFIGURATION PRIOR TO PACKAGE PULL	

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER | UNIT 2 | PD 2-70221

MO 3100314 | PKG S/N TG01586 | ENG S/N 1059T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2790	FINAL LEAK CHECK V - CONCLUSION	4/97	THE PURPOSE OF THIS OPERATION IS TO CONCLUDE THE FINAL LEAK CHECK OPERATIONS AND ENSURE THAT THERE ARE NO FLUID LEAKS ON THE UNIT PRIOR TO PACKAGE PULL	799
2800	AS-TEST PROGRAM SAVE AND PROGRAM CONSTANTS	4/99	THE PURPOSE OF THIS OPERATION IS TO SAVE A COPY OF THE "AS-TESTED" SOFTWARE TO THE "S" DRIVE AND PRINT THE PROGRAM CONSTANTS	728
2805	TEST COMPLETE - READY TO PRESERVE	1/99	THE PURPOSE OF THIS OPERATION IS TO TO VERIFY ALL GREEN CHANGES TEST OPERATIONS AND DISCREPAINCIES HAVE BEEN STAMPED OFF OR ADDRESSED AND THAT THE PACKAGE TEST IS COMPLETE TO WHERE THE ENGINE AND FUEL SYSTEM CAN BE PRESERVED	353
TEST ENGINEER'S INITIALS, UNIT OK TO PRESERVE				SK
2820	ENGINE AND FUEL SYSTEM PRESERVATION	3/00	THE PURPOSE OF THIS OPERATION IS TO SAFELY AND PROPERLY PRESERVE THE PACKAGE FUEL SYSTEM(S) AND THE ENGINE UPON CONCLUSION OF DYNAMIC TEST	
2822 (AC)	CURRENT TRANSFORMER WIRING	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE WIRING FOR THE DIFFERENTIAL AND NEUTRAL CURRENT TRANSFORMER LEADS IS PER THE LEGAL ELECTRICAL SCHEMATIC AND WIRING DIAGRAM	726
2825 (AC)	GENERATOR AND AC FACILITY DISCONNECT	6/00	THE PURPOSE OF THIS OPERATION IS TO DISCONNECT THE GENERATOR PACKAGE LOAD CABLES AND GENERATOR INSTRUMENTATION	
2835	PACKAGE DE-PREP	1/99	THE PURPOSE OF THIS OPERATION IS TO PREPARE THE PACKAGE FOR REMOVAL FROM THE TEST CELL	728
2837	CONSOLE (CONTROL SYSTEM) DE-PREP	12/99	THE PURPOSE OF THIS OPERATION IS TO REMOVE ALL FACILITY TEST EQUIPMENT RESET ALL PACKAGE TIMERS AND PREPARE THE OFF SKID CONSOLE FOR REMOVAL FROM TEST	728
2840	POST-TEST AUDIT	4/97	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT A POST-TEST AUDIT IS PERFORMED ON THE UNIT BEFORE PACKAGE PULL	728
2845	TEST VERIFICATION	12/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL ITEMS IN THE TEST PAPERWORK ARE SIGNED OR STAMPED OFF AS COMPLETE THAT UNRESOLVED PACKAGE TEST DISCREPANCIES ARE DOCUMENTED ON THE TEST VERIFICATION SHEET AND THAT ALL DISCREPANCIES HAVE BEEN CLEARED FROM THE TEST LOG	728
2846	PACKAGE REMOVAL	3/00	THE PURPOSE OF THIS OPERATION IS TO REMOVE THE PACKAGE FROM THE TEST CELL	
2850	PAPERWORK COMPLETE	2/99	THE PURPOSE OF THIS OPERATION IS TO RETURN THE COMPLETED PACKAGE PAPERWORK TO THE APPROPRIATE LOCATIONS	799

ENGINE S/N	Engine K-values 1059T
PD #:	2-70221
PD NAME UNIT #	#2
MODEL #	T7301S
TEST ENGINEER	S. RUETER 6/5/01
F13:509 ENGSRLNUM	1059T
F13:281 or 645 or 646 BASET5_GAS	(See below)
F13:282 BASET5_LIQ	N/A
1-Shaft	
FUEL	GAS
% PILOT 2	2 0% half load 4.4% full load
ORIFICE DIA (mm)	N/A
F13:687 VARPLT_Y1	24 0
F13:688 VARPLT_Y2	31 0
F13:370 SIVKWSPLO	N/A
F13:371 SIVKWSPHI	N/A
F13:645 T5SIVOPEN (Base T5 SIV's Open)	1229
F13:646 T5SIVCLOSED (Base T5 SIV's Closed)	1255
F13:xxx GV59TPZ_SP	N/A
F13:372 VGV59SP_G	1220
F13:384 T5T3_LO_LD	N/A
F13:385 T5T3_HI_LD	N/A
F13:389 PZCBAIR_RT	45730
F13:392 PRCNTLO_LD	N/A
F13:393 PRCNTHI_LD	N/A
FUEL	

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER UNIT 1 PD 2-70221

MO 3100314 PKG S/N TG01586 ENG S/N 1059T

ENCLOSURE SYSTEMS TEST OPERATIONS - QUANTUM FIRE SYSTEM				
3140	SIMULATOR / TEST EQUIPMENT STAGING	8/97	THE PURPOSE OF THIS OPERATION IS TO ENSURE ALL OF THE REQUIRED TEST EQUIPMENT SIMULATORS EXPENDABLE SUPPLIES, AND SALES ORDER "LEGAL" DRAWINGS ARE LOCATED AND AVAILABLE FOR ENCLOSURE AND ANCILLARY TESTING	809
3500	GAS SENSORS	8/97	THE PURPOSE OF THIS INSTRUCTION IS TO VERIFY PROPER OPERATION OF THE GAS SENSOR USED ON THE ENCLOSURE GAS DETECTION SYSTEM	809
3600 (AC)	AC ENCLOSURE LIGHTS	7/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE INSTALLATION AND THE OPERATION OF THE AC ENCLOSURE LIGHT SYSTEM	809
3740	FIRE SHUTTERS	8/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE FIRE SHUTTER WILL CLOSE ONLY AFTER THE FIRE SHUTTER SOLENOID IS ENERGIZED	N/A
3200	FIRE SYSTEM SETUP	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY PROPER FIRE SYSTEM WIRING AND TO INITIALLY "LOCK-UP" THE FIRE SYSTEM	809
3220	FIRE SYSTEM FAULTS	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE ABILITY OF THE FIRE & GAS SYSTEM TO DETECT AND ANNUNCIATE MODULE FAULTS AT THE MODULE LCU AND PLC	809
3240	FIRE SYSTEM HORN TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE FIRE SYSTEM HORN IS OPERATIONAL AND SOUNDS WHEN REQUIRED	809
3260	FIRE SYSTEM RELEASE STROBES TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE FIRE SYSTEM RELEASE STROBES ARE OPERATIONAL AND THAT THEY OPERATE WHEN REQUIRED	809
3280	FIRE EYE TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE ENCLOSURE MOUNTED FIRE EYES ARE WORKING AND WILL CAUSE A PACKAGE SHUTDOWN	809
3300	HEAT SENSOR TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE ENCLOSURE MOUNTED THERMAL SWITCHES OPERATE PROPERLY AND WILL CAUSE A PACKAGE SHUTDOWN	809
3320	RELEASE CONFIRM SWITCH	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PROPER OPERATION OF THE FIRE SYSTEM DISCHARGE PRESSURE SWITCH AND ITS ASSOCIATED PACKAGE INDICATIONS	809
3340	FIRE SYSTEM AUTO/INHIBIT TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE OPERATION OF THE AUTO/INHIBIT SWITCH AND TO VERIFY THAT IN "INHIBIT" A DETECTED FIRE WILL NOT CAUSE RELEASE SOLENOIDS TO BE ENERGIZED	809
3360	MANUAL RELEASE SWITCH TEST	4/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY (IN AUTO & INHIBIT) THAT THE MANUAL RELEASE SWITCH WILL ACTIVATE THE FIRE SYSTEM & RELEASE SOLONOIDS	809
3800	CUSTOMER OBSERVE - ENCLOSURE TEST	N/A	TO DEMONSTRATE TO A CUSTOMER REPRESENTATIVE THAT ALL ENCLOSURE SYSTEMS OPERATE AS INTENDED	N/A

ENCLOSURE AND FINAL VISUAL ACCEPTANCE TEST

CUSTOMER. _____ PD #: 2-70221 UNIT #: 2 OF 3 PKG S/N: TG01586

OPER. NO.	OPERATION	REV. DATE	DESCRIPTION	STAMP
9020	LEGAL DRAWING VERIFICATION	01/10/01	THE PURPOSE OF THIS OPERATION IS TO OBTAIN THE REQUIRED PROJECT 'LEGAL DRAWINGS AND VERIFY THEIR COMPLETENESS CONSOLE ELECTRICAL LEGAL (APPLICABLE TO ON-SKID CONTROLS ONLY) SKID ELECTRICAL LEGAL MECHANICAL LEGAL	777 777 777
9040	SKID GROUND CHECK (DRIVER SKID)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ON THE DRIVER SKID THERE IS A MINIMUM RESISTANCE BETWEEN ALL CIRCUITS AND SKID GROUND	777
9060	SKID GROUND CHECK (DRIVEN SKID)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ON THE DRIVEN SKID THERE IS A MINIMUM RESISTANCE BETWEEN ALL CIRCUITS AND SKID GROUND	N/A
9080	PRELIMINARY FINAL VISUAL - DRIVER SKID	01/10/01	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY FINAL VISUAL INSPECTION OF THE DRIVER SKID TO DETERMINE ALL WIRING IS PER THE "LEGAL" WIRING DIAGRAM	777
9100	PRELIMINARY FINAL VISUAL - DRIVEN SKID	01/10/01	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY FINAL VISUAL INSPECTION OF THE DRIVEN SKID TO DETERMINE ALL WIRING IS PER THE "LEGAL" WIRING DIAGRAM	N/A
9820	CLEAR PLC MEMORY (ON SKID CONTROLS ONLY)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE PLC MEMORY IS WIPED CLEAR PRIOR TO SHIPMENT	809
9840	DISCREPANCY VERIFICATION	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL DISCREPANCIES HAVE BEEN CLEARED	608
9860	FINAL VISUAL COMPLETE	01/10/01	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT ALL GREEN CHANGES HAVE BEEN WORKED	809
9880	FINAL PAPERWORK	01/10/01	THE PURPOSE OF THIS OPERATION IS TO COPY AND DISTRIBUTE THE ENCLOSURE AND FINAL VISUAL STAMP OFF SHEET	809
9900	DISPATCH LEGAL DRAWINGS	01/10/01	THE PURPOSE OF THIS OPERATION IS TO INSURE THAT ALL THE LEGAL DRAWINGS ARE RETURNED TO THEIR PROPER LOCATION	809

ITEM 2. TURBINE ENGINE PERFORMANCE

TAURUS 60S, T7300 ONE-SHAFT ENGINE PERFORMANCE, NAT. GAS FUEL
ENGINE S/N 1059T
CELL - 11 TEST DEF= 99 9 DATA TAKEN: 31-MAY-01 19:36:19 P.F.= 1.00

IGV	-DEG. :	5.000	INLET GUIDE VANE ANGLE (OPERATOR SET)
P.BARO	-IN.HG :	29.452	PRESS., BAROMETRIC (T.BARO= 32. DEG.F)
%R.H.	-% :	86.203	PERCENT RELATIVE HUMIDITY
T.AMB	-DEG.F :	63.020	TEMP., OUTSIDE AMBIENT AIR
STD.TEMP	-DEG.F :	59.000	TEMP., STANDARD CONDITIONS (0= T0.AVG)
P.LOSS.A-	:	652.000	CODE: POWER LOSS COEFF'S, ACT. G/B & GEN
P.LOSS.C-	:	652.000	CODE: POWER LOSS COEFF'S, CUST.G/B & GEN
NTURB	-RPM :	15056.376	SHAFT SPEED, 1-SHAFT TURBINE ENGINE ROTOR
NT.100%	-RPM :	14951.000	100% SHAFT SPEED, 1-SHAFT TURBINE ENGINE R
GEN.KW	-KW :	5005.952	GENERATOR LOAD
DRY.WA	-PPS :	45.805	AIRFLOW, AIR INLET VENTURI, W/O HUMIDITY
P0.AVG	-IN.H2O:	-5.681	PRESS., AIR INLET TOTAL, AVG. OF PROBES
P0.PKG	-IN.H2O:	-7.071	PRESS., AIR INLET WALL STATIC, PKG. MUFF
P1AV.PKG	-IN.H2O:	-83.441	PRESS., ENG. COMPR. INLET STATIC, AVG.
PCD	-PSIG :	157.465	PRESS., COMPRESSOR DISCHARGE
P7.AVG	-IN.H2O:	0.706	PRESS., EXHAUST WALL STATIC, AVG OF TAPS
T0.AVG	-DEG.F :	64.588	TEMP., AIR INLET, AVG. OF PROBES
T2.AVG	-DEG.F :	694.865	TEMP., COMPRESSOR DISCHARGE, AVG, PROBES
T5.AVG	-DEG.F :	1244.227	TEMP., 3RD STAGE TURB INLET, AVG, T/C'S
T7.AVG	-DEG.F :	936.675	TEMP., EXHAUST GAS, AVG. OF PROBES
FUELTYPE-	:	1.000	FUEL CODE: 1=NATURAL GAS, 3=LIQUID: DIES#2
WF.MASS	-PPH :	2760.927	FUEL MASSFLOW, METER #1
WF.MASS2	-PPH :	2765.475	FUEL MASSFLOW, METER #2
DWF.MASS-	% :	0.165	DELTA FUEL FLOW, METERS #1 & #2, (% OF AVG
LHV.NGAS	-BTU/LB:	20617.592	LOWER HEATING VALUE, NATURAL GAS FUEL
TNG.AVG	-DEG.F :	62.461	TEMP., NATURAL GAS FUEL, AVG. OF PROBES
H/C.GAS	- :	0.320	HYDROGEN/CARBON RATIO, NATURAL GAS
WA.BLEED	-PPS :	0.000	FLOW, AIR BLEED TO AMBIENT, SOLONOX
RUN.#	- :	4.000	TEST RUN NO./DATAPOINT (OPERATOR SET)

ADJUSTED INPUTS:
WF.AVG : 2763.201

RESULTS CORRECTED TO 59.0 DEG.F AIR TEMP,
SEA LEVEL, & NO DUCT LOSSES.

CORR PCT-SPEED, CORR.%NT	100.06	(99.70 - 100.30)	
CORR MAX TEMP FROM WORK, TRIT/TH(STD)	1891.3	(1875. - 1895.)	
CORR.KW	5180.2	(5043. - MIN)	
SFC, BTU/KW-HR	11215.	(11615. - MAX)	
CORR SHP	7353.2		
SFC, BTU/HP-HR	7901.		
COMPR PRESS RATIO, R(C)	12.177	(12.00 - MIN)	REF.ONLY
CORR COMPR MASS FLOW, WA(PPS)	47.38	(49.60 - MAX)	REF.ONLY
T5(R)/TRIT(R)	0.7170	(0.6518 - 0.7580)	
CORR PT INLET TEMP, T5/TH(STD)	1226.1		
CORR EGT, T7	915.9	(891. - MIN)	REF.ONLY
ACTUAL TEMP FROM WORK, TRIT	1913.9		
CORR.WF, LBS N.GAS/HR	2818.7		
CORR.WF, MILLION BTU/HR	58.094		
EFF. G/B, % (ASSUMED)	98.00		
EFF. GEN., % (ASSUMED)	96.40		
HEAT.BAL	0.9887		

ITEM 3. FREQUENCY (SPEED) AND VOLTAGE REGULATION

Frequency (SPEED) and Voltage Regulation

Customer	:	Unit No	:2	Turbine S/N:1059T	
Project	:2X70221	Model	:T7301S	Package S/N:TG01586	
Fuel Type	:GAS	Date	: 1-JUN-01	Time	:19:55:38

		0 KW	1600 KW	3200 KW	FL KW	0 KW
Generator AC Load:						
Power Measured (KW)	GEN.KW	12.	1615.	3230.	4757.	12.
Power no losses (KW)	CORR.KW	12.	1709.	3379.	4961.	12.
Power Factor	P.F.	0.00	0.99	1.00	1.00	0.00
Facility Inlet Duct:						
Average Temp.(DegF)	TO.AVG	63.09	62.98	62.93	63.59	63.66
Speed (Freq.) (%)	Min	100.00	100.00	100.00	100.00	100.00
Speed (Freq.) (%)	%NTURB	100.08	100.11	100.21	100.17	100.08
Speed (Freq.) (%)	Max	100.08	100.11	100.33	100.18	100.08
Generator Volt (%)	Min	99.97	100.05	100.09	100.37	100.07
Generator Volt (%)	%.VOLT	100.00	100.06	100.20	100.37	100.07
Generator Volt (%)	Max	100.02	100.07	100.21	100.37	100.08
Voltage Balance (2% Max)	VOLT.H-L	0.16	0.15	0.37	0.42	0.21
Freq Regulation (.25% Max)		0.00	-0.03	-0.13	-0.09	0.00
Volt Regulation(1.0% Max)		0.00	-0.06	-0.20	-0.37	-0.07

ITEM 4. OPERATING PARAMETERS

OPERATING PARAMETERS - TAURUS GENERATOR SET

CUSTOMER: UNIT NO: 2 TURBINE S/N: 1059T
PROJECT : 70221 MODEL : TAURUS 60S PACKAGE S/N: TG01586

PARAMETER	NAME	LIMIT	0 KW	1600 KW	3200 KW	DRY F/L
DATE			30-MAY-01	30-MAY-01	31-MAY-01	01-JUN-01
TIME			20:34:46	21:18:20	07:53:06	13:51:42
TEST CELL			11	11	11	11
FUEL			GAS	GAS	GAS	GAS
GENERATOR AC LOAD						
POWER-MEASURED (KW)	GEN.KW		-3.	1565.	3143.	4822.
POWER-NO LOSSES (KW)	CORR.KW		-3.	1619.	3212.	5022.
VOLTAGE (VOLTS)	VOLT.AVG		13198.1	13228.5	13247.8	13234.9
VOLTAGE BALANCE (%)	VOLT.H-L	2.0 MAX	0.1	0.1	0.3	0.3
CURRENT (AMPS)	AMP.AVG		0.	68.	137.	210.
POWER FACTOR	P.F.		0.00	1.00	1.00	1.00
FREQUENCY (HZ)	GEN.FREQ		60.4	60.6	60.2	60.0
GENERATOR WINDING TEMP (DEG.C)						
PHASE A	T.GEN.A		34.	39.	39.	56.
PHASE B	T.GEN.B		36.	39.	39.	56.
PHASE C	T.GEN.C		34.	39.	41.	56.
ENGINE SPEED (%)						
ENGINE SPEED	%NTURB		100.71	100.97	100.19	100.14
LUBRICATION						
OIL TEMPERATURE (DEG.F)	TPKG.OIL	140. - 155.	143.	142.	142.	143.
GEARBOX OIL PRESSURE (PSI)	PGB.OIL	45. - 65.	48.	47.	46.	46.
TURBINE LT OIL PRESSURE (PSI)	P.COMP.L	45. - 65.	56.	59.	59.	59.
OIL MANIFOLD PRESSURE (PSI)	P.OIL		71.	74.	74.	74.
GEARBOX OIL FLOW (GPM)	FGB.OIL	41.2 - 66.0	50.3	54.5	55.2	55.8
TURBINE LT OIL FLOW (GPM)	F.COMP.L		31.5	32.2	31.4	32.7
ENGINE TEMPERATURE (DEG.F)						
FAC AIR INLET DUCT	TO.AVG		64.8	67.3	63.8	68.4
THIRD STAGE TURBINE INLET	T5.	1255. MAX (SIVS C)	613.	887.	1198.	1224.
THIRD STAGE TURBINE INLET 1	T5/1	1229. MAX (SIVS O)	600.	894.	1182.	1231.
THIRD STAGE TURBINE INLET 2	T5/2		624.	904.	1212.	1250.
THIRD STAGE TURBINE INLET 3	T5/3		610.	890.	1199.	1235.
THRID STAGE TURBINE INLET 4	T5/4		578.	815.	1146.	1146.
THIRD STAGE TURBINE INLET 5	T5/5		616.	894.	1219.	1219.
THIRD STAGE TURBINE INLET 6	T5/6		653.	923.	1227.	1260.
ENGINE EXHAUST DUCT	T7.AVG		480.1	642.4	961.1	928.4
THRUST BEARING TEMPERATURES (DEG.F)						
FWD. THRUST BRG.#1 RTD	TGP.TBRG	230. MAX	193.	196.	193.	198.
FWD. THRUST BRG.#2 RTD	TGPTBRG2	230. MAX	180.	181.	177.	183.
ENGINE PRESSURE						
COMPRESSOR DISCHARGE (PSI)	PCD		117.3	128.4	110.8	154.6
OIL TANK SUMP (IN.H2O)	PSUMP		1.7	1.9	1.7	2.6

OPERATING PARAMETERS - TAURUS GENERATOR SET

CUSTOMER:
PROJECT : 70221

UNIT NO: 2
MODEL : TAURUS 60S

TURBINE S/N: 1059T
PACKAGE S/N: TG01586

PARAMETER	NAME	LIMIT	0 KW	1600 KW	3200 KW	DRY F/L
DATE			30-MAY-01	30-MAY-01	31-MAY-01	01-JUN-01
TIME			20:34:46	21:18:20	07:53:06	13:51:42
TEST CELL			11	11	11	11
FUEL			GAS	GAS	GAS	GAS
FUEL						
GAS FLOW (CFM)	WF.NG		35.71	44.48	44.45	62.89
GAS TEMPERATURE (DEG.F)	T.NG		61.9	61.0	60.6	66.4
GAS PRESSURE (PSI)	P.NG		193.9	191.4	226.1	216.4
VIBRATION						
COMPRESSOR HORIZ VEL(15-2000HZ)(IPS-RMS)	V.COMP.H	0.28 MAX	0.07	0.07	0.07	0.09
TURBINE VERT VEL (15-2000HZ)(IPS-RMS)	V.TURB.V	0.40 MAX	0.09	0.09	0.07	0.08
GEARBOX HOR. VEL (15-1000HZ)(IPS-RMS)	VGB.HOR	0.28 MAX	0.04	0.04	0.05	0.06
GEARBOX VERT ACCEL (15-12000HZ)(G'S-RMS)	VGB.VERA	16.0 MAX	1.0	1.9	4.6	5.7
GEN DRIVEN END VERT (15-90HZ) (IPS-RMS)	VGENDR.V	0.10 MAX	0.02	0.02	0.02	0.03
GEN EXCITER END VERT (15-90HZ) (IPS-RMS)	VGENEXCV	0.10 MAX	0.01	0.02	0.02	0.03
BEARING 1 VERT DISP(5-1000HZ) (MILS)	VBRG.1.V	3.50 MAX	0.36	0.30	0.17	0.64
BEARING 1 HORIZ DISP(5-1000HZ) (MILS)	VBRG.1.H	3.50 MAX	0.35	0.35	0.30	0.51
BEARING 2 VERT DISP(5-1000HZ) (MILS)	VBRG.2.V	3.50 MAX	0.62	0.67	0.39	0.49
BEARING 2 HORIZ DISP(5-1000HZ) (MILS)	VBRG.2.H	3.50 MAX	0.76	0.88	0.60	0.64
BEARING 3 VERT DISP(5-1000HZ) (MILS)	VBRG.3.V	3.50 MAX	0.79	0.76	0.40	0.39
BEARING 3 HORIZ DISP(5-1000HZ) (MILS)	VBRG.3.H	3.50 MAX	0.84	0.83	0.45	0.47

ITEM 5. VIBRATION DATA

MACHINERY VIBRATION SIGNATURE

V.COMP.H
1-JUN-01
13:57:53
CELL: 11
2-70221 2
1059T

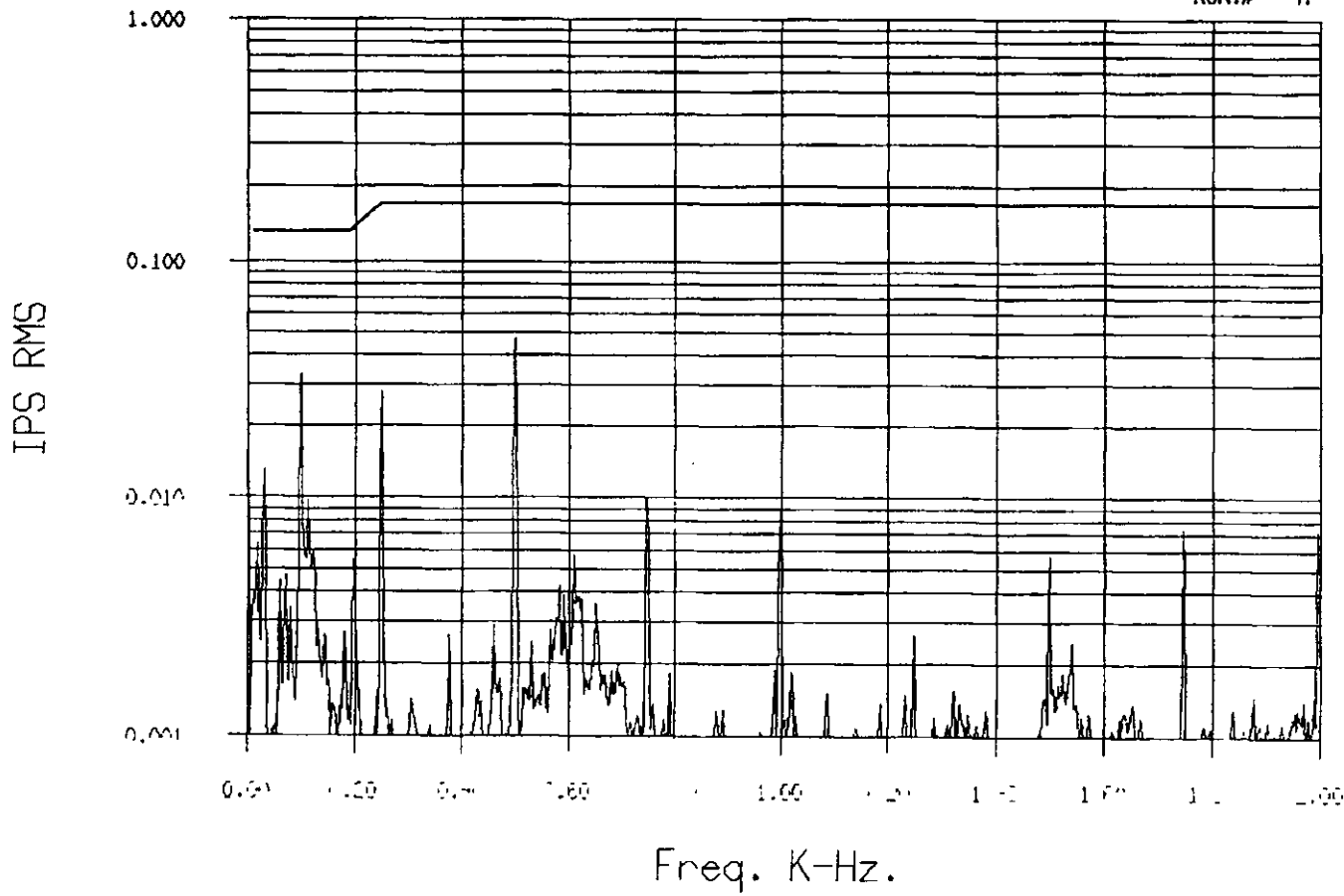
PEAKS (FREQ= AMPL):

16.5= 0.006	498.8= 0.047
29.9= 0.013	748.2= 0.010
98.8= 0.033	997.5= 0.009
111.5= 0.010	1745.6= 0.007
249.3= 0.028	1995.1= 0.007

1-E:
NTURB
249.3 Hz.
0.028

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

V.TURB.V
1-JUN-01
13:57:53
CELL: 11
2-70221 2
1059T

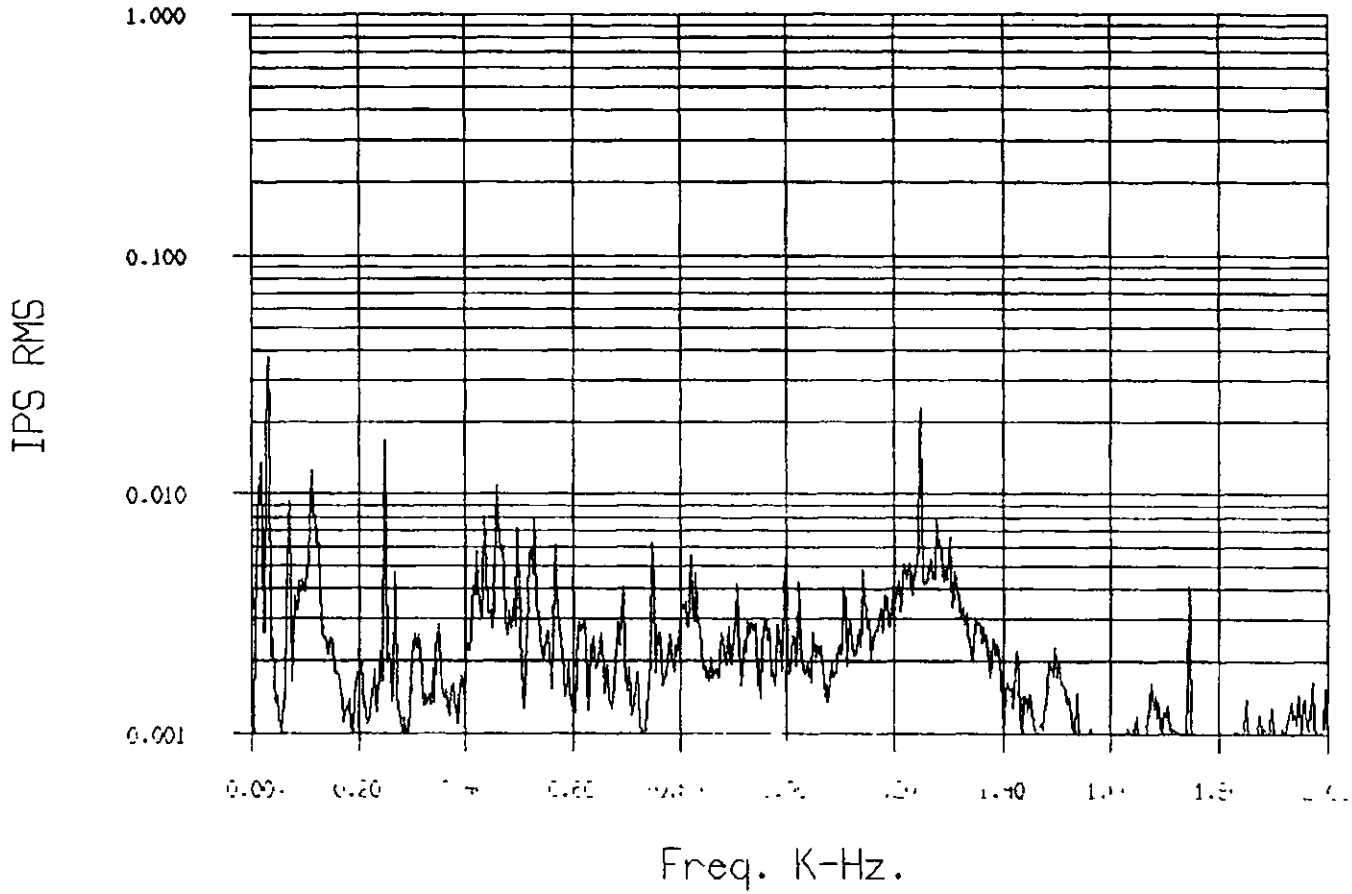
PEAKS (FREQ= AMPL):

16.4= 0.014	436.2= 0.008
30.0= 0.038	461.1= 0.011
68.9= 0.009	528.7= 0.008
111.4= 0.013	1246.8= 0.023
249.4= 0.017	1278.6= 0.008

1-E:
NTURB
249.4 Hz.
0.017

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VGB.HOR
1-JUN-01
13:57:24
CELL: 11
2-70221 2
1059T

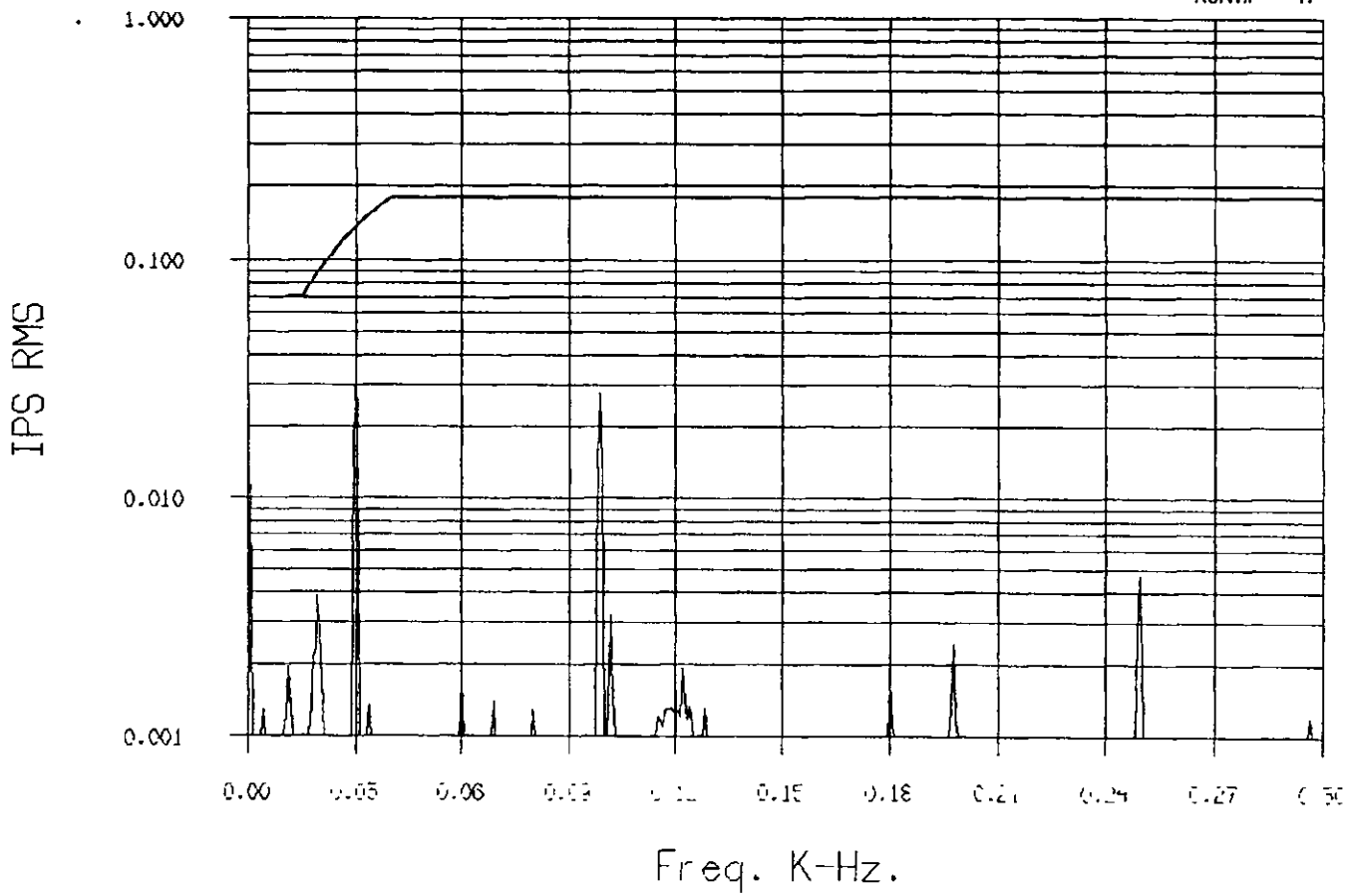
PEAKS (FREQ= AMPL):

11.5= 0.002	101.8= 0.003
19.6= 0.004	122.2= 0.002
30.0= 0.036	180.1= 0.002
60.1= 0.002	197.5= 0.002
98.7= 0.028	249.3= 0.005

1-E:
GEN
30.0 Hz.
0.036

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VGB.HOR
1-JUN-01
13:56:52
CELL: 11
2-70221 2
1059T

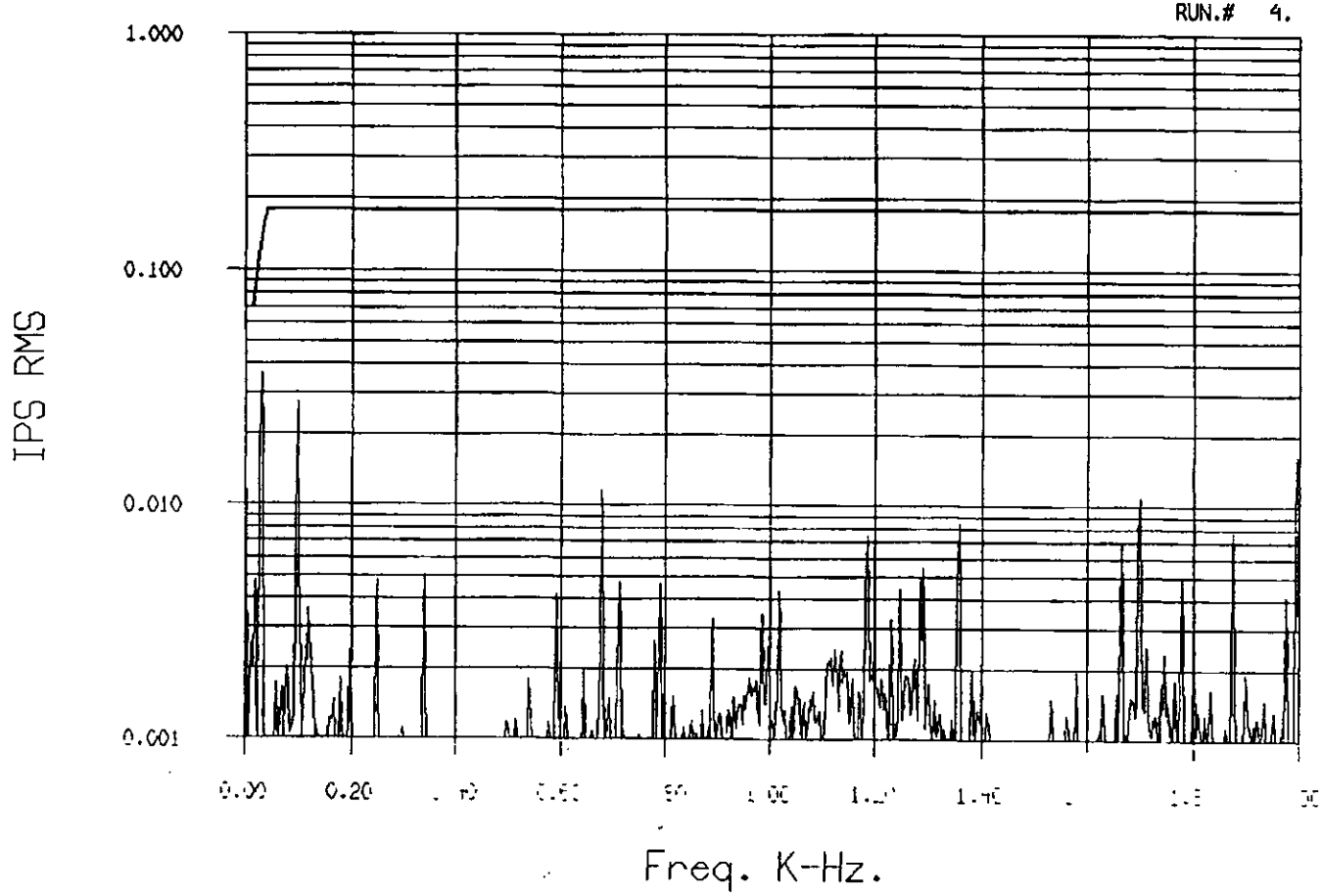
PEAKS (FREQ= AMPL):

30.0= 0.037	1357.4= 0.008
98.8= 0.027	1662.8= 0.007
678.7= 0.012	1696.8= 0.011
1184.7= 0.007	1876.2= 0.008
1290.8= 0.005	1994.8= 0.016

1-E:
NTURB
249.3 Hz.
0.005

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VGB.VERA
1-JUN-01
13:58:25
CELL: 11
2-70221 2
1059T

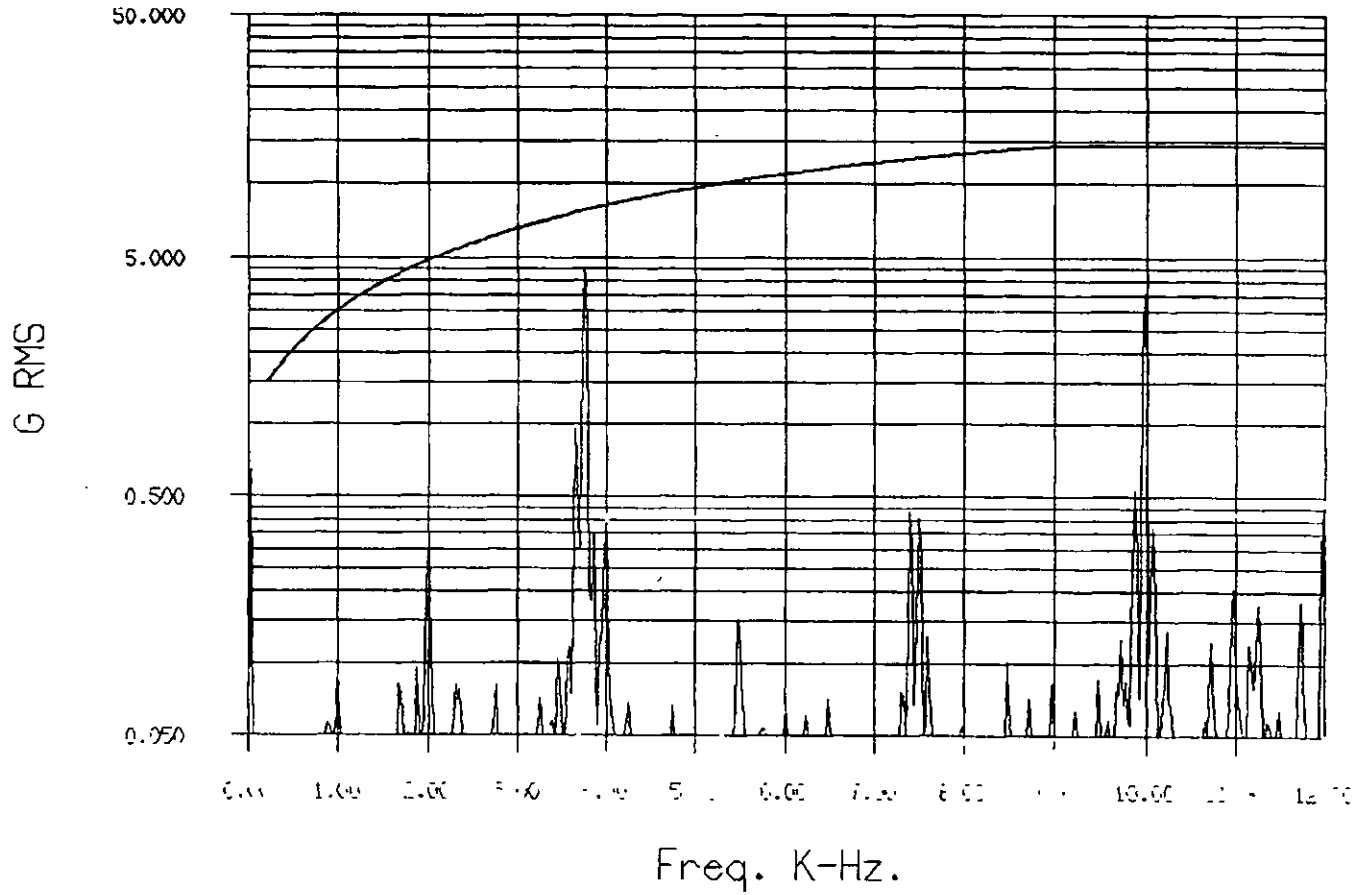
PEAKS (FREQ= AMPL):

3654.2= 0.948	7505.6= 0.410
3752.9= 4.542	9876.0= 0.530
3851.4= 0.349	9974.6= 3.574
3989.5= 0.378	10073.5= 0.372
7407.2= 0.433	11969.3= 0.458

1-E:
RGM
9974.6 Hz.
3.574

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VGENDR.V
1-JUN-01
13:55:53
CELL: 11
2-70221 2
1059T

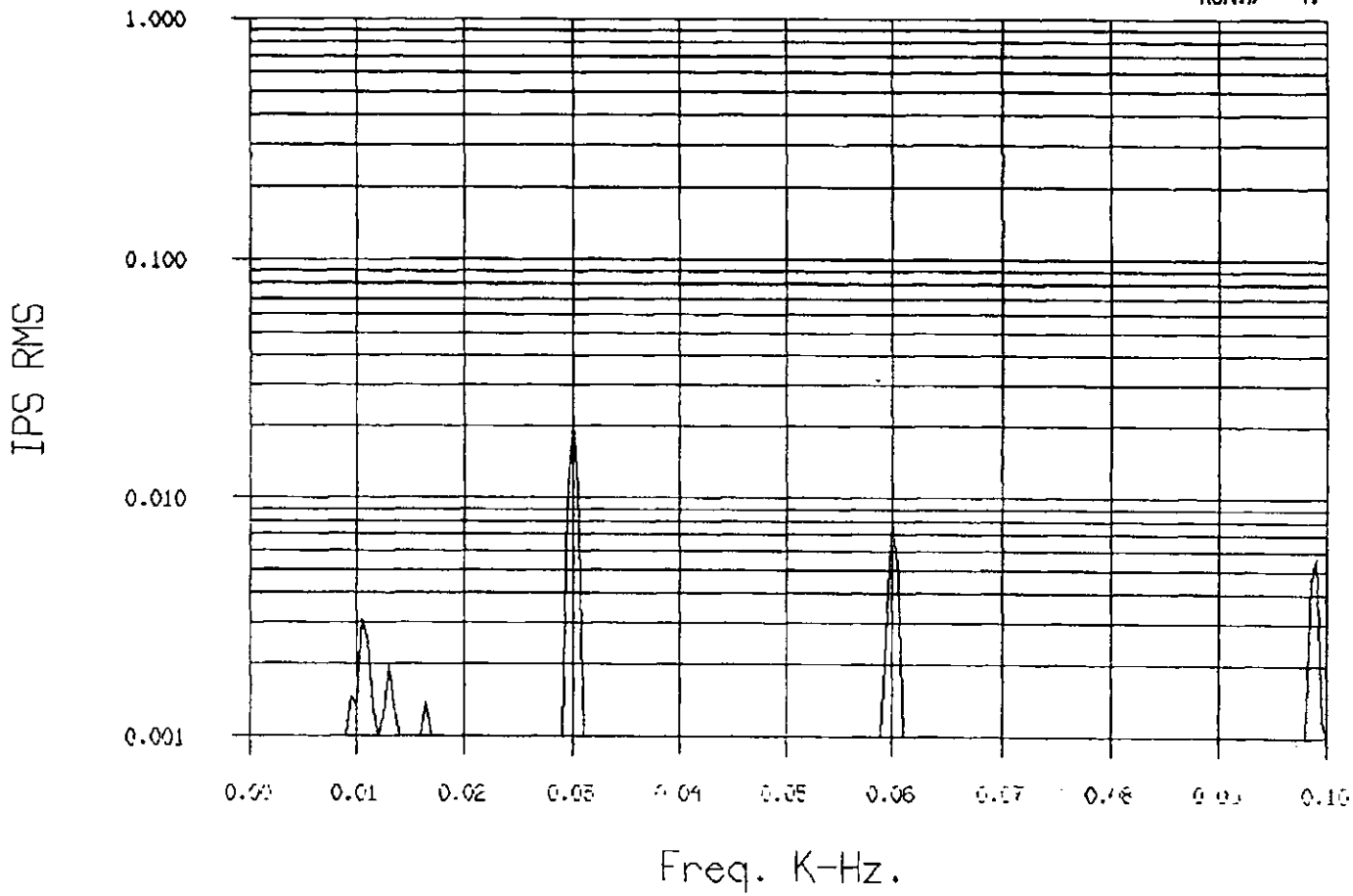
PEAKS (FREQ= AMPL):
10.7= 0.003
13.2= 0.002
16.7= 0.001
30.0= 0.021
60.1= 0.008

98.8= 0.006

1-E:
GEN
30.0 Hz.
0.021

OIL TEMP:143. DEG.F
LOAD: 4819. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

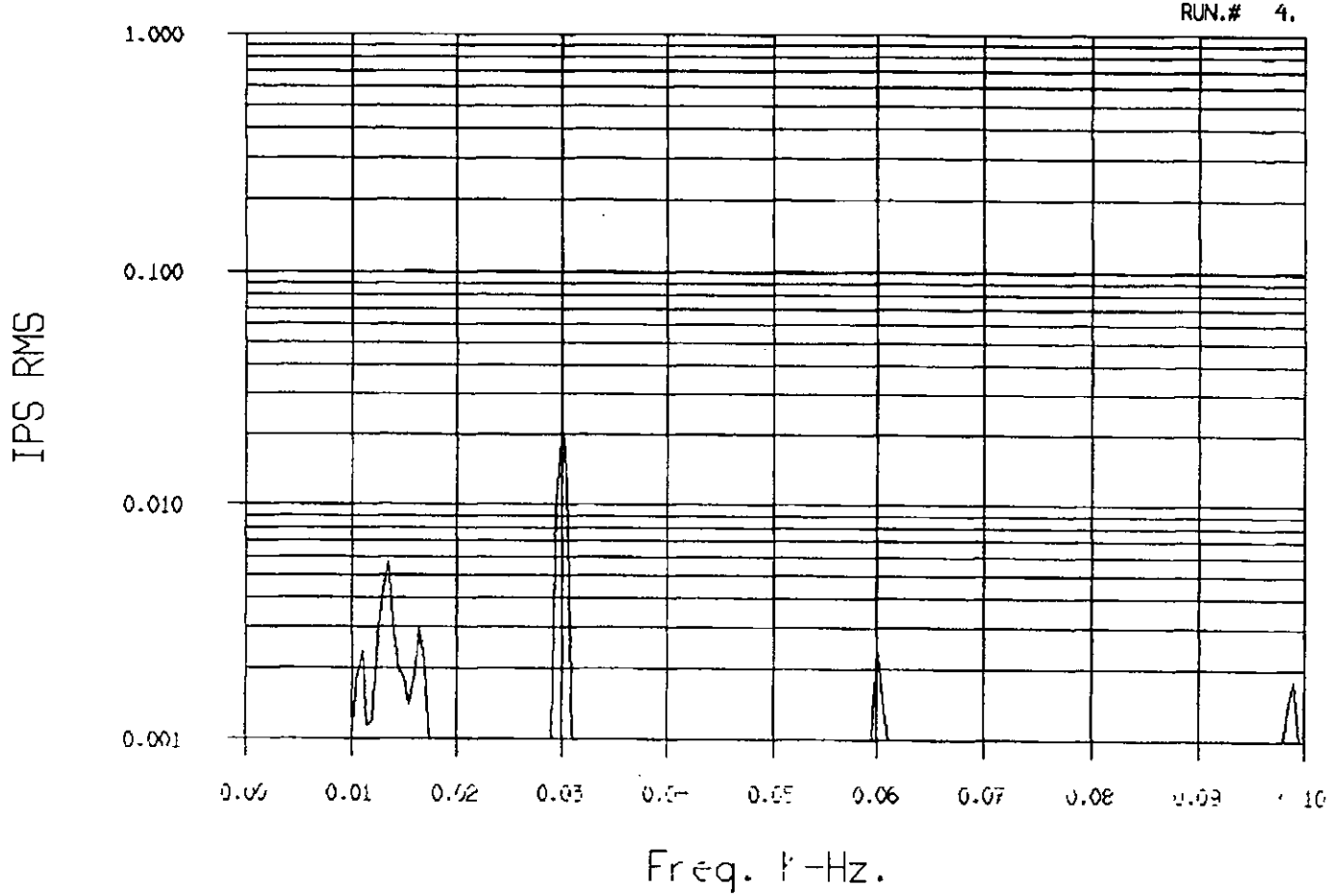
VGENEXCV
1-JUN-01
13:55:53
CELL: 11
2-70221 2
1059T

PEAKS (FREQ= AMPL):
10.8= 0.002
13.3= 0.006
16.7= 0.003
30.0= 0.022
60.1= 0.003
98.8= 0.002

1-E:
GEN
30.0 Hz.
0.022

OIL TEMP:143. DEG.F
LOAD: 4819. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VBRG.1.V
1-JUN-01
13:58:26
CELL: 11
2-70221 2
1059T

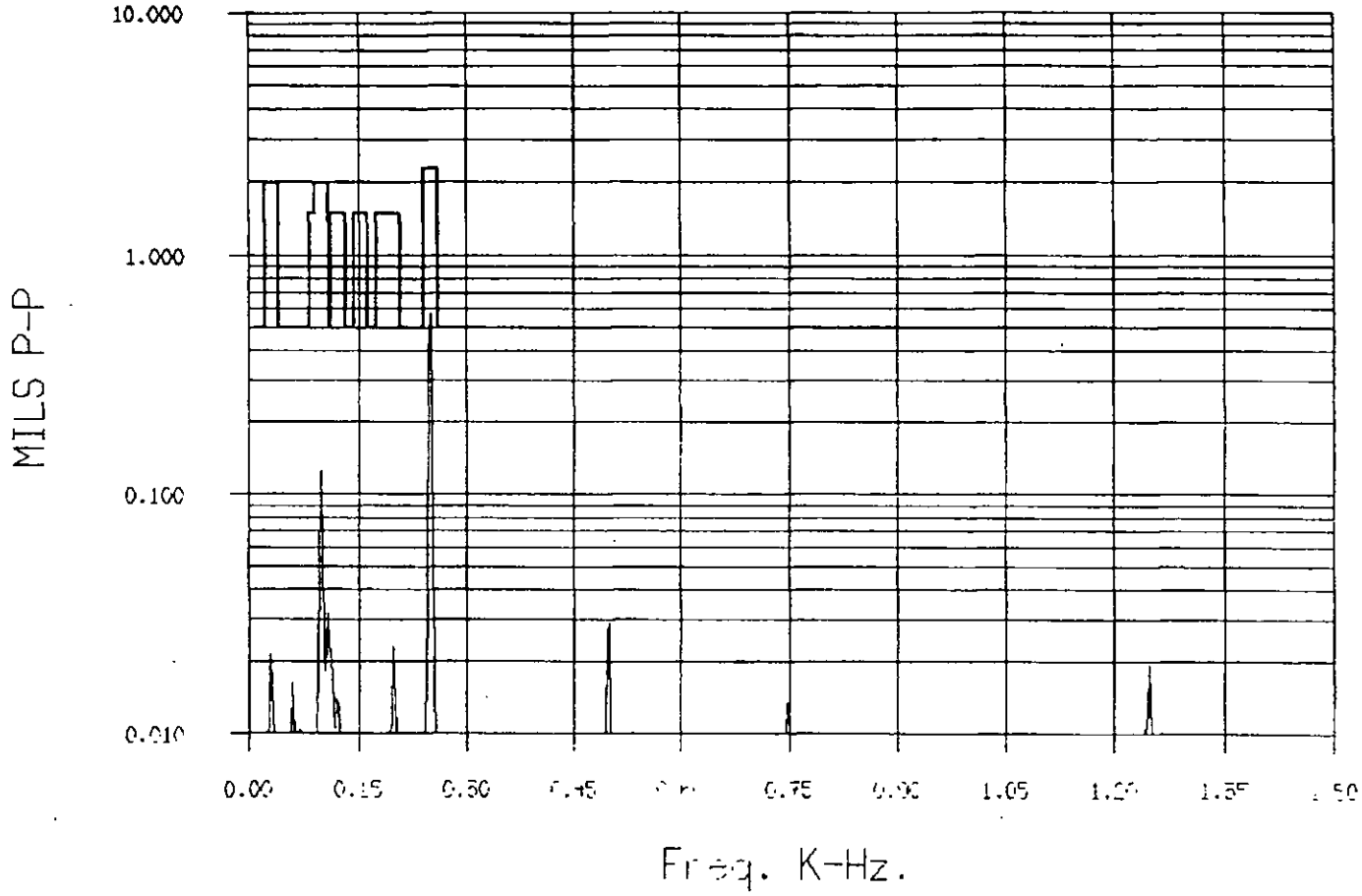
PEAKS (FREQ= AMPL):

30.2= 0.021	498.8= 0.029
59.9= 0.016	748.2= 0.013
98.8= 0.125	1247.1= 0.019
108.6= 0.032	
249.4= 0.575	

1-E:
NTURB
249.4 Hz.
0.575

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

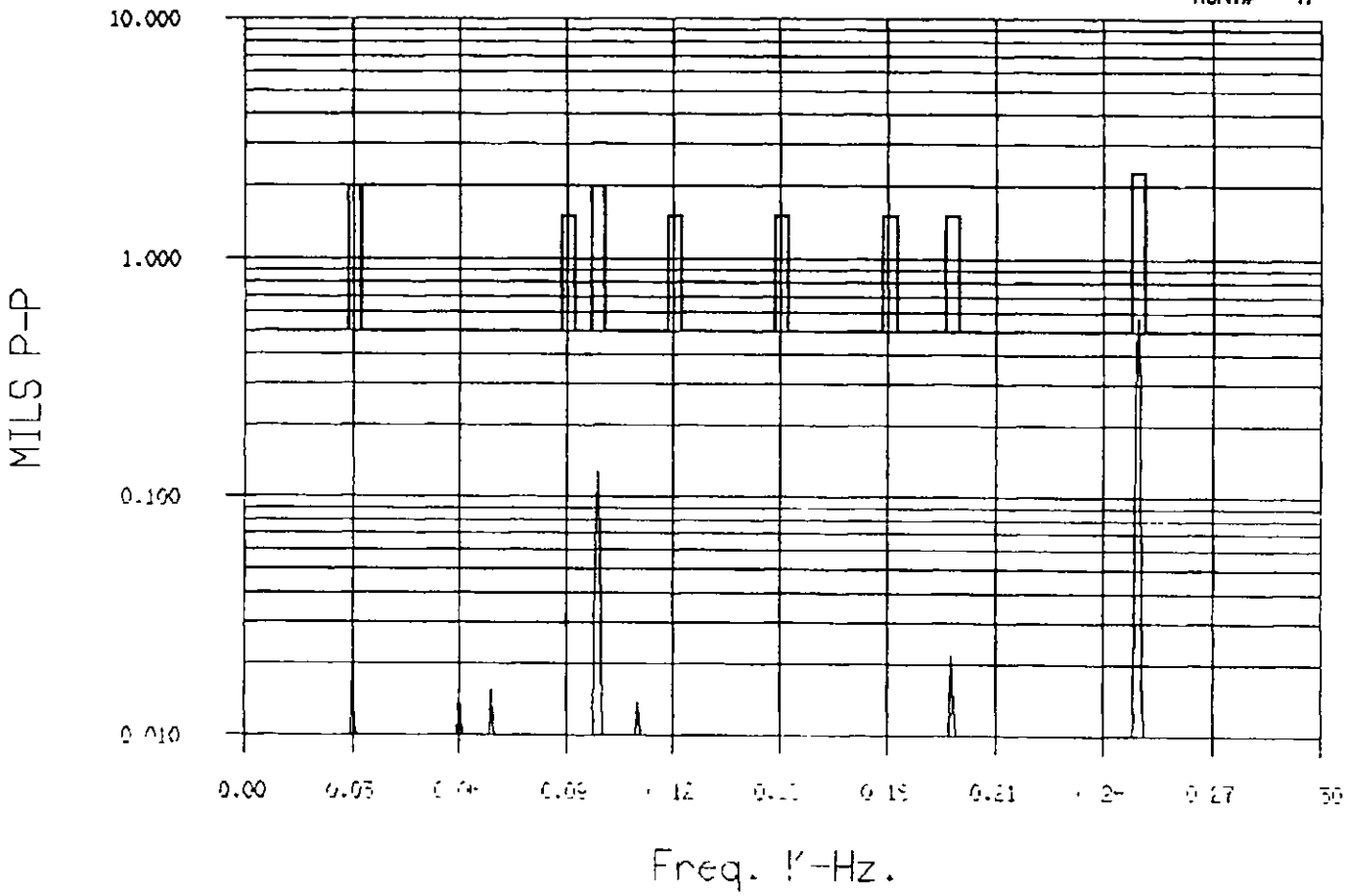
VBRG.1.V
1-JUN-01
13:59:22
CELL: 11
2-70221 2
1059T

PEAKS (FREQ= AMPL):
30.0= 0.020
60.1= 0.015
69.0= 0.015
98.8= 0.127
109.7= 0.014
197.6= 0.022
249.4= 0.572

1-E:
GEN
30.0 Hz.
0.020

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

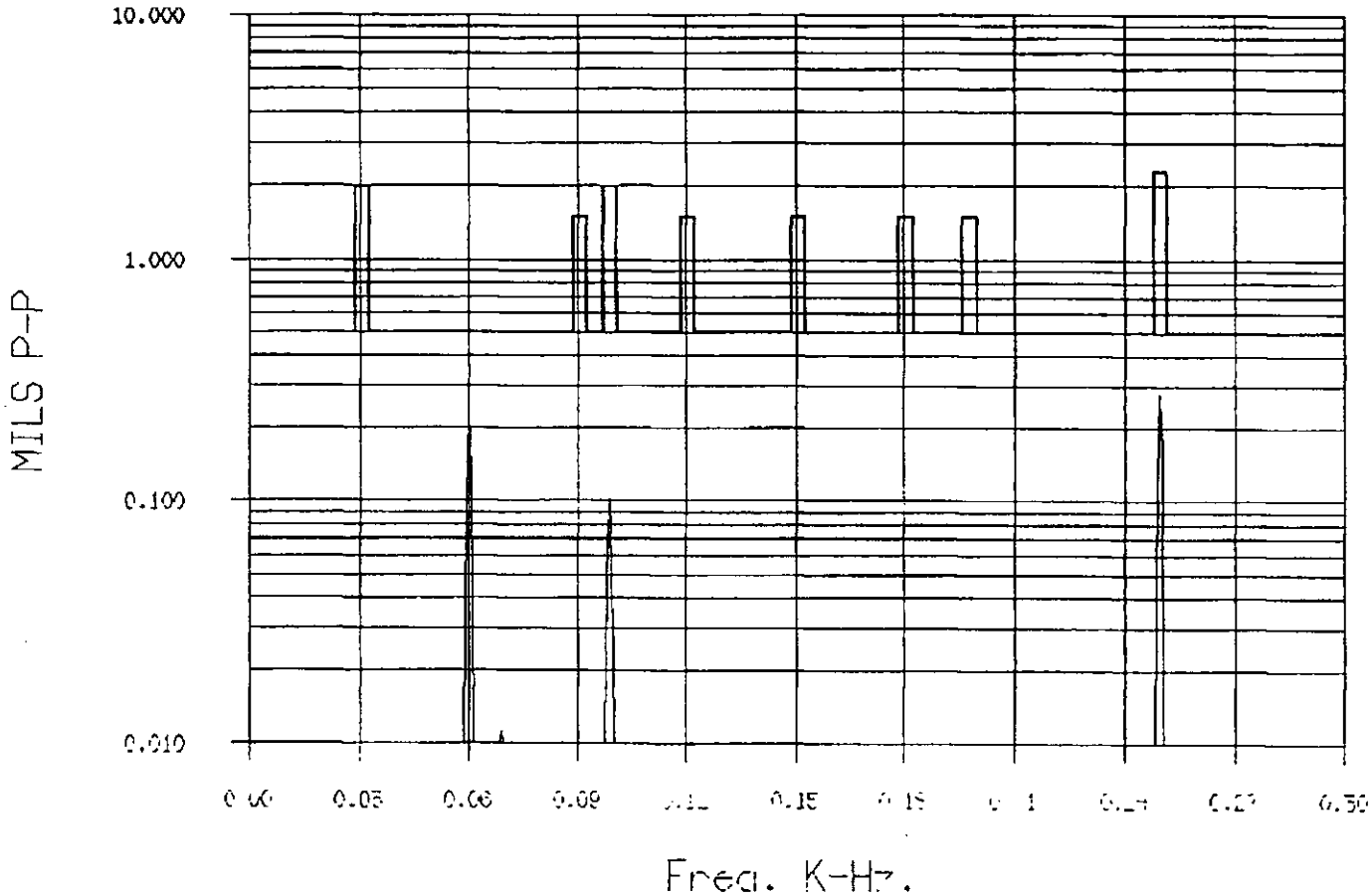
VBRG.1.H
1-JUN-01
13:59:22
CELL: 11
2-70221 2
1059T

PEAKS (FREQ= AMPL):
60.1= 0.231
69.0= 0.011
98.8= 0.101
249.4= 0.280

1-E:
GEN
30.0 Hz.
0.006

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

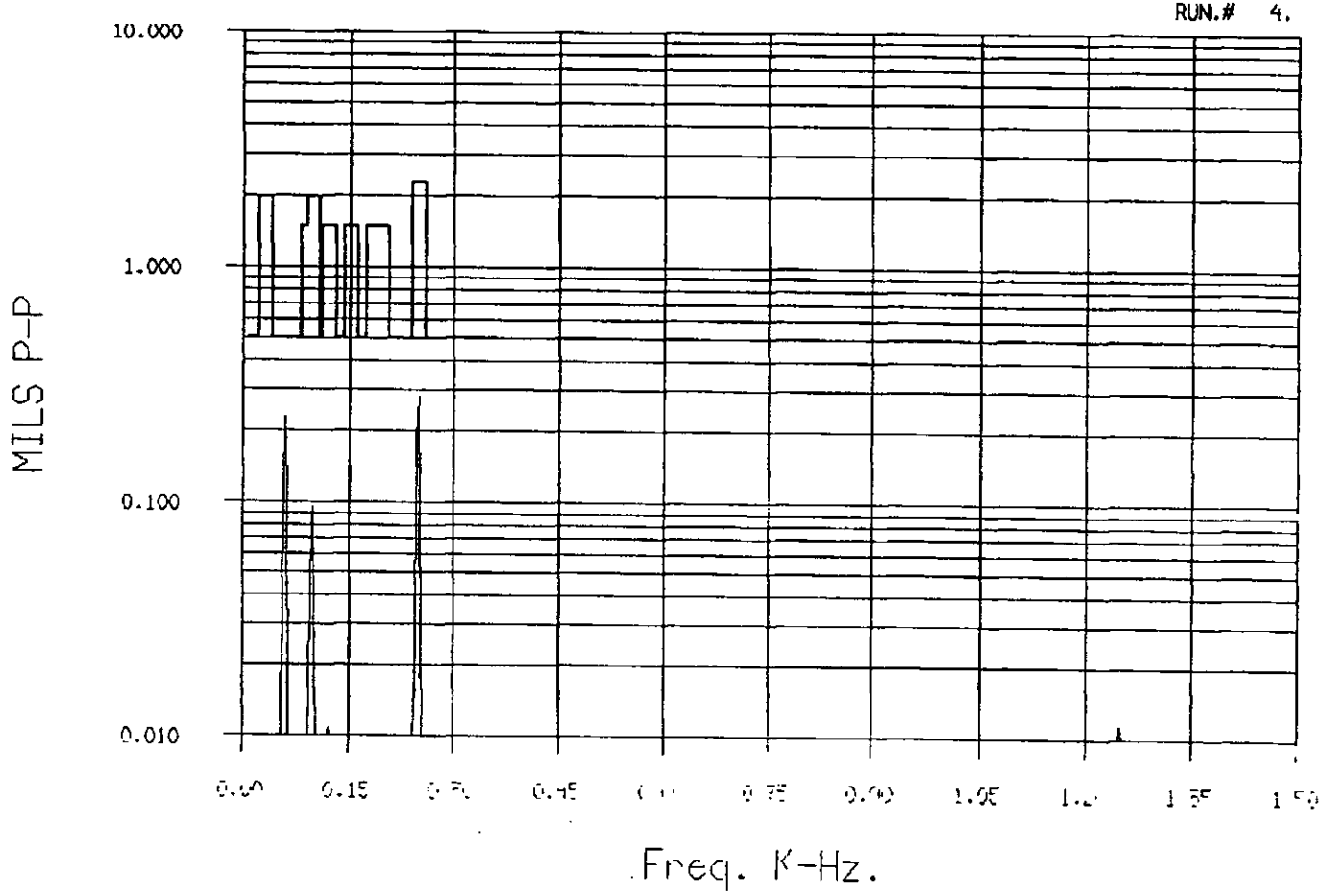
VBRG.1.H
1-JUN-01
13:58:28
CELL: 11
2-70221 2
1059T

PEAKS (FREQ= AMPL):
60.1= 0.231
98.8= 0.096
121.4= 0.011
249.4= 0.280
1247.0= 0.011

1-E:
NTURB
249.4 Hz.
0.280

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VBRG.2.V
1-JUN-01
13:53:40
CELL: 11
2-70221 2
1059T

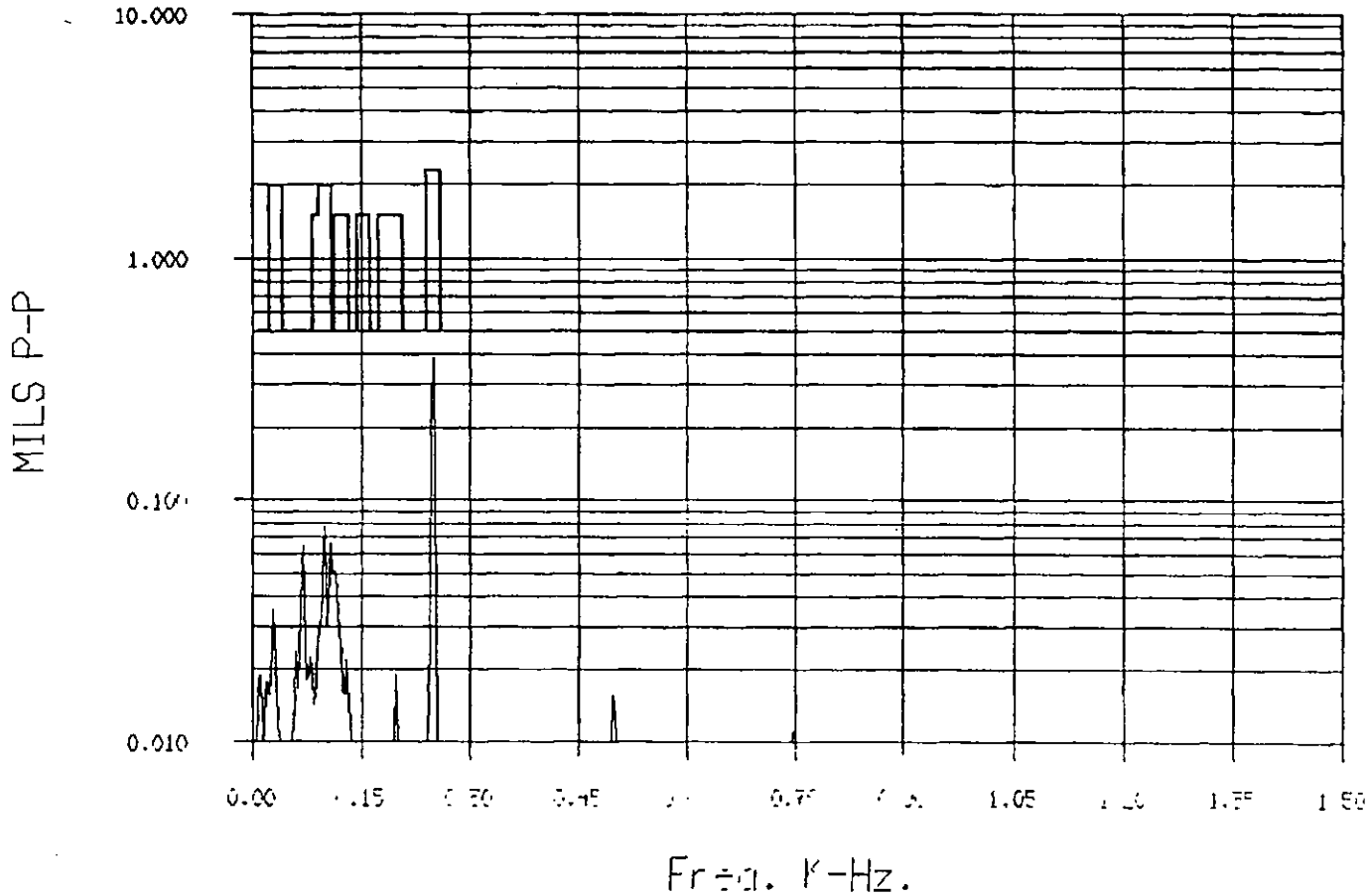
PEAKS (FREQ= AMPL):

28.7= 0.035	197.4= 0.019
68.9= 0.065	249.3= 0.388
98.8= 0.078	498.7= 0.016
108.7= 0.067	748.0= 0.011
128.8= 0.022	

1-E:
NTURB
249.3 Hz.
0.388

OIL TEMP:143. DEG.F
LOAD: 4821. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

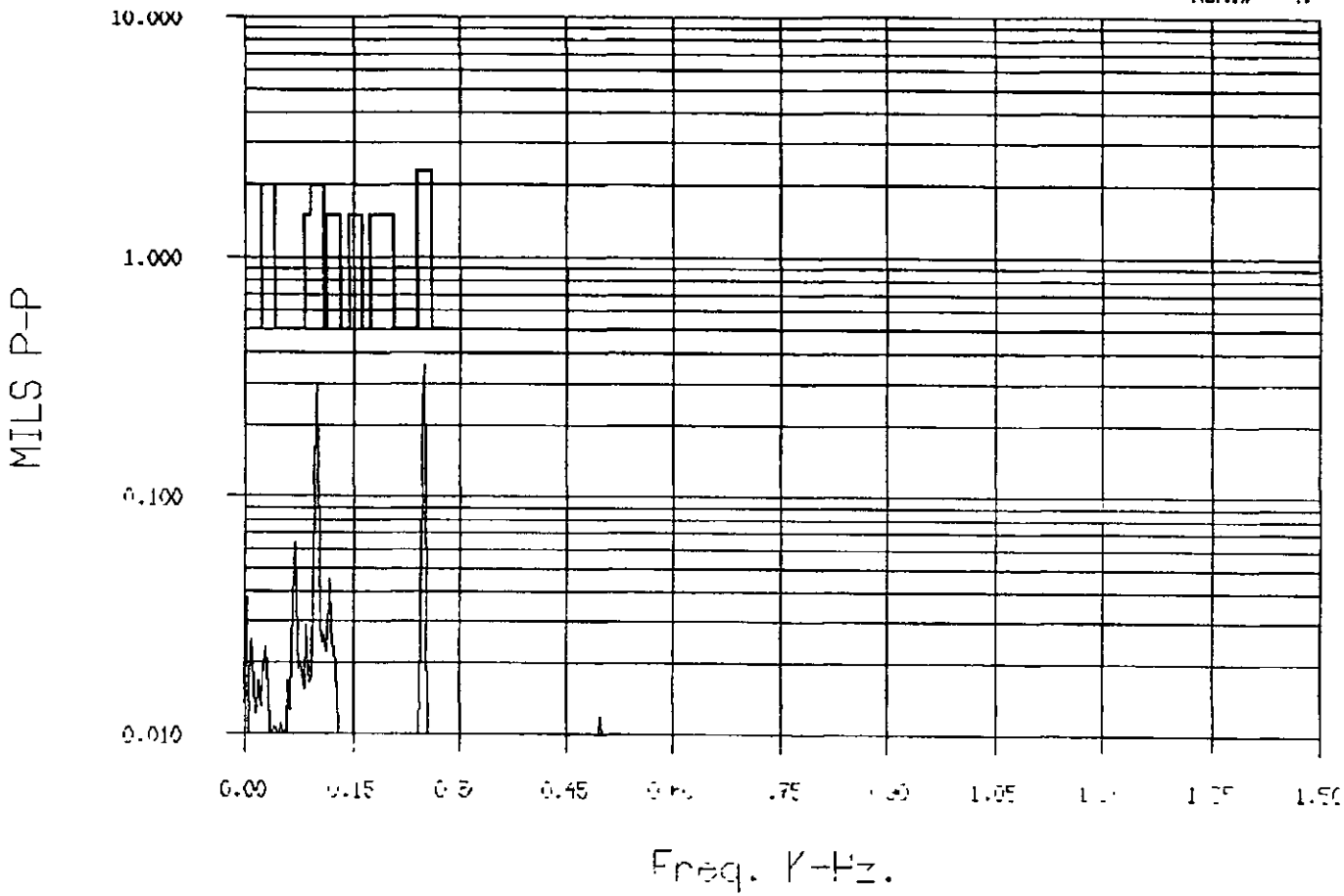
VBRG.2.H
1-JUN-01
13:53:40
CELL: 11
2-70221 2
1059T

PEAKS (FREQ= AMPL):
1.6= 0.038
68.9= 0.064
85.6= 0.029
98.8= 0.299
116.7= 0.045
249.3= 0.359
498.7= 0.012

1-E:
NTURB
249.3 Hz.
0.359

OIL TEMP:143. DEG.F
LOAD: 4821. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VBRG.3.V
1-JUN-01
13:54:33
CELL: 11
2-70221 2
1059T

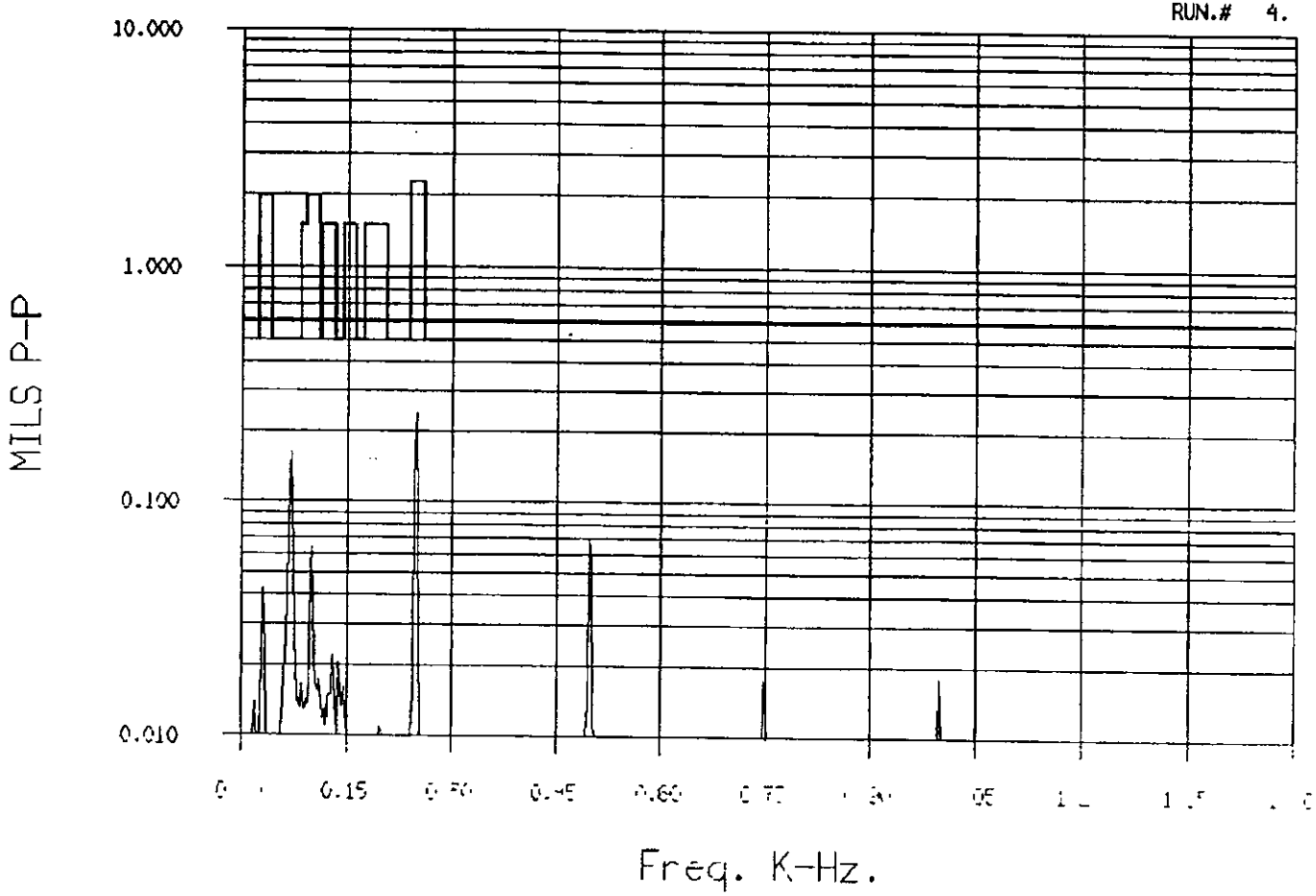
PEAKS (FREQ= AMPL):

18.7= 0.014	138.7= 0.020
30.2= 0.042	249.4= 0.240
68.9= 0.163	498.7= 0.069
98.8= 0.063	748.0= 0.017
129.1= 0.022	997.4= 0.018

1-E:
NTURB
249.4 Hz.
0.240

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.



MACHINERY VIBRATION SIGNATURE

VBRG.3.H
1-JUN-01
13:54:33
CELL: 11
2-70221 2
1059T

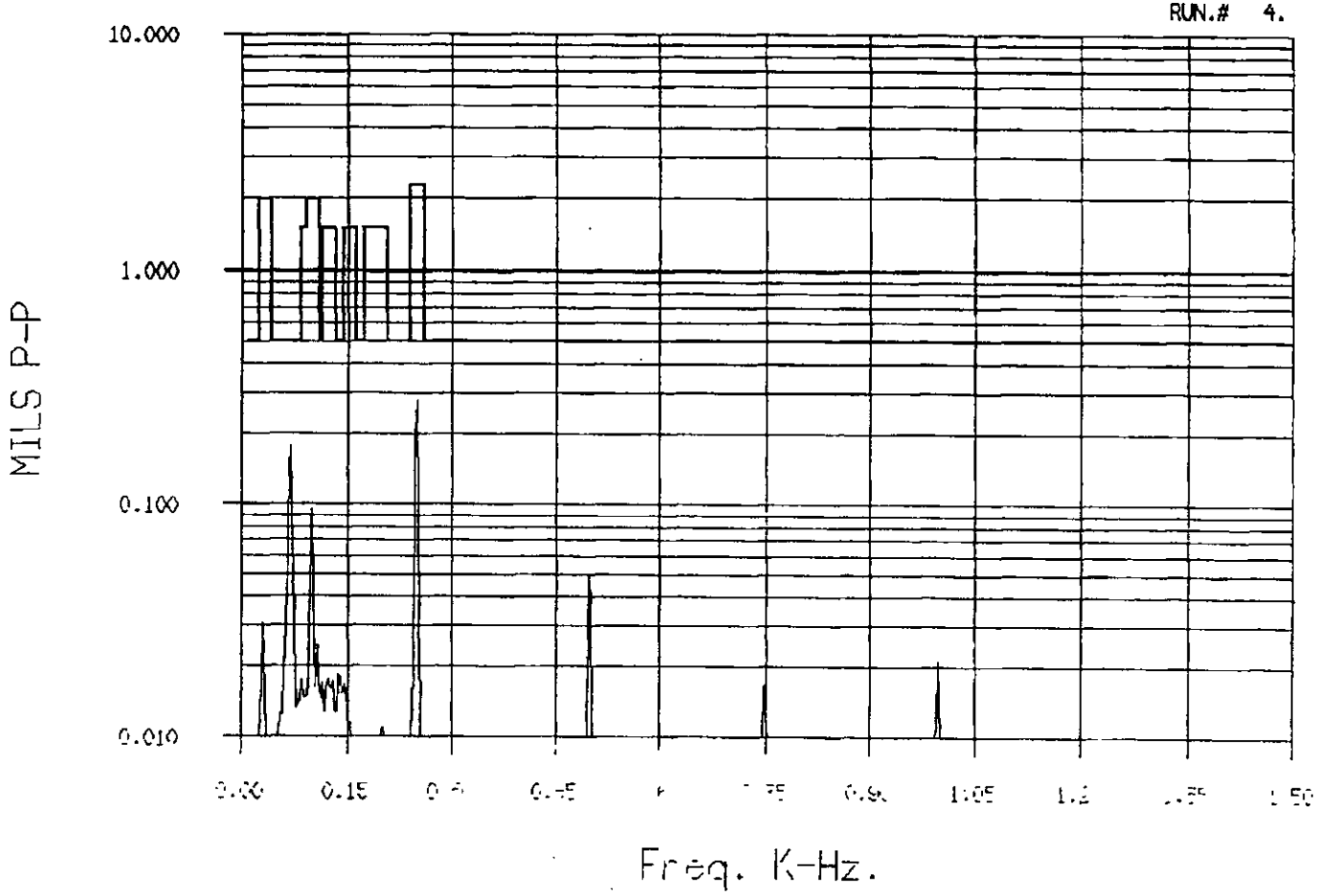
PEAKS (FREQ= AMPL):

29.8= 0.031	249.4= 0.282
68.9= 0.178	498.6= 0.048
98.8= 0.096	748.1= 0.017
108.6= 0.025	997.4= 0.021
198.8= 0.011	

1-E:
NTURB
249.4 Hz.
0.282

OIL TEMP:143. DEG.F
LOAD: 4820. KW -UNCORRECTED
FUEL: NGAS

RUN.# 4.

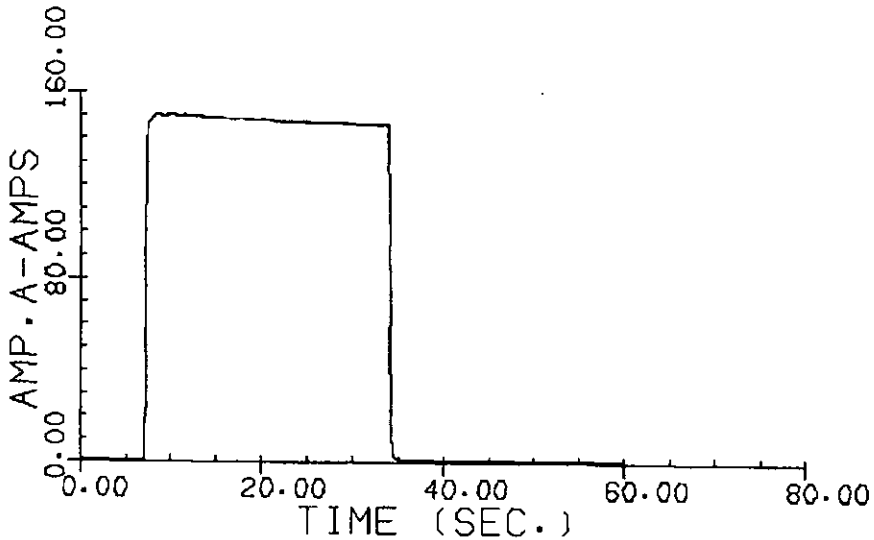


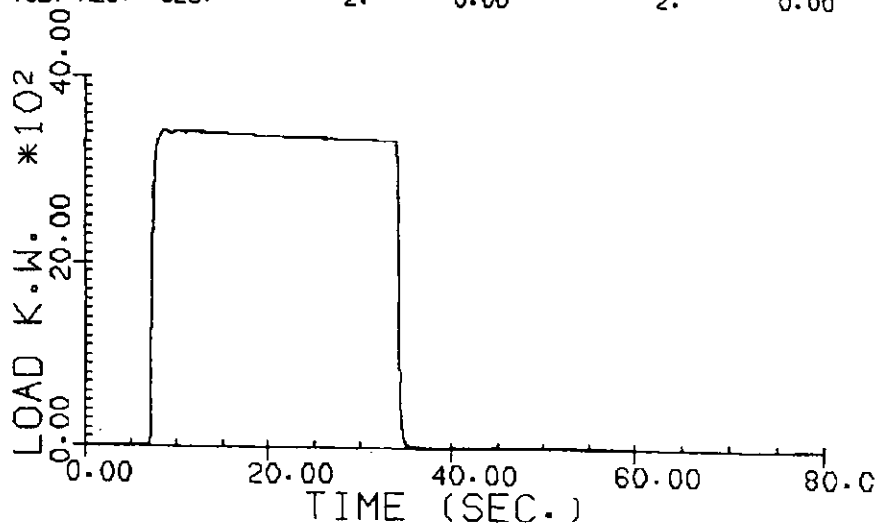
ITEM 6. SUDDEN LOAD TESTS

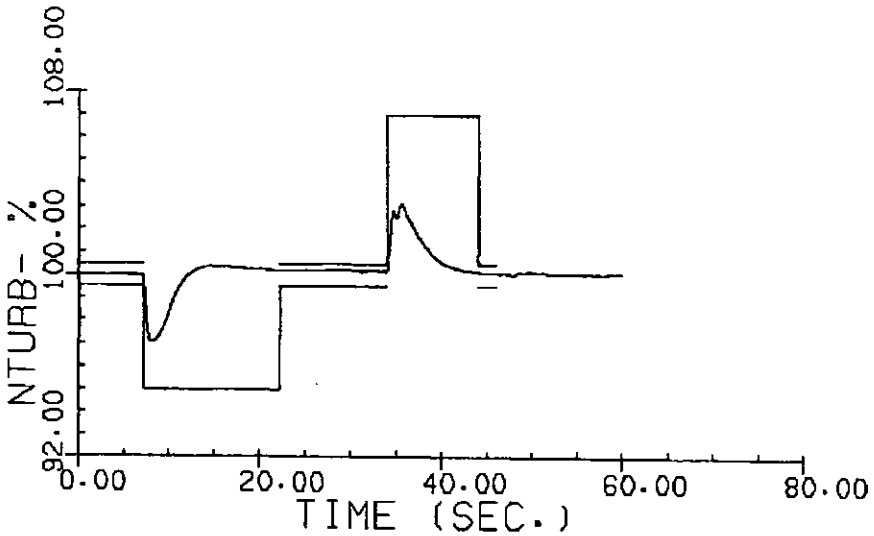
SOLAR TURBINES INCORPORATED

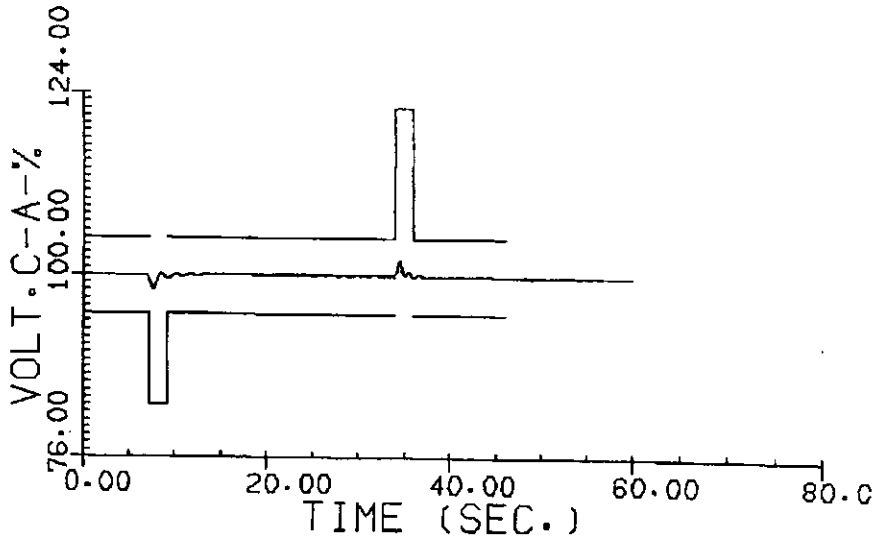
1-JUN-01 22:10:40 11		UNIT NO.	: 2
CUSTOMER NAME	:	FUEL	: NAT.GAS
P.D.NO.	: 2X70221	ENG S/N	: 1059T
AIR INLET TEMP.	: 62.5	KW (ACTUAL)	: 3409.
POWER FACTOR	: 1.00	KW (NO LOSSES)	: 3520.

	ON LOAD		OFF LOAD	
	LIM	ACT	LIM	ACT
SPEED DEV-% :	5.	2.96	7.	3.16
SPEED REC.-SEC:	15.	4.06	10.	6.41
VOLTAGE DEV-% :	17.	1.87	22.	2.16
VOLT REC.- SEC:	2.	0.00	2.	0.00









ITEM 7. DRY EMISSIONS

DRY Emissions (REV 1.0) Page - 1

Engine ID :TDSDAA-1500-007
Engine S/N :1059T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken :31-MAY-01 22:27:00
Load : 2384.62 (50.%) KW

T.AMB	-	DEG.F	:	64.4501
T.NG	-	DEG.F	:	64.8633
P.BARO	-	IN.HG	:	29.4525
%R.H.	-	%	:	81.0781
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	1761.0499
WA	-	PPS	:	28.5953
T2.AVG	-	DEG.F	:	583.8966
%NTURB	-	%	:	100.0770
T5.AVG	-	DEG.F	:	1219.8502
T7.AVG	-	DEG.F	:	1025.1400
FUELTYPE	-		:	1.0000
RUN.#	-		:	4.0000
PCD	-	PSIG	:	92.2820
TRIT	-	DEG.F	:	1812.3146
TPZ.C	-	DEG.F	:	3270.1375
TPZ.O	-	DEG.F	:	0.0000
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY : 0.03 %
LOAD_INSTABILITY : 0.14 %KW
T7AVG_INSTABILITY : 0.63 DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	7.	7.	7.	
CO2	-	%	:	3.08	3.07	3.10	
NO	-	ppmv	:	9.	9.	9.	
NOX	-	ppmv	:	12.	12.	12.	
UHC	-	ppmv	:	3.	2.	3.	
O2	-	%	:	15.76	15.72	15.81	

Fuel Factor 1.67

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	14.	14.	15.	
NOX	13.	13.	14.	1.99
CO	8.	8.	8.	0.72
UHC	3.	3.	3.	0.17

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***

DRY Emissions (REV 1.0) Page - 1

Engine ID :TDSDAA-1500-007
Engine S/N :1059T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken :31-MAY-01 21:34:55
Load : 3558.62 (75 %) KW

T.AMB	-	DEG.F	:	65.0499
T.NG	-	DEG.F	:	63.6696
P.BARO	-	IN.HG	:	29.4591
%R.H.	-	%	:	79.8281
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	2144.1060
WA	-	PPS	:	35.8854
T2.AVG	-	DEG.F	:	623.8162
%NTURB	-	%	:	100.1011
T5.AVG	-	DEG.F	:	1214.2532
T7.AVG	-	DEG.F	:	953.2326
FUELTYPE	-		:	1.0000
RUN.#	-		:	4.0000
PCD	-	PSIG	:	119.4550
TRIT	-	DEG.F	:	1830.9896
TPZ.C	-	DEG.F	:	3263.6008
TPZ.O	-	DEG.F	:	0.0000
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY	:	0.05	%
LOAD_INSTABILITY	:	0.06	%KW
T7AVG_INSTABILITY	:	0.46	DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	4.	4.	4.	
CO2	-	%	:	3.03	3.01	3.05	
NO	-	ppmv	:	9.	9.	10.	
NOX	-	ppmv	:	13.	12.	13.	
UHC	-	ppmv	:	4.	3.	6.	
O2	-	%	:	15.87	15.81	15.93	

Fuel Factor 1.66

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	15.	15.	16.	
NOX	14.	14.	15.	2.57
CO	5.	5.	5.	0.51
UHC	5.	5.	5.	0.29

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***

DRY Emissions (REV 1.0) Page - 1

Engine ID :TDSDAA-1500-007
Engine S/N :1059T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken : 1-JUN-01 13:51:42
Load : 4821.73 (100.%) KW

T.AMB	-	DEG.F	:	65.5495
T.NG	-	DEG.F	:	66.3863
P.BARO	-	IN.HG	:	29.4661
%R.H.	-	%	:	74.9063
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	2687.8120
WA	-	PPS	:	45.0812
T2.AVG	-	DEG.F	:	695.5134
%NTURB	-	%	:	100.1437
T5.AVG	-	DEG.F	:	1223.5667
T7.AVG	-	DEG.F	:	928.3653
FUELTYPE	-		:	1.0000
RUN.#	-		:	4.0000
PCD	-	PSIG	:	154.5980
TRIT	-	DEG.F	:	1894.9755
TPZ.C	-	DEG.F	:	0.0000
TPZ.O	-	DEG.F	:	3044.6367
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY	:	0.03	%
LOAD_INSTABILITY	:	0.05	%KW
T7AVG_INSTABILITY	:	0.69	DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	6.	5.	6.	
CO2	-	%	:	3.01	2.99	3.04	
NO	-	ppmv	:	12.	12.	13.	
NOX	-	ppmv	:	16.	16.	16.	
UHC	-	ppmv	:	6.	4.	11.	
O2	-	%	:	15.93	15.87	15.99	

Fuel Factor 1.65

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	20.	20.	20.	
NOX	19.	19.	19.	4.24
CO	7.	7.	7.	0.92
UHC	7.	7.	8.	0.58

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***

CERTIFIED TEST DATA

TURBINE-DRIVEN GENERATOR SET

PACKAGE MODEL CGS001
ENGINE MODEL TAURUS 60S

PERFORMANCE ACCEPTANCE CERTIFICATE

CUSTOMER REFERENCE NO.:
NR-04819

SOLAR PROJECT NO.:
59731

CUSTOMER NAME:

Mobile Taurus 60 Power Generation Unit

SOLAR NAME:
PPS-1

UNIT NO.:
2

SERIAL NUMBERS

PACKAGE	ENGINE	GEARBOX	GENERATOR
TG01138	**1007T**	**SGL00-27300**	**001098-02**

PACKAGE ACCEPTANCE APPROVAL

Solar Turbines Incorporated at San Diego certifies that the equipment identified above was tested as described herein and found to meet applicable requirements of the Solar Project Definition, the engineering specifications and the contractual requirements.

STATIC TEST ENGINEER: R. Stoneman DATE: 2-7-01

PRODUCTION TEST ENGINEER: S. Rueter DATE: 1/30/01

MANAGER, PRODUCTION TEST ENGINEERING: T.M. Huang DATE: 8FEB01

PROJECT MANAGER: J. Plescia DATE: 2/15/01

TEST CONDITIONS AND TEST DATA

The generator package was tested with the turbine engine, reduction gearbox and generator mounted on the package base. The package controls were mounted on-skid and were used for the test.

The generator nameplate rating is 5,300 kw; rated voltage is 13,200 volts.

Full load for all package testing was determined by either the nameplate rating of the generator, or the engine performance curve adjusted for air inlet temperature, sea level and zero duct losses whichever was lower, per Solar Engineering Specification ES2091.

ITEM 1. ACCEPTANCE TEST

The attached figures labeled "Control Console Hardware Verification", "Universal Generator Set Acceptance Test" and "Final Visual Acceptance Test" are the specific test agenda for this unit. They were prepared to reflect contractual requirements and compliance with Solar Engineering Specifications ES2091 and ES2220.

ITEM 2. TURBINE ENGINE PERFORMANCE

The attached figure labeled "Taurus 60S, T7300 One-Shaft Engine Performance, Nat. Gas Fuel" depicts engine performance test data as noted on the computer analysis printout. The upper portion shows measured parameters and the lower portion shows calculated results corrected to conditions of standard temperature, sea level, and zero duct losses. The acceptance criteria for the engine performance results is contained in ES2091.

Based on the T5/T3 ratio determined during the engine performance test, the software base T5 with SIV open is 1212 degrees Fahrenheit and T5 with SIV closed is 1251 degrees Fahrenheit.

The attached table labeled "Engine K-values" consists of data points required for customer's software.

ITEM 3. FREQUENCY (SPEED) AND VOLTAGE REGULATION

The attached figure labeled "Frequency (Speed) and Voltage Regulation" shows the regulation of this unit with the speed governor and voltage regulator adjusted for isochronous operation. Regulation was verified at each load point after all transients had decayed, as the load was varied from no load to full load to no load.

ITEM 4. OPERATING PARAMETERS

The attached figure labeled "Operating Parameters - Taurus Generator Set" provides "new condition" operating parameters for comparative purposes. Data was compiled from various load runs after engineering evaluation.

ITEM 5. VIBRATION DATA

The attached figures labeled "Machinery Vibration Signature" are the spectrum plots for each vibration probe recorded during the engine full load run.

ITEM 6. SUDDEN LOAD TESTS

The attached digitized trace shows the sudden load testing of this unit at 1500 KW on-load and 3300 KW off-load corrected to sea level and zero duct losses per Solar Engineering Specification ES2220.

Frequency (speed) deviation during load application did not exceed the specification limit of minus 5.0 percent from rated speed and recovery was within a plus or minus 0.50 percent band within 15.0 seconds. Frequency deviation during load rejection was within 7.0 percent and recovery was within a plus or minus 0.50 percent band within 10.0 seconds.

Voltage deviation during load application did not exceed specification limit of plus or minus 17.0 percent from rated voltage and recovery was within a plus or minus 5.0 percent band within 2.0 seconds for this high performance generator. Voltage deviation during load rejection was within plus or minus 22.0 percent and recovery was within a plus or minus 5.0 percent band within 2.0 seconds.

ITEM 7. DRY EMISSIONS

The attached figures labeled "Dry Emissions" document the results of emissions testing without water injection. The component concentration levels are corrected to 15% oxygen and ISO conditions per Solar ES9-97. The NOx and CO emissions limits are 25 ppm and 50 ppm, respectively.

ITEM 1. ACCEPTANCE TEST

Solar® Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	Page: 1 of 4	Date:12/01/00
CUSTOMER:	PROJECT: 2-59731	UNIT: 2 of 2	

OPERATION	TITLE	PURPOSE OF OPERATION	STAMP
5	Console Wiring and Shortages (Can)	To ensure that the console components and wiring are in accordance with the legal wiring diagram. Verify that any missing components are recorded in the test log and placed on order	945
7	Allen Bradley Module Switches and Jumper Settings	Verify that the switches and jumpers on the A/B modules and the backplane of the PLC rack are set in accordance with the electrical schematic Also, verify that all modules are correctly positioned in the rack	727
8	Horn/Hour Meter/Start Counter Disconnect	To disable the alarm horn, hour meter, and start counter during test	727
10	Connect External DC Power	To search for any "short" circuits between OVDC and frame, and 24VDC and frame before applying DC power to the control console Also, verify that each circuit breaker powers its respective circuit/bus only per electrical print	727
12	Prepare Programming Terminal and Load PLC Program	Connect the programming terminal (PC) to the control console PLC and load the project application software to the PLC	727
15	Load Display Program (TT2000)	Load the display software into the contro console display terminal/computer	TE 14
16	Load Display Program (PV1000)	Load the display software into the control console Panel View 900	727
21	PLC LED's All Green	Verify no communication error exists between the PLC and the display	727
22	Clear All Malfunctions	To lock-up the backup relay system	727
24	Block Transfer Error - Controlnet	To verify the correct alarm and/or shutdown functionality associated with ControlNet communication errors for units with CAN or ACNR modules.	TE 14
25	PLC I/O Hardware Check	To verify that all PLC I/O channels (except those related to the fire, vibration, and backup system) are functioning properly in accordance with the legal electrical schematic diagram	TE 14

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

Solar® Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	Page: 2 of 4	Date:12/01/00
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OPERATION	TITLE	PURPOSE OF OPERATION	STAMP
31	IPG Vibration Accelerometer Transmitter	To ensure that the vibration acceleration transmitters are providing the correct output for a given input	TE 14
32	IPG Vibration Velocity Transmitter	To ensure that the vibration velocity transmitters are providing the correct output for a given input	TE 14
49	Lamp Test	To verify the lamps on the turbine control panel are operational.	TE 14
61	Start Counter	To verify the start counter is incremented once during every start that engine lightoff (T5>400 Deg F) occurs	TE 14
62	Hour Meter	To verify the hour meter begins counting when the engine reaches starter dropout speed	TE 14
63	Alarm Horn	To verify the horn is sounded on any alarm or shutdown condition and silenced when the alarm/shutdown condition is cleared or when "horn silence" or reset is selected	727
69	PLC Powerup	To verify that the I/O modules communicate properly and a fast stop shutdown occurs on initial PLC powerup	TE 14
75	24 Vdc Voltage Divider	To verify the accuracy of the 24 Vdc measurement resistor network with a calibrated meter	945
90	Backup System Fast Stop	Ensure that the backup system will de-energize the starter, fuel valves, bleed valve, and guide vane independently of the PLC	TE 14
91	Relay Backup - Fire Signal (K298)	Verify that in the event of a fire and a PLC failure, the backup system activates the pre/post lube oil pump while the rolldown timer (KD298) is timing.	TE 14
94	Backup System Lube Pump Control (S/C/T60)	Verify that in the event of PLC failure, the auxiliary lube oil pump is turned on If S322-2 does not see pressure (auxiliary lube oil pump failed), then the backup lube oil pump turns on and auxiliary lube oil pump turns off immediately.	TE 14

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

Solar® Turbines A Caterpillar Company	CONTROL CONSOLE HARDWARE VERIFICATION	Page: 3 of 4	Date:12/01/00
CUSTOMER:	PROJECT: 2-59731	UNIT: 2 of 2	

OPERATION	TITLE	PURPOSE OF OPERATION	STAMP
115	T37 Keyboard Commands	To verify that the display terminal's two sealed-membrane keypads (the Function Keypad and the numeric Keypad) are functional	TE 14
116	Printer/Logger	To verify that the printer and data logging functions are operable	TE 14
117	Set Console Timers	To verify that all electrical timers are set per the legal drawing and torque painted.	945
130	A/C Visual Inspection	To verify the correct selection of the A/C meters and their proper wiring	744
131	A/C Simulator Hookup	To provide a consistent and logical method for connecting the A/C simulator	744
132	A/C LSM Module Verification (Hardware)	To verify that the LSM is installed and functions properly	744
133	A/C Metering Accuracy	To verify the accuracy of the AC meters and the CRT displayed AC parameters.	744
134	A/C Voltage Droop Verification	To verify initial setup of the voltage droop feature of the Basler voltage regulator.	744
135	A/C KVAR/P.F Control	To verify the Basler KVAR/PF controller is operating properly	786
136	A/C Motorized Voltage Adjust	To verify that the motorized potentiometer and associated control assembly function correctly.	744
137	A/C Voltage Regulator	To verify the circuitry and operation of the voltage regulator.	786

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

Solar® Turbines *A Caterpillar Company*	CONTROL CONSOLE HARDWARE VERIFICATION	Page: 4 of 4	Date: 12/01/00
CUSTOMER:	**PROJECT: 2-59731**	**UNIT: 2 of 2**	

OPERATION	TITLE	PURPOSE OF OPERATION	STAMP
139	A/C Single Unit Auto Sync (Hot Bus)	To verify the unit will automatically synchronize with a live bus.	786
140	A/C Single Unit Auto Sync (Dead Bus)	The purpose of this operation is to verify statically that the control console is tuned to automatically synchronize to a dead bus.	786
150	Clear Open Discrepancies	To verify all operations have been performed and the Automated Test Log (ATL) is reviewed	
152	Legal Drawings Clear	To verify all changes shown on the legal electrical drawing have been performed and the legal drawing is signed by the test engineer	727
154	Console Complete and Authorized for Disconnect	To obtain authorization from test engineer to disconnect the turbine controls and verify all test equipment and accessories are disconnected	778
155	Post-Test Visual Inspection	The purpose of this operation is to compare the wiring of the controls with the legal electrical drawing, log any discrepancies discovered, and take the necessary corrective action	727
158	Final I/O Check	To verify if new I/O modules or channels were added and perform a hardware check on them	TE 14
159	Load PLC Program	To ensure the latest revision of the controls software is downloaded to the PLC	727
165	Test Cell Acceptance (New Production)	To ensure the package test engineer has accepted the turbine controls by signing the test verification sheet.	727

*** ENSURE ALL STAMPS ARE LEGIBLE AND IN BLACK INK ***

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT: 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 3 OPERATIONS				
OPER NO	OPERATION	REV DATE	DESCRIPTION	STAMP
SKID TEST OPERATIONS (STATION 3)				
2000	SAFETY INSTRUCTIONS AND FAMILIARIZATION	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE OPERATOR IS FULLY AWARE OF THE PROJECT REQUIREMENTS AND GENERAL SAFETY PRECAUTIONS TO BE FOLLOWED WHEN OPERATING TURBO MACHINERY IN SUPPORT OF PRODUCTION TEST OPERATIONS.	353
2002	SKID INSPECTION	8/98	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY INSPECTION OF THE SKID FOR PROPER ASSEMBLY AND COMPLETENESS.	353
2005	SHORTAGES	9/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT ALL SHORTAGES ARE RECOGNIZED AND DOCUMENTED.	353
2020 (AC)	LUBE OIL TANK AND CIRCULATION HEATER CHECK	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PART NUMBER AND INTEGRITY OF THE LUBE OIL TANK AND CIRCULATION HEATERS, AS APPLICABLE	819
2025 (AC)	AC MOTOR SPACE HEATERS	4/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE DC RESISTANCE AND VERIFY CONTINUITY OF EACH PACKAGE MOTOR SPACE HEATER	819
2030 (AC)	GENERATOR SPACE HEATER	5/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE INTEGRITY OF THE GENERATOR SPACE HEATERS	819
2035 (AC)	GENERATOR WINDING INSULATION RESISTANCE	5/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE INSULATION RESISTANCE OF THE GENERATOR WINDINGS	506
2040 (AC)	GENERATOR EXCITER FIELD DC RESISTANCE	5/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE THE DC RESISTANCE OF THE GENERATOR'S EXCITER FIELD	819
2045	VIBRATION SYSTEM INSTALLATION VERIFICATION	3/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PROPER INSTALLATION OF THE VIBRATION SYSTEM COMPONENTS	353
2050	PRELIMINARY FACILITY ATTACHMENTS	12/98	THE PURPOSE OF THIS OPERATION IS TO PREPARE VARIOUS PACKAGE SYSTEMS AND CONNECTIONS FOR HOOKUP IN THE TEST CELL	353
2055	INSTRUMENTATION HOOKUP I	4/99	THE PURPOSE OF THIS OPERATION IS TO PROVIDE GUIDELINES FOR THE HOOKUPS AND INSTALLATION OF FACILITY HARNESSES AND TEST EQUIPMENT.	353
2060	CIRCUIT TO GROUND RESISTANCE CHECK	10/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE IS A MINIMUM RESISTANCE BETWEEN ANY CIRCUIT AND SKID GROUND	353
2085	PACKAGE ELECTRICAL END DEVICES	7/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE ACCURACY OF THE PACKAGE MOUNTED END DEVICES THROUGH THE ELECTRICAL INTERCONNECT	770
2090	SKID INTERCONNECT AND SKID DC POWER HOOKUP	6/00	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT THE CORRECT INTERCONNECTS AND DC POWER HOOKUPS ARE HOOKED UP PER THE "LEGAL" WIRING DIAGRAM	353
CONSOLE/CONTROL SYSTEMS TEST OPERATIONS (STATION 3)				
2100	OUTPUT MODULE WIRING VERIFICATION	5/00	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT NONE OF THE OUTPUT CIRCUITS FROM THE PLC ARE SHORTED TO "0V" OR GROUND	353

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT: 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 3 OPERATIONS				
OPER NO	OPERATION	REV DATE	DESCRIPTION	STAMP
2120	PLC SOFTWARE REVISION PROCEDURE	4/99	THE PURPOSE OF THIS OPERATION IS TO OUTLINE THE PROCEDURE FOR INSTALLING NEW SOFTWARE REVISIONS TO THE PROGRAM LOGIC CONTROLLER (PLC)	363
2125	SOFTWARE LOADING	4/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT THE SOFTWARE IS LOADED PROPERLY.	363
2130	CONSOLE/SKID LOCKUP	7/97	THE PURPOSE OF THIS OPERATION IS TO PREPARE THE CONSOLE AND SKID FOR TESTING.	770
2132	VIB MONITOR SYSTEM CHECK	8/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE ON-SKID VIBRATION PROBES ARE CONNECTED TO THE CORRECT VIBRATION CHANNEL OF THE CONTROL SYSTEM'S VIBRATION MONITORING EQUIPMENT.	770
2135	OFF/LOCAL/REMOTE SWITCH (S101)	7/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT WHEN THE OFF/LOCAL/REMOTE SWITCH (S101) IS IN THE OFF MODE, THE UNIT DOES NOT RESPOND TO THE START SIGNAL AND LOCKOUT SHUTDOWN IS ANNUNCIATED.	770
2140	FAST STOP	2/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE LOCAL/SKID/REMOTE FAST STOP SWITCHES WILL STOP THE UNIT WHILE IN THE LOCAL OR REMOTE MODE.	770

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER UNIT: 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2300	SKID SUPPORT LOCATION	5/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE SKID SUPPORTS ARE UNDER THE CUSTOMERS BOLT-DOWN POINTS.	353
2305	FACILITY INLET/EXHAUST ATTACHMENTS	4/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE INSTRUCTION TO ATTACH THE FACILITY INLET AND EXHAUST DUCTS TO THE PACKAGE	353
2315	PLC SOFTWARE REVISION PROCEDURE	4/97	THE PURPOSE OF THIS OPERATION IS TO OUTLINE THE PROCEDURE FOR INSTALLING NEW SOFTWARE REVISIONS TO THE PROGRAM LOGIC CONTROLLER (PLC)	368
2320	SOFTWARE LOADING	4/99	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT THE SOFTWARE IS LOADED PROPERLY.	368
2325	FACILITY OIL FILTER INSTALLATION	3/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE GUIDELINES FOR THE INSTALLATION OF FACILITY EQUIPMENT FOR TEST MEASUREMENT AND PACKAGE OIL SYSTEM PROTECTION.	353
2330	LOW LUBE OIL LEVEL AL/SD AND LUBE TANK FILL	9/97	THE PURPOSE OF THIS OPERATION IS TO FILL THE LUBE OIL TANK, AND VERIFY THE LOW OIL LEVEL SWITCH FUNCTIONS PROPERLY	770
2345	SKID FAST STOP	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE SKID FAST STOP PUSH-BUTTON SHUTS THE UNIT DOWN AND THE ASSOCIATED DISPLAY MESSAGES ARE DEPICTED ON THE DISPLAY MONITOR.	770
2350	IGV CALIBRATION (SOLONOX)	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE IGV'S ARE CALIBRATED CORRECTLY IF THE IGV'S ARE SUSPECTED TO BE INCORRECTLY CALIBRATED, DEPT 377 (ENGINE BUILD) SHOULD BE REQUESTED TO RECALIBRATE THE IGV'S.	770
2355	GEARBOX/ENGINE INSTALLATION	7/95	THE PURPOSE OF THIS OPERATION IS TO INSTALL ENGINE AND/OR GEARBOX ON THE SKID CORRECTLY, EFFICIENTLY, AND SAFELY.	N TE 75 A
2360 (AC)	GENERATOR LOAD CABLE HOOKUP	6/00	THE PURPOSE OF THIS OPERATION IS TO SAFELY ATTACH THE GENERATOR LOAD CABLES TO THE FACILITY LOAD TESTING NETWORK	506
2365 (AC)	FACILITY LOAD TESTING SETUP	5/00	THE PURPOSE OF THIS OPERATION IS TO SETUP THE FACILITY LOAD TESTING CIRCUIT BREAKER OVERCURRENT TRIP RELAYS AND PREPARE THE FACILITY LOAD BANKS FOR TESTING.	819
2370	FACILITY HOOKUP (TESTCELL)	12/98	THE PURPOSE OF THIS OPERATION IS TO CONNECT VARIOUS PACKAGE SYSTEMS TO TEST CELL FACILITIES.	770
2375	FACILITY COMPUTER LOADING	3/00	THE PURPOSE OF THIS OPERATION IS TO LOAD THE SALES ORDER SPECIFIC TEST DEFINITION PROGRAM INTO THE FACILITY COMPUTER SYSTEM	353
2380	INTERCONNECT HOOKUPS	7/97	THE PURPOSE OF THIS OPERATION IS TO PLUG IN THE PACKAGE, CONSOLE AND FACILITY TEST INTERCONNECTS TO PERMANENTLY MOUNTED TEST CELL FACILITY CABLE RUN CONNECTORS.	353
2385	INSTRUMENTATION HOOKUP II	6/95	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT INSTRUMENTATION HOOKUPS ARE PERFORMED SAFELY AND PROPERLY.	353
2390 (AC)	GENERATOR FACILITY INTERCONNECTS	6/00	THE PURPOSE OF THIS OPERATION IS TO COMPLETE THE GENERATOR FACILITY AC HARNESS CONNECTIONS	506
2395	FACILITY VIBRATION MONITOR VERIFICATION	3/00	THE PURPOSE OF THIS OPERATION IS TO CONNECT THE FACILITY VIBRATION MONITOR SYSTEM AND SET THE APPROPRIATE ALARM AND SHUTDOWN SETPOINTS	353

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT: 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2400	ZERO INSTRUMENTATION CHECK	2/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL INSTRUMENTATION READINGS MEET THE FACILITY COMPUTERS ZERO CHECK CONDITIONS.	353
2410 (AC)	AC MOTOR CONNECTION	8/98	THE PURPOSE OF THIS OPERATION IS TO PROVIDE A SAFE PROCEDURE FOR THE WIRING OF THE PACKAGE AC MOTOR CONNECTIONS	506
2415 (AC)	VFD CONFIGURATION	5/99	THE PURPOSE OF THIS OPERATION IS TO SAFELY SET UP AND CONFIGURE ALL PACKAGE VARIABLE FREQUENCY DRIVES (VFD'S)	819
2420	PRELUBE PACKAGE	3/00	THE PURPOSE OF THIS OPERATION IS TO MAKE PRELIMINARY CHECKS AND ADJUSTMENTS TO LUBE OIL SYSTEM PRIOR TO FIRST CRANK.	353
2430	AUX AND B/U LUBE OIL PUMP SHUTDOWNS	8/97	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF THE AUXILIARY AND BACKUP LUBE PUMPS AND ASSOCIATED SOFTWARE LOGIC	353
2440	LIQUID FUEL SYSTEM LEAK TEST	6/99	THE PURPOSE OF THIS OPERATION IS TO LEAK TEST MOST OF THE LIQUID FUEL SYSTEM PRIOR TO STARTING THE UNIT IN LIQUID FUEL.	777
2445	GAS FUEL SYSTEM LEAK TEST	6/99	THE PURPOSE OF THIS OPERATION IS TO CHECK THE GAS FUEL SYSTEM FOR LEAKS PRIOR TO CONNECTING THE NATURAL GAS TO THE SYSTEM DURING THIS TEST THE PILOT AIR SUPPLY PRESSURE AND TORCH PRESSURE WILL BE SET PER THE MECHANICAL LEGAL DRAWINGS.	777
2450	PECC FUEL VALVE SETUP	4/97	THE PURPOSE OF THIS OPERATION IS TO STATICALLY VERIFY THE PROPER OPERATION OF THE PECC GAS FUEL CONTROL VALVE.	443
SPEC OP "A"	T60 SINGLE SHAFT ADRE SET UP	12/00	THE PURPOSE OF THIS OPERATION IS TO SETUP THE ADRE FOR VIBRATION MONITORING OF T60 SINGLE SHAFT ENGINES	JE 5 A
2462	"AFI" AND "FORCE" SEARCH	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE PROGRAM AND CONSOLE ARE CHECKED FOR AFI'S, FORCE'S, AND TEST JUMPERS WHICH WERE INSTALLED OR OVERLOOKED DURING THE STATIC PORTION OF TESTING AND REMOVE THEM, IF POSSIBLE, BEFORE CRANKING THE ENGINE.	353
2465	AIR INLET INSPECTION	9/98	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE AIR INLET DUCT IS CLEAN AND FREE OF FOREIGN OBJECTS AND DEBRIS.	777
TEST ENGINEER OR SUPERVISOR'S INITIALS, UNIT READY TO CRANK				KJ
2470	FIRST CRANK	4/00	THE PURPOSE OF THIS OPERATION IS TO CONDUCT THE UNIT'S "FIRST CRANK".	353
2475	FIRST LIGHT OFF	4/00	THE PURPOSE OF THIS INSTRUCTION IS TO PROVIDE FOR AN ORDERLY AND DOCUMENTED PROCEDURE FOR PERFORMING "FIRST LIGHT-OFF".	353
2480	OVERSPEED	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE THREE SEPARATE OVERSPEED SHUTDOWNS, PLC CONTROLLED INSTANTANEOUS AND DELAYED AND THE SEPARATE SKID MOUNTED BACK-UP OVERSPEED MONITOR.	353
2485	NGP SPEED LOSS SHUTDOWN	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT UPON LOSS OF ONE SPEED PICKUP CONDUCTOR, THE UNIT WILL SHUTDOWN.	353
2490	FUEL VALVE FAIL (GAS AND DUAL FUEL)	6/00	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF BOTH THE PRIMARY AND SECONDARY FUEL VALVES	770

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2495	OIL PRESSURE ALARM AND SHUTDOWN	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY PROPER ALARM AND SHUTDOWN RESPONSES TO LOW LUBE OIL PRESSURE CONDITION	770
2497	HIGH LUBE OIL HEADER TEMPERATURE ALARM AND SHUTDOWN	6/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE PROPER ALARM AND SHUTDOWN RESPONSES TO HIGH LUBE OIL HEADER TEMPERATURE CONDITIONS	770
2500	MANUAL COOLDOWN AND FAST STOP	6/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE FOR AN ORDERLY AND DOCUMENTED PROCEDURE FOR PERFORMING BOTH A MANUAL COOLDOWN AND FAST STOP	770
2530	T5 TEMPERATURE TOPPING, SETPOINT, AND CONTROLS	6/00	THE PURPOSE OF THIS OPERATION IS TO INSURE THAT THE FUEL SYSTEM FUNCTIONS PROPERLY IN ORDER TO RELIABLY START THE PACKAGE AND ALSO PREVENT A HIGH TEMP S/D	770
2540	GENERATOR BEARING OIL PRESSURE SHUTDOWN	4/97	THE PURPOSE OF THIS OPERATION IS TO INSURE THE PROPER OPERATION OF THE GENERATOR BEARING LOW OIL PRESSURE SHUTDOWN	N TE 75 A
2545 (AC)	PMG VOLTAGE AND FREQUENCY CHECK	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT PRIOR TO VOLTAGE BUILD, THE GENERATOR'S PMG PRODUCES THE PROPER VOLTAGE AND FREQUENCY	819
2550 (AC)	VOLTAGE BUILD-UP	6/00	THE PURPOSE OF THIS OPERATION IS TO PERFORM THE INITIAL VOLTAGE BUILD	819
2560	BLEED VALVE SEQUENCE	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE BLEED VALVE OPENS AND CLOSES IN THE CORRECT SEQUENCE AND SPEED OR LOAD VALUES.	770
2575	GEARBOX AND ENGINE BREAK-IN	6/00	THIS OPERATION DETAILS THE PROCEDURE FOR THE GEARBOX BREAK-IN RUNS AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION.	443
2580	ENGINE ACCEPTANCE	6/00	THIS OPERATION DETAILS THE PROCEDURE FOR THE ENGINE ACCEPTANCE RUN(S) AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION.	443
2585	EMISSIONS	6/00	THIS OPERATION DETAILS THE PROCEDURE FOR THE ENGINE EMISSIONS RUN(S) AS SPECIFIED IN THE APPLICABLE ENGINE ACCEPTANCE SPECIFICATION.	443
2590	GENERATOR WINDING RTD VERIFICATION	6/00	THE PURPOSE OF THIS OPERATION IS TO MEASURE AND RECORD ALL GENERATOR WINDING RTD READINGS	770
2610	PRELIMINARY LEAK CHECK	6/00	THE PURPOSE OF THIS OPERATION IS TO IDENTIFY AND FIX AS MANY AIR, OIL, FUEL OR WATER LEAKS AS POSSIBLE BEFORE CONTINUED TESTING.	363
2620	MOTOR ROTATION ARROW VERIFICATION	6/00	THE PURPOSE OF THIS INSTRUCTION IS TO ENSURE THAT THE MOTOR ROTATION ARROWS ARE CORRECTLY INSTALLED NEAR EACH MOTOR OR MOTOR/PUMP COMBINATION AND THEY ARE ACCURATE IN THEIR DEPICTION.	363
2625 (AC)	VOLTAGE AND SPEED RANGE ADJUST	6/00	THE PURPOSE OF THIS OPERATION IS TO MANUALLY VERIFY PACKAGE VOLTAGE AND SPEED ADJUSTABILITY	819
2630 (AC)	SPEED DROOP	6/00	THE PURPOSE OF THIS OPERATION IS TO ADJUST AND VERIFY THE OPERATION OF THE SPEED DROOP FEATURE OF THE GENERATOR CONTROL SYSTEM	819 TE 75
2635 (AC)	SPEED ISOCH TO SPEED DROOP BUMPLESS TRANSFER	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE SPEED ISOCH TO SPEED DROOP BUMPLESS TRANSFER FEATURE	819 TE 75

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT. 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2645 (AC)	VOLTAGE DROOP	6/00	THE PURPOSE THIS OPERATION IS TO VERIFY THE VOLTAGE DROOP FEATURE OF THE VOLTAGE REGULATOR	819
2655 (AC)	SPEED AND VOLTAGE REGULATION	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT SPEED AND VOLTAGE ARE PROPERLY REGULATED OVER A RANGE OF LOAD POINTS	819
2660 (AC)	LOAD TRANSIENT TUNING	4/99	THE PURPOSE OF THIS OPERATION IS TO TUNE THE CONTROL SYSTEM SUCH THAT THE SPEED AND VOLTAGE RECOVERY TIMES AND EXCURSIONS ARE WITHIN THE SPECIFIED LIMITS PRIOR TO PERFORMING THE "AUTOSYNC" OPERATION.	819
2665 (AC)	SINGLE UNIT SYNCHRONIZATIOIN	11/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE UNITS ABILITY TO SYNCHRONIZE VOLTAGE, FREQUENCY, AND PHASE ANGLE WITH A SIMULATED 3-PHASE BUS AND CLOSE THE OUTPUT BREAKER WHEN AN AUTOSYNCH OR MANUAL SNYC COMMAND IS INITIATED.	819
2670 (AC)	LOAD TRANSIENTS	4/99	THE PURPOSE OF THIS OPERATION IS TO DOCUMENT THE UNIT'S ABILITY TO RECOVER FROM AN EXTREME ON OR OFF LOAD CONDITION WITHIN SPECIFIED LIMITS	819
2680 (AC)	KW & EXPORT/IMPORT CONTROL	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE UNIT'S KW CONTROL FEATURE AND IMPORT/EXPORT CONTROL (IF APPLICABLE)	819
2685 (AC)	KVAR/PF CONTROL (ISLAND MODE)	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE KVAR/PF CONTROL WILL CHANGE GENERATOR VOLTAGE AS THE KVAR/PF SETPOINT IS VARIED	819
2695	F13/T4 PRELIMINARY SETPOINTS	6/00	THE PURPOSE OF THIS OPERATION IS TO DOCUMENT PRELIMINARY F13 AND T4 VALUES AT THE END OF SUDDEN LOADS, IF SINGLE FUEL ONLY, AND AT THE END OF FUEL CHANGEOVERS IF THE UNIT IS DUAL FUEL.	443
2700	START RELIABILITY AND ACCELERATION	4/97	THE PURPOSE OF THIS OPERATION IS TO DEMONSTRATE AND VERIFY THE CAPABILITY OF THE UNIT IN STARTING RELIABLY AND SUCCESSFULLY FOR FOUR CONSECUTIVE TIMES.	770
2705	CUSTOMER OBSERVE OPERATIONS	6/00	THE PURPOSE OF THIS OPERATION IS TO DEMONSTRATE FOR THE CUSTOMER ALL REQUIRED OPERATIONS PER THE PACKAGE APPLICATION CHECK SHEET (ACS) AND THE INSPECTION AND TEST PLAN (ITP).	TE 75
2740	TEST CRANK	4/97	THE PURPOSE OF THIS OPERATION IS TO INSURE PROPER OPERATION OF THE TEST CRANK FUNCTION FOR UNITS WITHOUT THE ON-CRANK WATER WASH OPTION.	443
2745	WATER WASH (ON-CRANK AND ON-LINE)	6/00	THE PURPOSE OF THIS OPERATION IS TO PROVIDE FOR A DOCUMENTED AND ORDERLY PROCEDURE FOR TESTING THE PACKAGE WATER WASH SYSTEM(S)	708
2750	DATA TABULATION	3/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL OFFICIAL DATA REQUIRED FOR A PARTICULAR PROJECT HAS BEEN TAKEN AND THOROUGHLY CHECKED BY TECHNICIAN, LEAD PERSON, AND TE, AND CLEARLY DOCUMENTED IN THE PTI.	368
TEST ENGINEER'S INITIALS, UNIT OK TO DEPREP				SK 1/17/01
2765	VIBRATION AND TEMP SUPPLEMENTARY DATA	4/97	THE PURPOSE OF THIS OPERATION IS TO PERFORM A VISUAL CHECK OF THE CONSOLE'S DATA DISPLAYS WHILE RUNNING	443
2770	FINAL LEAK CHECK I - PREP AND INITIAL VISUAL	4/97	THE PURPOSE OF THIS OPERATION IS TO PREPARE UNIT FOR FINAL LEAK CHECK	443

UNIVERSAL GENERATOR SET ACCEPTANCE TEST

CUSTOMER: UNIT: 2 PD: 2-59731

MO: 3100246 PKG S/N: TG01138 ENG S/N: 1007T

STATION 4 OPERATIONS				
OPER. NO.	OPERATION	REV DATE	DESCRIPTION	STAMP
2775	FINAL LEAK CHECK II - FUEL SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO FUEL LEAKS PRESENT ON THE UNIT PRIOR TO PACKAGE PULL	443
2780	FINAL LEAK CHECK III - AIR SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO AIR LEAKS ON THE UNIT PRIOR TO PACKAGE PULL	443
2785	FINAL LEAK CHECK IV - OIL SYSTEM CHECK	4/97	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THERE ARE NO OIL LEAKS ON THE UNIT IN IT'S FIELD CONFIGURATION PRIOR TO PACKAGE PULL	443
2790	FINAL LEAK CHECK V - CONCLUSION	4/97	THE PURPOSE OF THIS OPERATION IS TO CONCLUDE THE FINAL LEAK CHECK OPERATIONS AND ENSURE THAT THERE ARE NO FLUID LEAKS ON THE UNIT PRIOR TO PACKAGE PULL	443
2800	AS-TEST PROGRAM SAVE AND PROGRAM CONSTANTS	4/99	THE PURPOSE OF THIS OPERATION IS TO SAVE A COPY OF THE "AS-TESTED" SOFTWARE TO THE "S" DRIVE AND PRINT THE PROGRAM CONSTANTS	708
2805	TEST COMPLETE - READY TO PRESERVE	1/99	THE PURPOSE OF THIS OPERATION IS TO TO VERIFY ALL GREEN CHANGES, TEST OPERATIONS AND DISCREPANCIES HAVE BEEN STAMPED OFF OR ADDRESSED AND THAT THE PACKAGE TEST IS COMPLETE TO WHERE THE ENGINE AND FUEL SYSTEM CAN BE PRESERVED.	428
TEST ENGINEER'S INITIALS, UNIT OK TO PRESERVE				SK 1/20/01 2200
2820	ENGINE AND FUEL SYSTEM PRESERVATION	3/00	THE PURPOSE OF THIS OPERATION IS TO SAFELY AND PROPERLY PRESERVE THE PACKAGE FUEL SYSTEM(S) AND THE ENGINE UPON CONCLUSION OF DYNAMIC TEST	428
2822 (AC)	CURRENT TRANSFORMER WIRING	6/00	THE PURPOSE OF THIS OPERATION IS TO VERIFY THE WIRING FOR THE DIFFERENTIAL AND NEUTRAL CURRENT TRANSFORMER LEADS IS PER THE LEGAL ELECTRICAL SCHEMATIC AND WIRING DIAGRAM.	819
2825 (AC)	GENERATOR AND AC FACILITY DISCONNECT	6/00	THE PURPOSE OF THIS OPERATION IS TO DISCONNECT THE GENERATOR PACKAGE LOAD CABLES AND GENERATOR INSTRUMENTATION	819
2835	PACKAGE DE-PREP	1/99	THE PURPOSE OF THIS OPERATION IS TO PREPARE THE PACKAGE FOR REMOVAL FROM THE TEST CELL.	728
2837	CONSOLE (CONTROL SYSTEM) DE-PREP	12/99	THE PURPOSE OF THIS OPERATION IS TO REMOVE ALL FACILITY TEST EQUIPMENT, RESET ALL PACKAGE TIMERS, AND PREPARE THE OFF SKID CONSOLE FOR REMOVAL FROM TEST.	728
2840	POST-TEST AUDIT	4/97	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT A POST-TEST AUDIT IS PERFORMED ON THE UNIT BEFORE PACKAGE PULL.	428
2845	TEST VERIFICATION	12/99	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL ITEMS IN THE TEST PAPERWORK ARE SIGNED OR STAMPED OFF AS COMPLETE, THAT UNRESOLVED PACKAGE TEST DISCREPANCIES ARE DOCUMENTED ON THE TEST VERIFICATION SHEET, AND THAT ALL DISCREPANCIES HAVE BEEN CLEARED FROM THE TEST LOG.	728
2846	PACKAGE REMOVAL	3/00	THE PURPOSE OF THIS OPERATION IS TO REMOVE THE PACKAGE FROM THE TEST CELL	428
2850	PAPERWORK COMPLETE	2/99	THE PURPOSE OF THIS OPERATION IS TO RETURN THE COMPLETED PACKAGE PAPERWORK TO THE APPROPRIATE LOCATIONS.	428

Solar Turbines
A Caterpillar Company

FINAL VISUAL ACCEPTANCE TEST

CUSTOMER: _____ PD #: 2-59731 UNIT #: 2 OF 2 PKG S/N: TG01138

OPER. NO.	OPERATION	REV. DATE	DESCRIPTION	STAMP
9020	LEGAL DRAWING VERIFICATION	01/10/01	THE PURPOSE OF THIS OPERATION IS TO OBTAIN THE REQUIRED PROJECT "LEGAL" DRAWINGS AND VERIFY THEIR COMPLETENESS CONSOLE ELECTRICAL LEGAL (APPLICABLE TO ON-SKID CONTROLS ONLY) SKID ELECTRICAL LEGAL MECHANICAL LEGAL	798 798 798
9040	SKID GROUND CHECK (DRIVER SKID)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ON THE DRIVER SKID THERE IS A MINIMUM RESISTANCE BETWEEN ALL CIRCUITS AND SKID GROUND	798
9060	SKID GROUND CHECK (DRIVEN SKID)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ON THE DRIVEN SKID THERE IS A MINIMUM RESISTANCE BETWEEN ALL CIRCUITS AND SKID GROUND	N/A
9080	PRELIMINARY FINAL VISUAL - DRIVER SKID	01/10/01	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY FINAL VISUAL INSPECTION OF THE DRIVER SKID TO DETERMINE ALL WIRING IS PER THE "LEGAL" WIRING DIAGRAM	809
9100	PRELIMINARY FINAL VISUAL - DRIVEN SKID	01/10/01	THE PURPOSE OF THIS OPERATION IS TO PERFORM A PRELIMINARY FINAL VISUAL INSPECTION OF THE DRIVEN SKID TO DETERMINE ALL WIRING IS PER THE "LEGAL" WIRING DIAGRAM	N/A
9820	CLEAR PLC MEMORY (ON SKID CONTROLS ONLY)	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT THE PLC MEMORY IS WIPED CLEAR PRIOR TO SHIPMENT	798
9840	DISCREPANCY VERIFICATION	01/10/01	THE PURPOSE OF THIS OPERATION IS TO VERIFY THAT ALL DISCREPANCIES HAVE BEEN CLEARED	809
9860	FINAL VISUAL COMPLETE	01/10/01	THE PURPOSE OF THIS OPERATION IS TO ENSURE THAT ALL GREEN CHANGES HAVE BEEN WORKED.	809
9880	FINAL PAPERWORK	01/10/01	THE PURPOSE OF THIS OPERATION IS TO COPY AND DISTRIBUTE THE ENCLOSURE AND FINAL VISUAL STAMP OFF SHEET	809
9900	DISPATCH LEGAL DRAWINGS	01/10/01	THE PURPOSE OF THIS OPERATION IS TO INSURE THAT ALL THE LEGAL DRAWINGS ARE RETURNED TO THEIR PROPER LOCATION	809

ITEM 2. TURBINE ENGINE PERFORMANCE

TAURUS 60S, T7300 ONE-SHAFT ENGINE PERFORMANCE, NAT. GAS FUEL
ENGINE S/N 1007T
CELL - 07 TEST DEF= 99 9 DATA TAKEN: 18-JAN-01 09:51:22 P.F.= 1.00

IGV -DEG. :	5.000	INLET GUIDE VANE ANGLE (OPERATOR SET)
P.BARO -IN.HG :	29.842	PRESS., BAROMETRIC (T.BARO= 32. DEG.F)
%R.H. -% :	36.875	PERCENT RELATIVE HUMIDITY
T.AMB -DEG.F :	53.572	TEMP., OUTSIDE AMBIENT AIR
STD.TEMP-DEG.F :	80.000	TEMP., STANDARD CONDITIONS (0= T0.AVG)
P.LOSS.A- :	652.000	CODE: POWER LOSS COEFF'S, ACT. G/B & GEN
P.LOSS.C- :	652.000	CODE: POWER LOSS COEFF'S, CUST.G/B & GEN
NTURB -RPM :	14561.409	SHAFT SPEED, 1-SHAFT TURBINE ENGINE ROTOR
NT.100% -RPM :	14951.000	100% SHAFT SPEED, 1-SHAFT TURBINE ENGINE R
GEN.KW -KW :	4422.926	GENERATOR LOAD
DRY.WA -PPS :	46.259	AIRFLOW, AIR INLET VENTURI, W/O HUMIDITY
P0.AVG -IN.H2O:	-5.401	PRESS., AIR INLET TOTAL, AVG. OF PROBES
P0.PKG -IN.H2O:	-6.679	PRESS., AIR INLET WALL STATIC, PKG. MUFF
P1AV.PKG-IN.H2O:	-81.273	PRESS., ENG. COMPR. INLET STATIC, AVG.
PCD -PSIG :	152.057	PRESS., COMPRESSOR DISCHARGE
P7.AVG -IN.H2O:	9.184	PRESS., EXHAUST WALL STATIC, AVG OF TAPS
T0.AVG -DEG.F :	54.740	TEMP., AIR INLET, AVG. OF PROBES
T2.AVG -DEG.F :	659.616	TEMP., COMPRESSOR DISCHARGE, AVG, PROBES
T5.AVG -DEG.F :	1131.684	TEMP., 3RD STAGE TURB INLET, AVG, T/C'S
T7.AVG -DEG.F :	863.423	TEMP., EXHAUST GAS, AVG. OF PROBES
FUELTYPE- :	1.000	FUEL CODE: 1=NATURAL GAS, 3=LIQUID: DIES#2
WF.MASS -PPH :	2541.336	FUEL MASSFLOW, METER #1
WF.MASS2-PPH :	2523.507	FUEL MASSFLOW, METER #2
DWF.MASS-% :	0.704	DELTA FUEL FLOW, METERS #1 & #2, (% OF AVG
LHV.NGAS-BTU/LB:	20494.125	LOWER HEATING VALUE, NATURAL GAS FUEL
TNG.AVG -DEG.F :	44.610	TEMP., NATURAL GAS FUEL, AVG. OF PROBES
H/C.GAS - :	0.320	HYDROGEN/CARBON RATIO, NATURAL GAS
WA.BLEED-PPS :	0.000	FLOW, AIR BLEED TO AMBIENT, SOLONOX
RUN.# - :	3.100	TEST RUN NO./DATAPOINT (OPERATOR SET)

ADJUSTED INPUTS:
WF.AVG : 2532.422

RESULTS CORRECTED TO 80.0 DEG.F AIR TEMP,
SEA LEVEL, & NO DUCT LOSSES.

CORR PCT-SPEED, CORR.%NT	99.99	(99.70 - 100.30)
CORR MAX TEMP FROM WORK, TRIT/TH(STD)	1883.2	(1865. - 1885.)
CORR.KW	4781.6	(4615. - MIN)
SFC, BTU/KW-HR	11473.	(11933. - MAX)
CORR SHP	6787.4	
SFC, BTU/HP-HR	8083.	
COMPR PRESS RATIO, R(C)	11.652	(11.00 - MIN)
CORR COMPR MASS FLOW, WA(PPS)	45.70	(46.70 - MAX)
T5(R)/TRIT(R)	0.7131	(0.6972 - 0.7612)
CORR PT INLET TEMP, T5/TH(STD)	1211.1	
CORR EGT, T7	922.0	(900. - MIN)
ACTUAL TEMP FROM WORK, TRIT	1781.0	
CORR.WF, LBS N.GAS/HR	2661.8	
CORR.WF, MILLION BTU/HR	54.861	
EFF. G/B, % (ASSUMED)	98.00	
EFF. GEN., % (ASSUMED)	96.40	
HEAT.BAL	0.9886	

ENGINE S/N K-values	1007T
PD #:	2-59731
PD NAME UNIT #	#2
MODEL #	TAURUS 60 - 7301S
TEST ENGINEER	S. Rueter (01/29/01)
F13:509 ENGSRLNUM	1007T
F13:281 or 645 or 646 BASET5_GAS	1212.
F13:282 BASET5_LIQ	n/a
1-Shaft	
FUEL	Gas
% PILOT 2	3.7%half load 4.1%full load
ORIFICE DIA (mm)	n/a
F13:687 VARPLT_Y1	22.0
F13:688 VARPLT_Y2	24.0
F13:370 SIVKWSPLO	93.0
F13:371 SIVKWSPHI	94.5
F13:645 T5SIVOPEN (Base T5 SIV's Open)	1212
F13:646 T5SIVCLOSED (Base T5 SIV's Closed)	1251
F13:xxx GV59TPZ_SP	n/a
F13:372 VGV59SP_G	1200
F13:384 T5T3_LO_LD	n/a
F13:385 T5T3_HI_LD	n/a
F13:389 PZCBAIR_RT	.4573
F13:392 PRCNTLO_LD	n/a
F13:393 PRCNTHI_LD	n/a

ITEM 3. FREQUENCY (SPEED) AND VOLTAGE REGULATION

Frequency (SPEED) and Voltage Regulation

Customer	:	Unit No	:2	Turbine S/N:1007T	
Project	:2X59731	Model	:T7301S	Package S/N:TG01138	
Fuel Type	:GAS	Date	:19-JAN-01	Time	:10:55:57

		0 KW	1600 KW	3200 KW	FULL KW	0 KW
Generator AC Load:						
Power Measured (KW)	GEN.KW	7.	1604.	3198.	4814.	7.
Power no losses (KW)	CORR.KW	7.	1718.	3322.	5050.	7.
Power Factor	P.F.	0.00	1.00	1.00	0.99	0.00
Facility Inlet Duct:						
Average Temp.(DegF)	T0.AVG	63.49	63.60	63.71	62.69	62.94
Speed (Freq.) (%)	Min	100.00	100.00	100.00	100.00	100.00
Speed (Freq.) (%)	%NTURB	100.19	100.20	100.21	100.27	100.19
Speed (Freq.) (%)	Max	100.21	100.21	100.23	100.28	100.21
Generator Volt (%)	Min	99.97	100.11	100.21	100.16	99.97
Generator Volt (%)	%.VOLT	99.97	100.12	100.22	100.17	99.98
Generator Volt (%)	Max	99.98	100.13	100.23	100.17	100.00
Voltage Balance (2% Max)	VOLT.H-L	0.03	0.03	0.11	0.13	0.02
Freq Regulation (.25% Max)		0.00	-0.02	-0.02	-0.08	0.00
Volt Regulation(1.0% Max)		0.00	-0.15	-0.24	-0.19	-0.01

ITEM 4. OPERATING PARAMETERS

OPERATING PARAMETERS - TAURUS GENERATOR SET

CUSTOMER:
PROJECT : 59731

UNIT NO: 2
MODEL : TAURUS 60S

TURBINE S/N: 1007T
PACKAGE S/N: TG01138

PARAMETER	NAME	LIMIT	0 KW	1600 KW	3200 KW	DRY F/L
DATE			17-JAN-01	17-JAN-01	17-JAN-01	18-JAN-01
TIME			11:15:30	14:10:26	16:23:22	10:33:55
TEST CELL			07	07	07	07
FUEL			GAS	GAS	GAS	GAS
GENERATOR AC LOAD						
POWER-MEASURED (KW)	GEN.KW		-1.	1482.	3039.	4935.
POWER-NO LOSSES (KW)	CORR.KW		-1.	1604.	3222.	5174.
VOLTAGE (VOLTS)	VOLT.AVG		13208.8	13233.5	13264.2	13247.9
VOLTAGE BALANCE (%)	VOLT.H-L	2.0 MAX	0.1	0.1	0.0	0.1
CURRENT (AMPS)	AMP.AVG		0.	64.	132.	216.
POWER FACTOR	P.F.		0.00	1.00	1.00	0.99
FREQUENCY (HZ)	GEN.FREQ		58.8	58.9	58.7	59.9
GENERATOR WINDING TEMP (DEG.C)						
PHASE A	T.GEN.A		33.	40.	46.	63.
PHASE B	T.GEN.B		36.	41.	49.	68.
PHASE C	T.GEN.C		36.	41.	52.	70.
ENGINE SPEED (%)						
ENGINE SPEED	%NTURB		97.88	98.09	97.86	99.99
LUBRICATION						
OIL TEMPERATURE (DEG.F)	TPKG.OIL	140. - 155.	146.	147.	148.	151.
GEARBOX OIL PRESSURE (PSI)	PGB.OIL	45. - 65.	50.	47.	46.	45.
TURBINE LT OIL PRESSURE (PSI)	P.COMP.L	45. - 65.	57.	57.	57.	56.
OIL MANIFOLD PRESSURE (PSI)	P.OIL		72.	72.	72.	71.
GEARBOX OIL FLOW (GPM)	FGB.OIL	41.2 - 66.0	50.8	54.4	55.6	56.3
TURBINE LT OIL FLOW (GPM)	F.COMP.L		31.0	31.2	30.4	32.0
ENGINE TEMPERATURE (DEG.F)						
FAC AIR INLET DUCT	T0.AVG		60.3	61.2	56.8	59.3
THIRD STAGE TURBINE INLET	T5.AVG	1251. MAX (SIV C) 1212. MAX (SIV O)	591.	843.	1225.	1209.
THIRD STAGE TURBINE INLET 1	T5/1		604.	860.	1260.	1235.
THIRD STAGE TURBINE INLET 2	T5/2		613.	860.	1253.	1203.
THIRD STAGE TURBINE INLET 3	T5/3		598.	876.	1255.	1233.
THRID STAGE TURBINE INLET 4	T5/4		581.	814.	1174.	1169.
THIRD STAGE TURBINE INLET 5	T5/5		572.	810.	1162.	1196.
THIRD STAGE TURBINE INLET 6	T5/6		578.	837.	1246.	1221.
ENGINE EXHAUST DUCT	T7.AVG		471.2	626.3	960.5	917.9
THRUST BEARING TEMPERATURES (DEG.F)						
FWD. THRUST BRG.#1 RTD	TGP.TBRG	230. MAX	183.	185.	181.	197.
FWD. THRUST BRG.#2 RTD	TGPTBRG2	230. MAX	198.	199.	195.	209.
ENGINE PRESSURE						
COMPRESSOR DISCHARGE (PSI)	PCD		115.7	126.3	109.8	159.3
OIL TANK SUMP (IN.H2O)	PSUMP		0.4	0.6	0.5	1.0

OPERATING PARAMETERS - TAURUS GENERATOR SET

CUSTOMER:
PROJECT : 59731

UNIT NO: 2
MODEL : TAURUS 60S

TURBINE S/N: 10077
PACKAGE S/N: TG01138

PARAMETER	NAME	LIMIT	0 KW	1600 KW	3200 KW	DRY F/L
DATE			17-JAN-01	17-JAN-01	17-JAN-01	18-JAN-01
TIME			11:15:30	14:10:26	16:23:22	10:33:55
TEST CELL			07	07	07	07
FUEL			GAS	GAS	GAS	GAS
FUEL						
GAS FLOW (CFM)	WF.NG		28.81	37.62	48.30	63.14
GAS TEMPERATURE (DEG.F)	T.NG		54.2	58.8	55.0	49.6
GAS PRESSURE (PSI)	P.NG		217.3	215.6	214.3	211.9
VIBRATION						
COMPRESSOR HORIZ VEL(15-2000HZ)(IPS-RMS)	V.COMP.H	0.28 MAX	0.06	0.05	0.05	0.08
TURBINE VERT VEL (15-2000HZ)(IPS-RMS)	V.TURB.V	0.40 MAX	0.07	0.08	0.06	0.09
GEARBOX HOR. VEL (15-1000HZ)(IPS-RMS)	VGB.HOR	0.28 MAX	0.06	0.05	0.06	0.06
GEARBOX VERT ACCEL (15-12000HZ)(G'S-RMS)	VGB.VERA	16.0 MAX	1.0	3.9	5.4	4.8
GEN DRIVEN END VERT (15-90HZ) (IPS-RMS)	VGENDR.V	0.10 MAX	0.04	0.03	0.04	0.03
GEN EXCITER END VERT (15-90HZ) (IPS-RMS)	VGENEXCV	0.10 MAX	0.02	0.01	0.01	0.02
BEARING 1 VERT DISP(5-1000HZ) (MILS)	VBRG.1.V	3.50 MAX	0.52	0.34	0.42	0.78
BEARING 1 HORIZ DISP(5-1000HZ) (MILS)	VBRG.1.H	3.50 MAX	0.54	0.42	0.48	0.94
BEARING 2 VERT DISP(5-1000HZ) (MILS)	VBRG.2.V	3.50 MAX	0.32	0.45	0.65	0.41
BEARING 2 HORIZ DISP(5-1000HZ) (MILS)	VBRG.2.H	3.50 MAX	0.39	0.58	0.78	0.52
BEARING 3 VERT DISP(5-1000HZ) (MILS)	VBRG.3.V	3.50 MAX	0.69	0.50	0.30	0.40
BEARING 3 HORIZ DISP(5-1000HZ) (MILS)	VBRG.3.H	3.50 MAX	0.72	0.57	0.39	0.43

ITEM 5. VIBRATION DATA

MACHINERY VIBRATION SIGNATURE

V.COMP.H
18-JAN-01
10:46:08
CELL: 7
2-59731 2
1007T

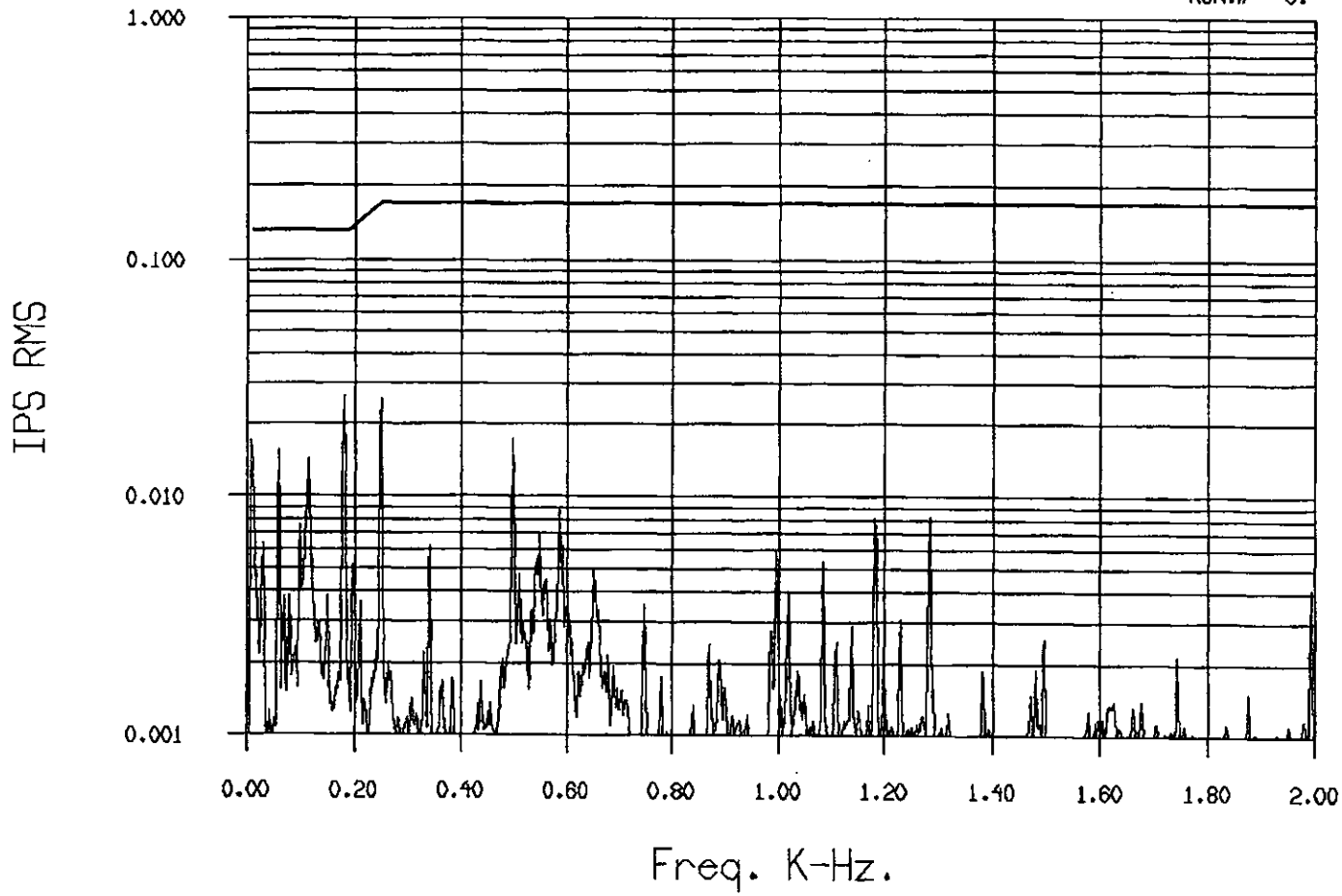
PEAKS (FREQ= AMPL):

8.7= 0.017	249.0= 0.026
59.9= 0.016	498.0= 0.017
98.9= 0.008	585.7= 0.009
115.9= 0.014	1183.4= 0.008
179.9= 0.027	1282.0= 0.008

1-E:
NTURB
249.0 Hz.
0.026

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

V.TURB.V
18-JAN-01
10:46:06
CELL: 7
2-59731 2
1007T

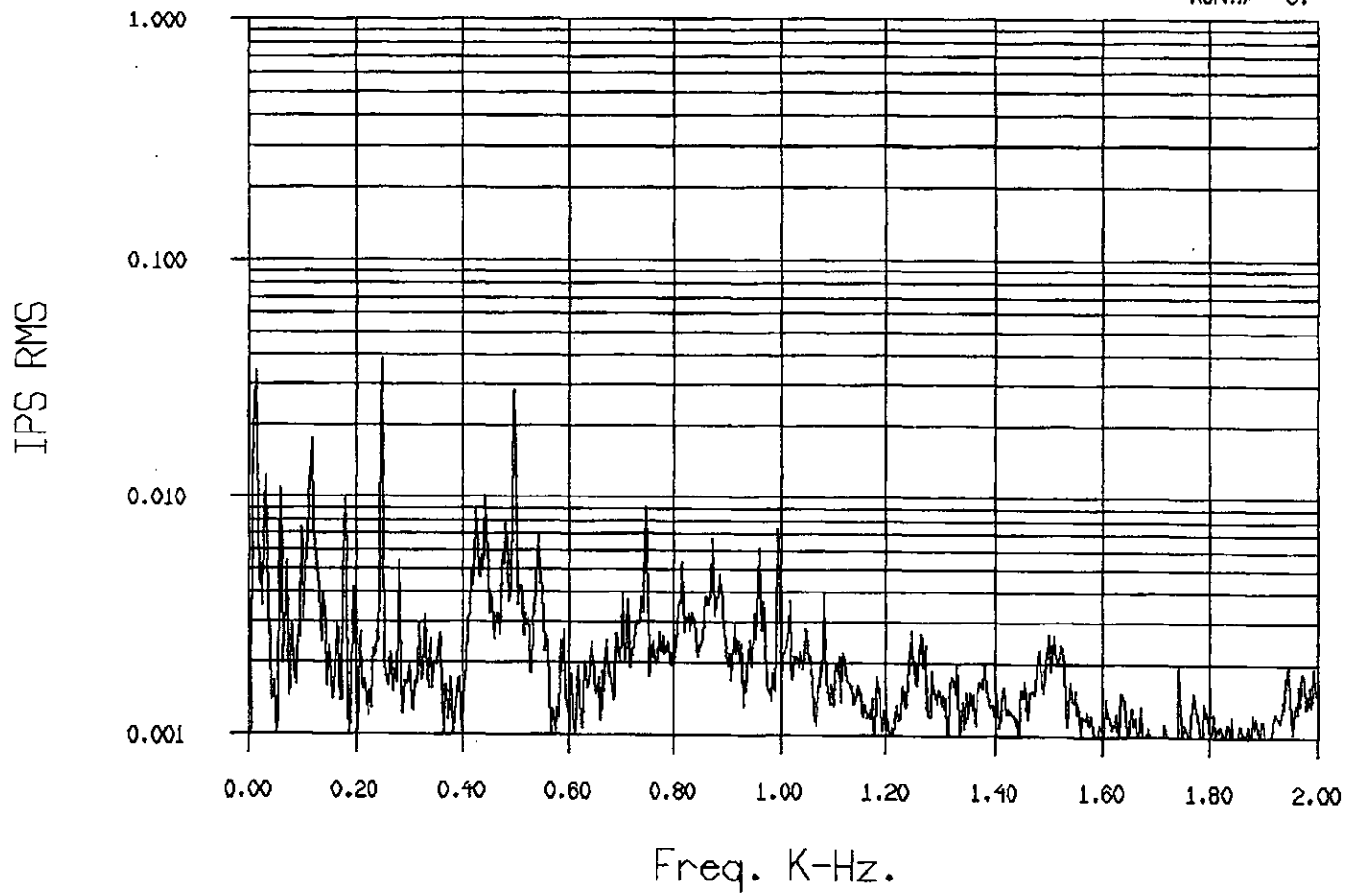
PEAKS (FREQ= AMPL):

11.5= 0.034	249.0= 0.039
30.2= 0.012	426.1= 0.009
59.9= 0.011	443.5= 0.010
118.8= 0.017	498.0= 0.028
179.7= 0.010	746.9= 0.009

1-E:
NTURB
249.0 Hz.
0.039

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VGB.HOR
18-JAN-01
10:45:07
CELL: 7
2-59731 2
1007T

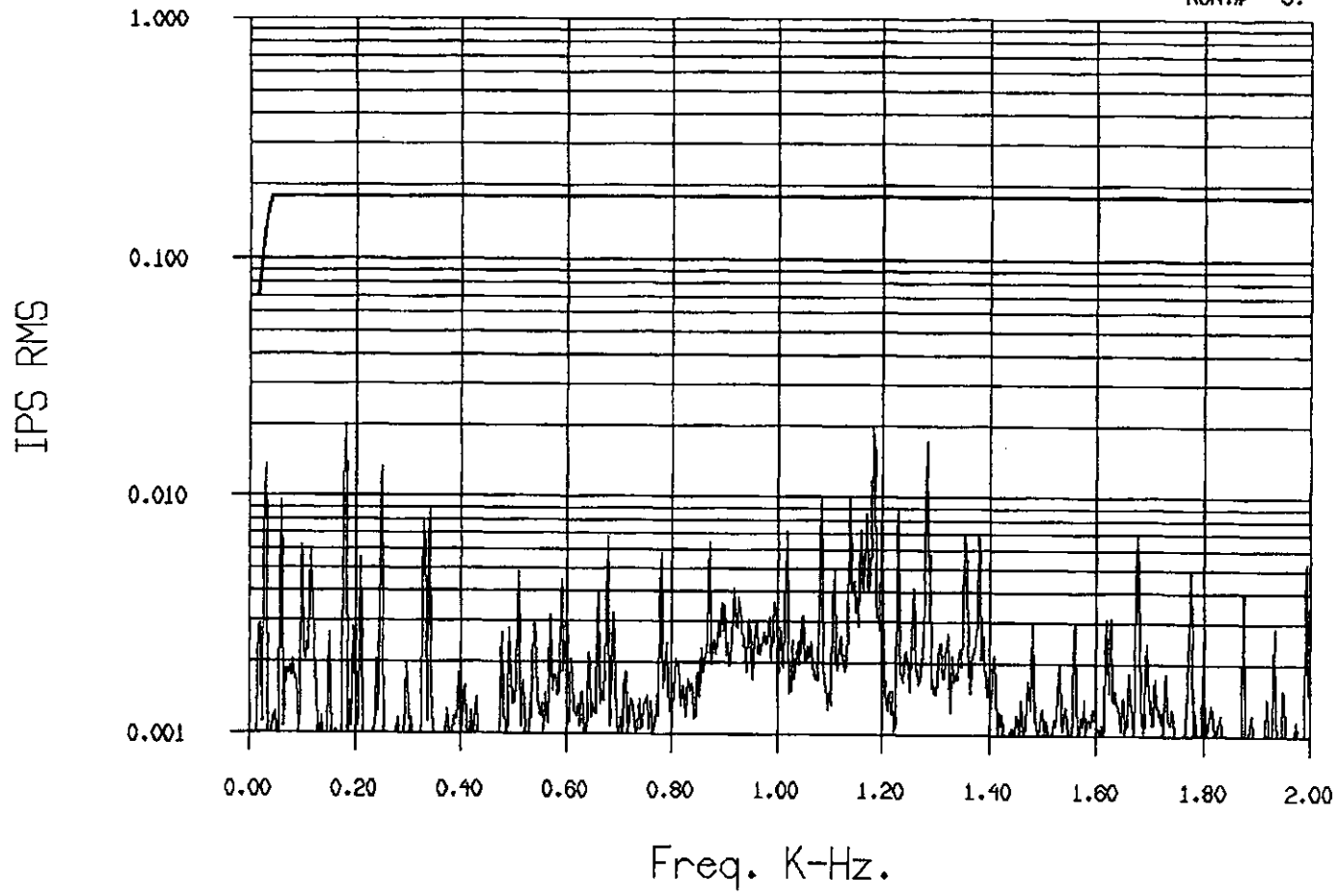
PEAKS (FREQ= AMPL):

30.0= 0.014	1139.3= 0.010
59.9= 0.010	1183.3= 0.020
179.9= 0.020	1199.1= 0.009
249.0= 0.013	1229.2= 0.009
1084.5= 0.010	1282.1= 0.017

1-E:
NTURB
249.0 Hz.
0.013

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VGB.HOR
18-JAN-01
10:45:38
CELL: 7
2-59731 2
1007T

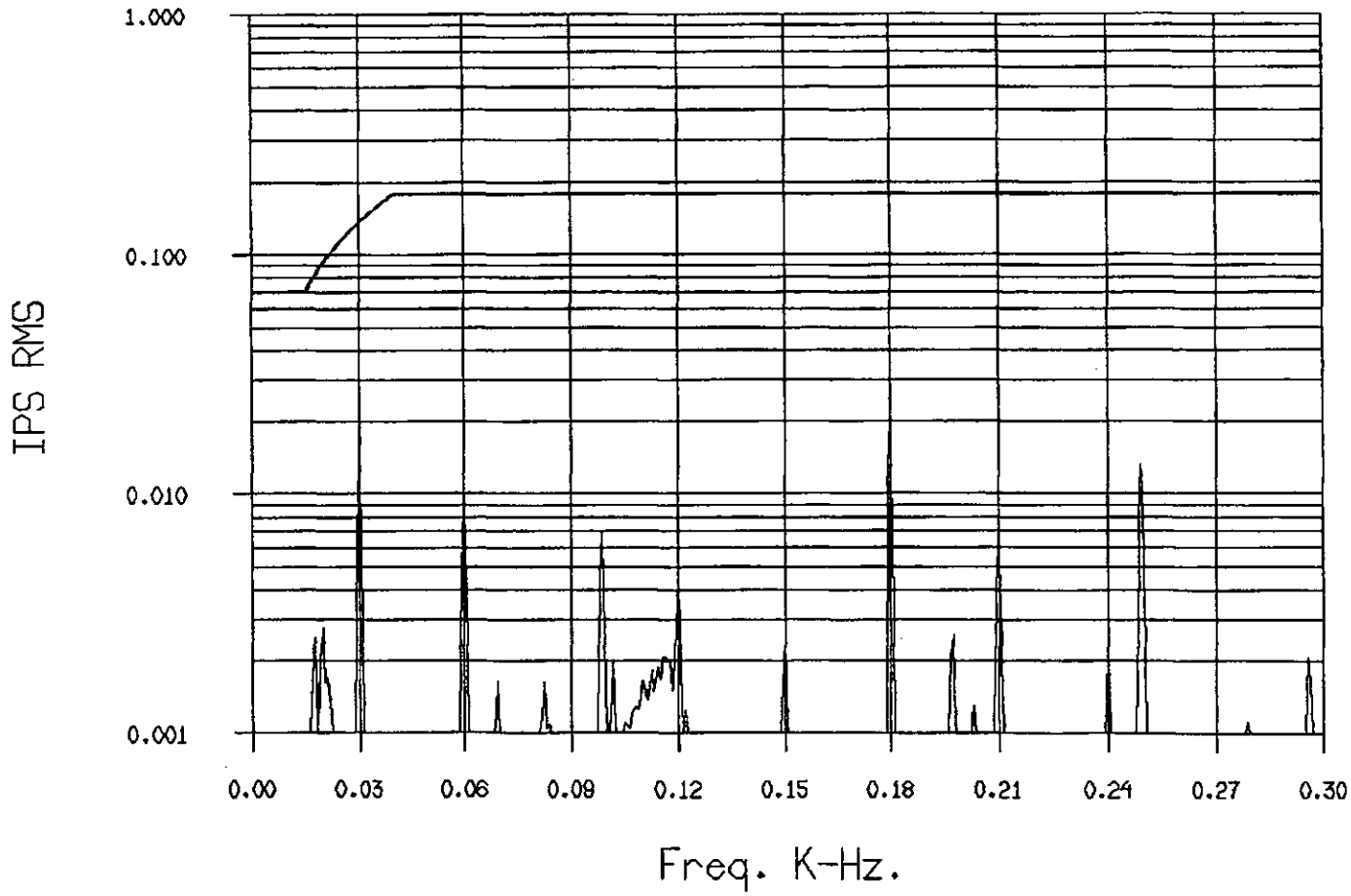
PEAKS (FREQ= AMPL):

17.4= 0.002	119.9= 0.004
19.7= 0.003	179.9= 0.020
30.0= 0.013	197.2= 0.003
60.0= 0.009	209.9= 0.006
98.6= 0.007	249.0= 0.013

1-E:
GEN
30.0 Hz.
0.013

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

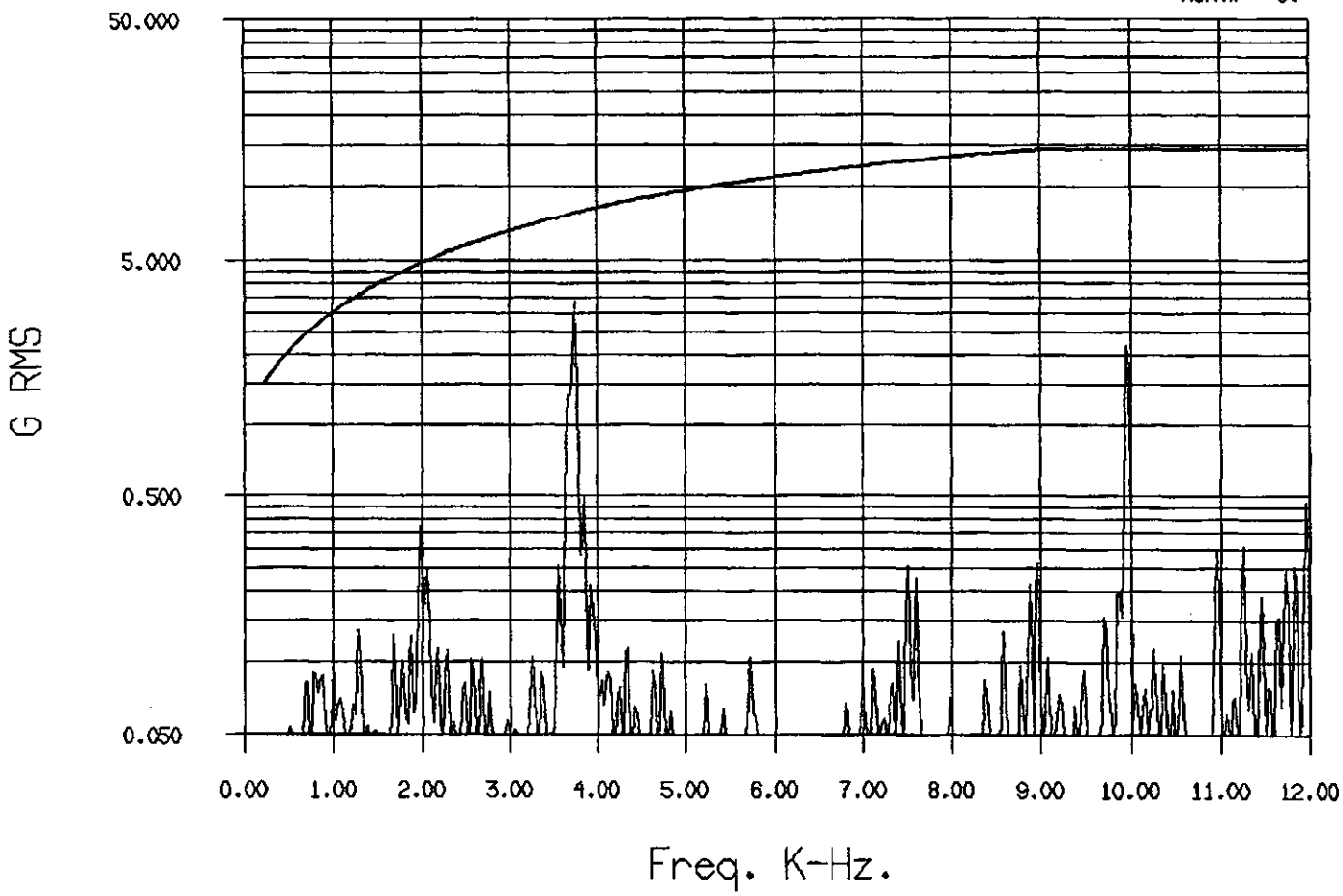
VGB.VERA
18-JAN-01
10:44:40
CELL: 7
2-59731 2
1007T

PEAKS (FREQ= AMPL):
1980.8= 0.373 8964.4= 0.265
3555.0= 0.258 9960.4= 2.195
3746.7= 3.380 10956.5= 0.298
3842.8= 0.503 11241.8= 0.309
7495.0= 0.255 11952.2= 0.471

1-E:
RGM
9960.4 Hz.
2.195

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

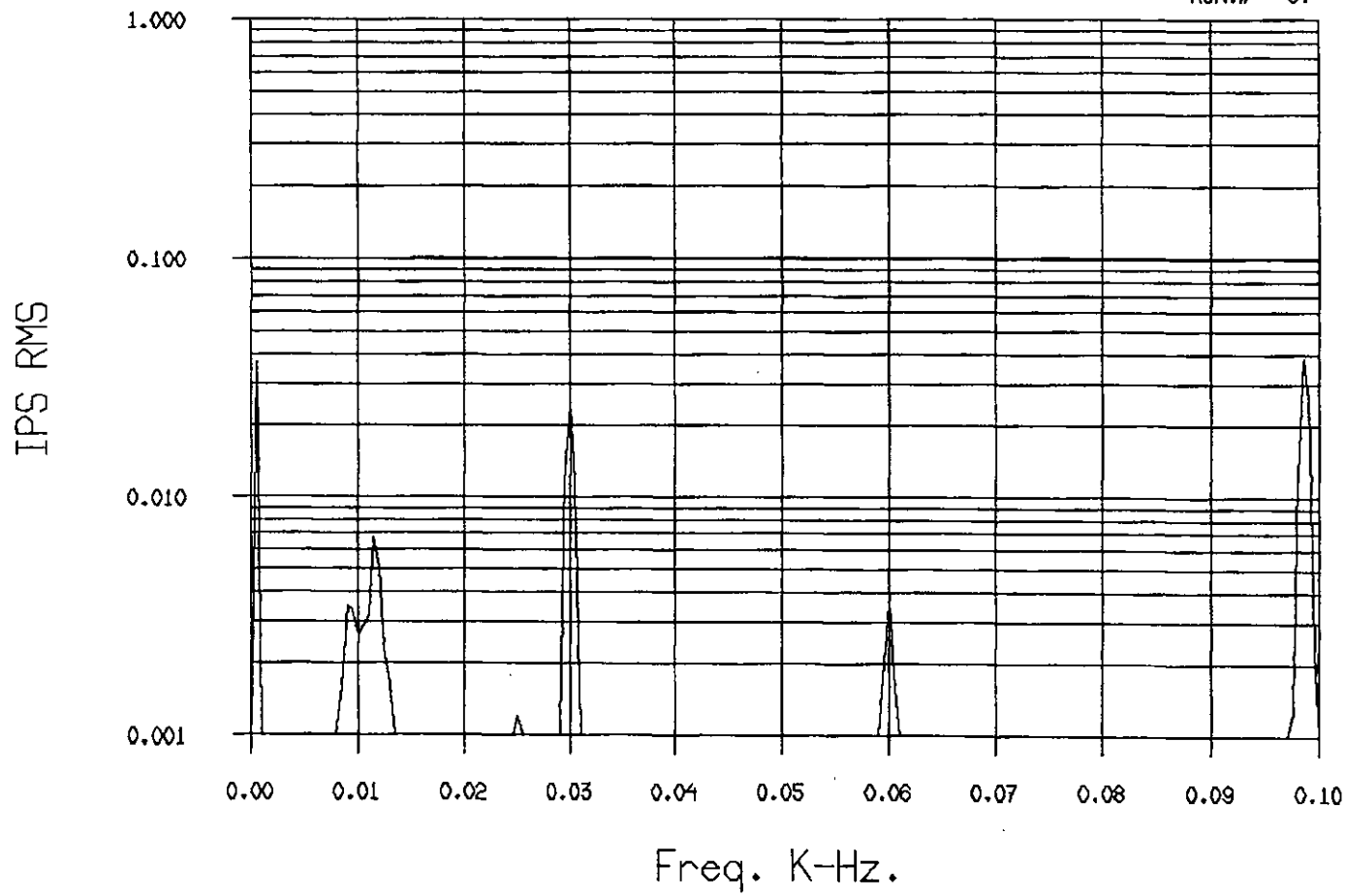
VGENDR.V
18-JAN-01
10:44:07
CELL: 7
2-59731 2
1007T

PEAKS (FREQ= AMPL):
11.7= 0.007
24.8= 0.001
30.0= 0.024
60.0= 0.004
98.6= 0.039

1-E:
GEN
30.0 Hz.
0.024

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

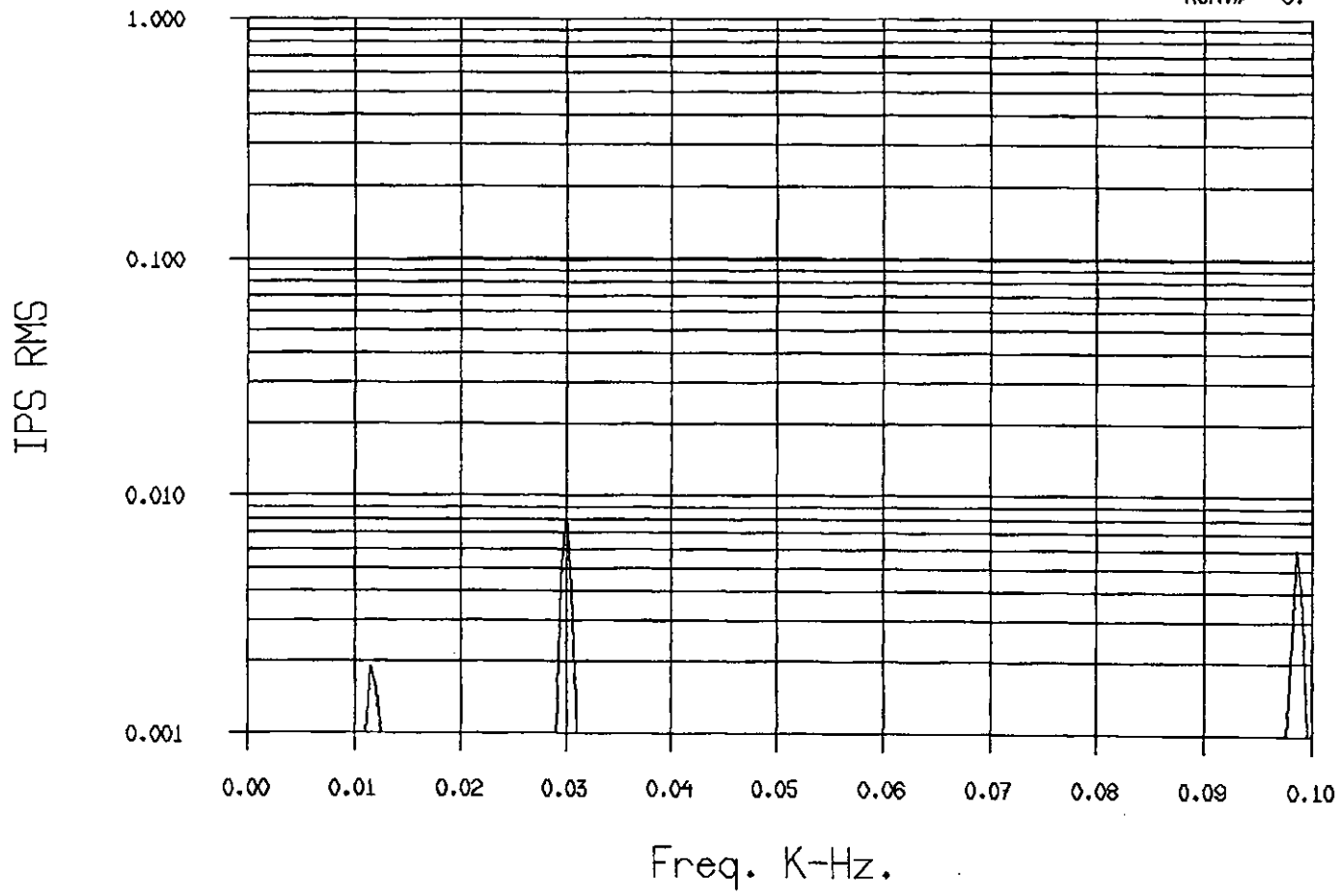
VGENEXCV
18-JAN-01
10:44:07
CELL: 7
2-59731 2
1007T

PEAKS (FREQ= AMPL):
11.7= 0.002
30.0= 0.009
98.6= 0.006

1-E:
GEN
30.0 Hz.
0.009

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.1.V
18-JAN-01
10:46:41
CELL: 7
2-59731 2
1007T

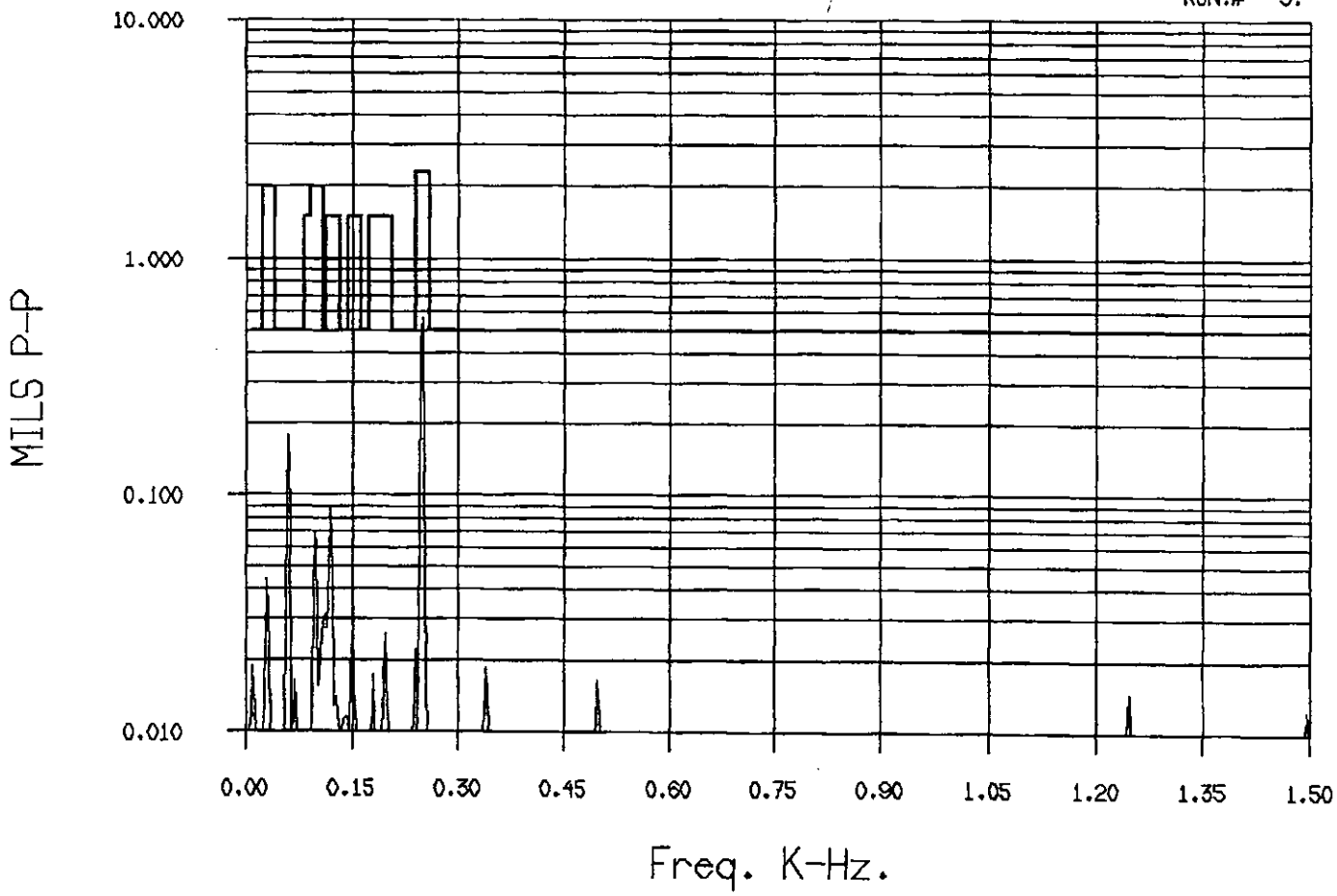
PEAKS (FREQ= AMPL):

10.8= 0.019	149.6= 0.030
30.0= 0.044	197.1= 0.026
60.0= 0.179	240.0= 0.022
98.7= 0.071	249.0= 0.567
119.8= 0.089	339.0= 0.019

1-E:
NTURB
249.0 Hz.
0.567

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.1.H
18-JAN-01
10:46:41
CELL: 7
2-59731 2
1007T

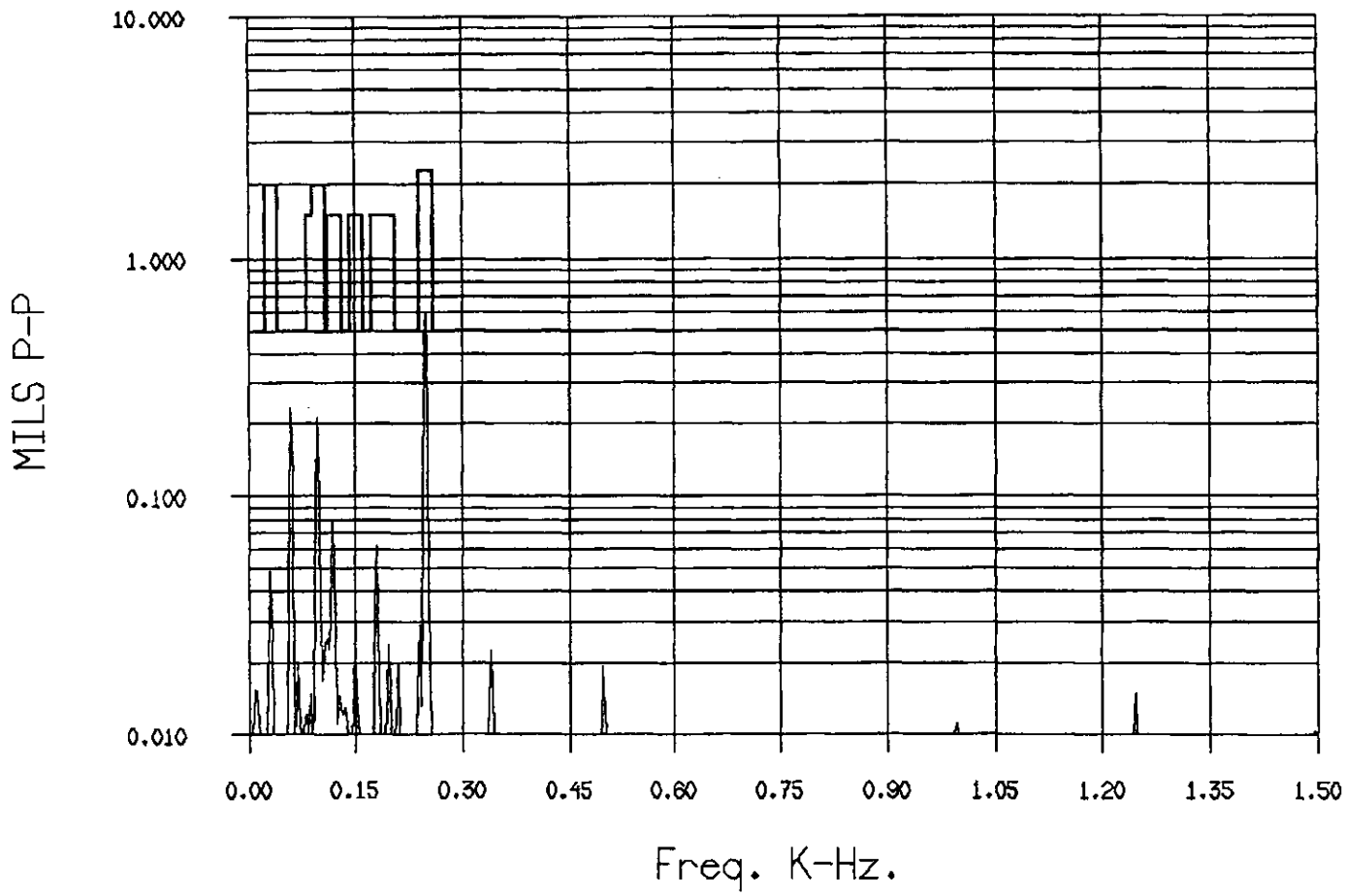
PEAKS (FREQ= AMPL):

29.9= 0.048	179.9= 0.062
59.9= 0.234	197.0= 0.024
98.6= 0.213	240.0= 0.029
119.5= 0.078	249.0= 0.593
150.3= 0.023	338.9= 0.023

1-E:
NTURB
249.0 Hz.
0.593

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.1.V
18-JAN-01
10:47:39
CELL: 7
2-59731 2
1007T

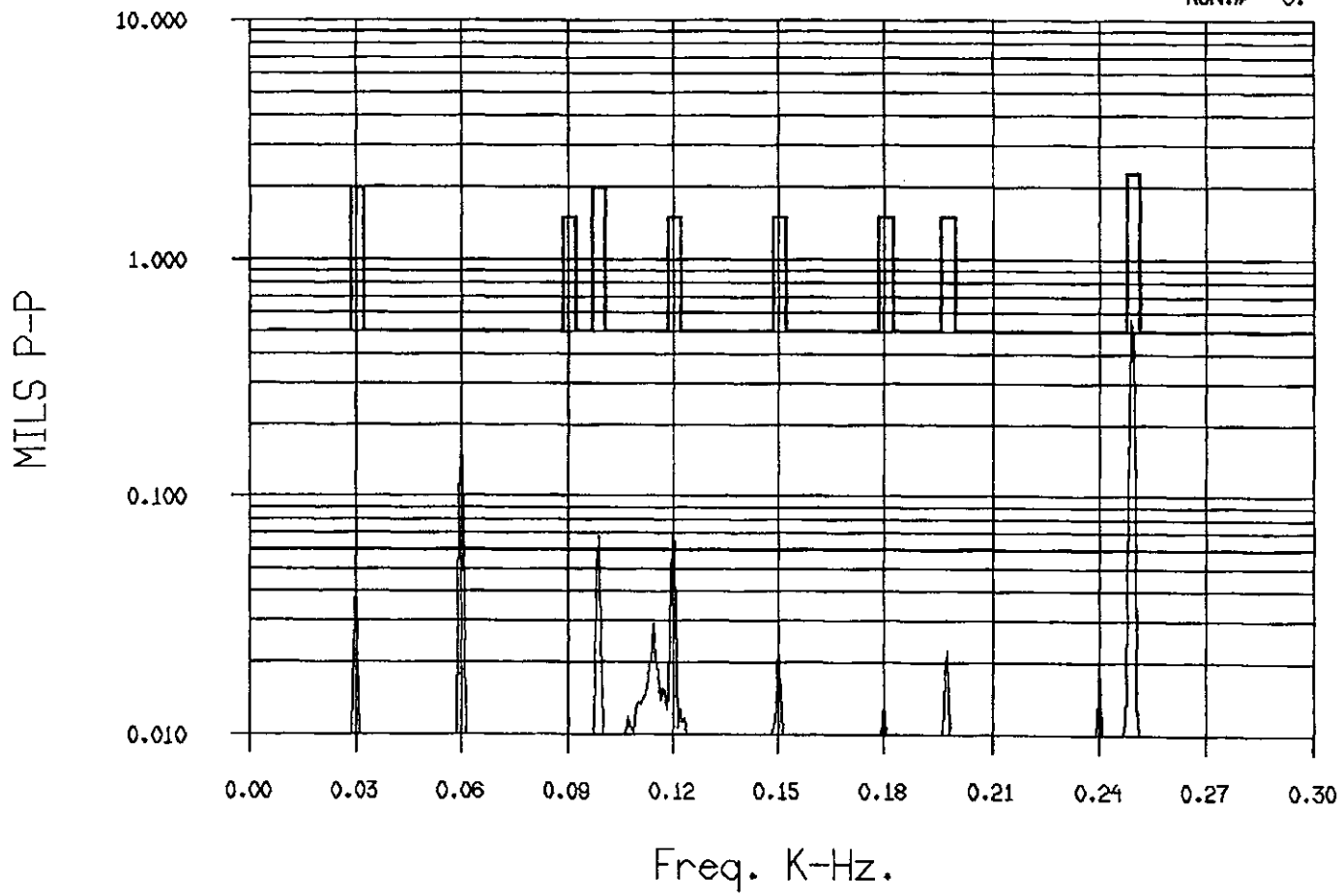
PEAKS (FREQ= AMPL):

30.0= 0.044	150.2= 0.024
60.0= 0.178	179.9= 0.014
98.6= 0.068	197.3= 0.023
114.7= 0.029	239.8= 0.021
120.0= 0.081	249.0= 0.564

1-E:
GEN
30.0 Hz.
0.044

OIL TEMP:152. DEG.F
LOAD: 4935. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.1.H
18-JAN-01
10:47:39
CELL: 7
2-59731 2
1007T

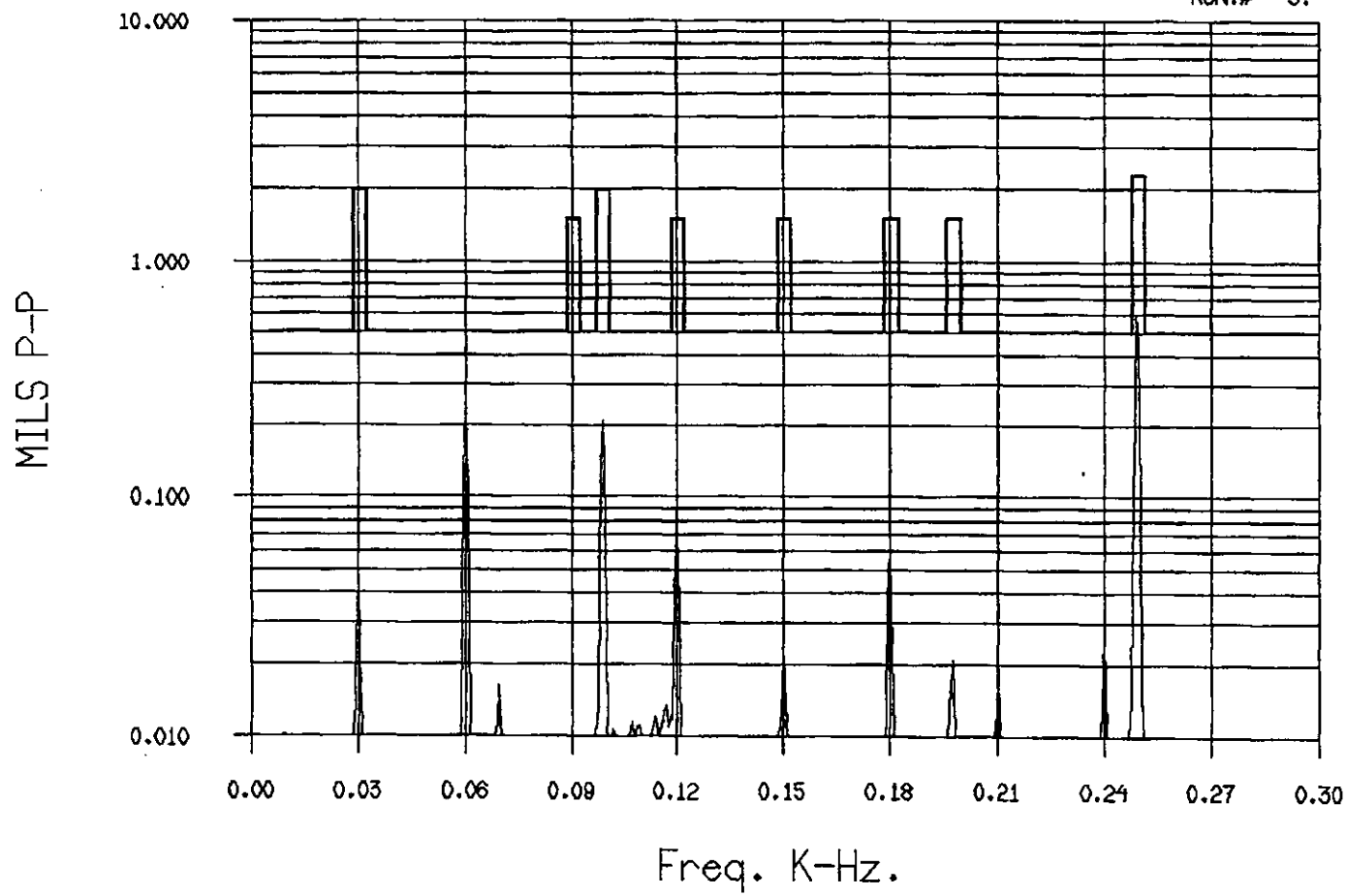
PEAKS (FREQ= AMPL):

30.0= 0.048	179.9= 0.060
60.0= 0.233	197.2= 0.021
98.6= 0.211	209.9= 0.017
120.0= 0.074	239.8= 0.027
150.1= 0.022	249.0= 0.589

1-E:
GEN
30.0 Hz.
0.048

OIL TEMP:152. DEG.F
LOAD: 4935. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.2.V
18-JAN-01
10:42:17
CELL: 7
2-59731 2
1007T

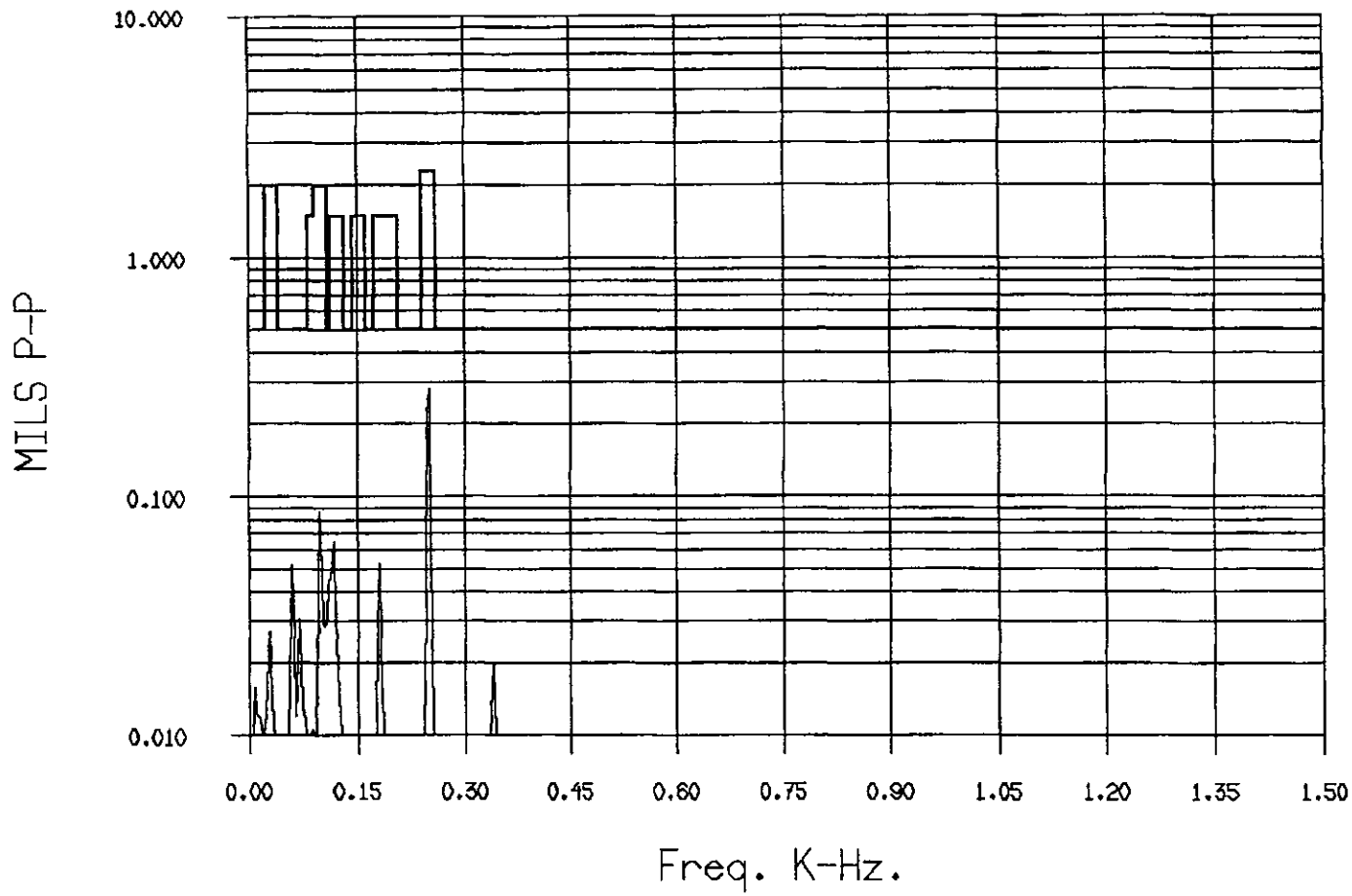
PEAKS (FREQ= AMPL):

28.7= 0.027	179.9= 0.053
59.9= 0.052	249.0= 0.280
69.1= 0.031	338.9= 0.020
98.6= 0.086	
116.3= 0.065	

1-E:
NTURB
249.0 Hz.
0.280

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.2.H
18-JAN-01
10:42:17
CELL: 7
2-59731 2
1007T

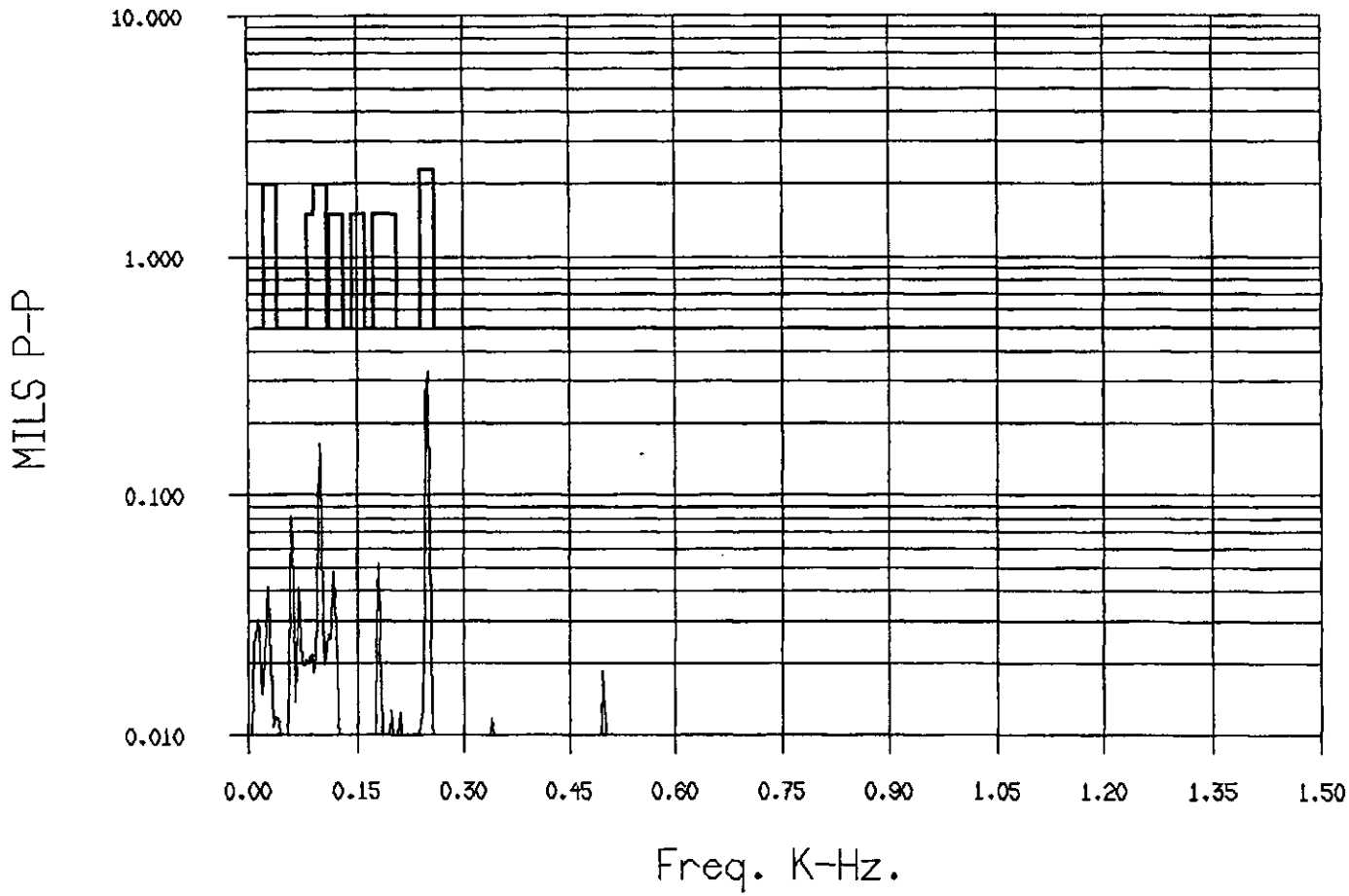
PEAKS (FREQ= AMPL):

28.4= 0.041	179.9= 0.052
60.1= 0.082	197.2= 0.013
69.1= 0.041	209.6= 0.012
98.7= 0.165	249.0= 0.329
118.7= 0.048	498.1= 0.019

1-E:
NTURB
249.0 Hz.
0.329

OIL TEMP:152. DEG.F
LOAD: 4936. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

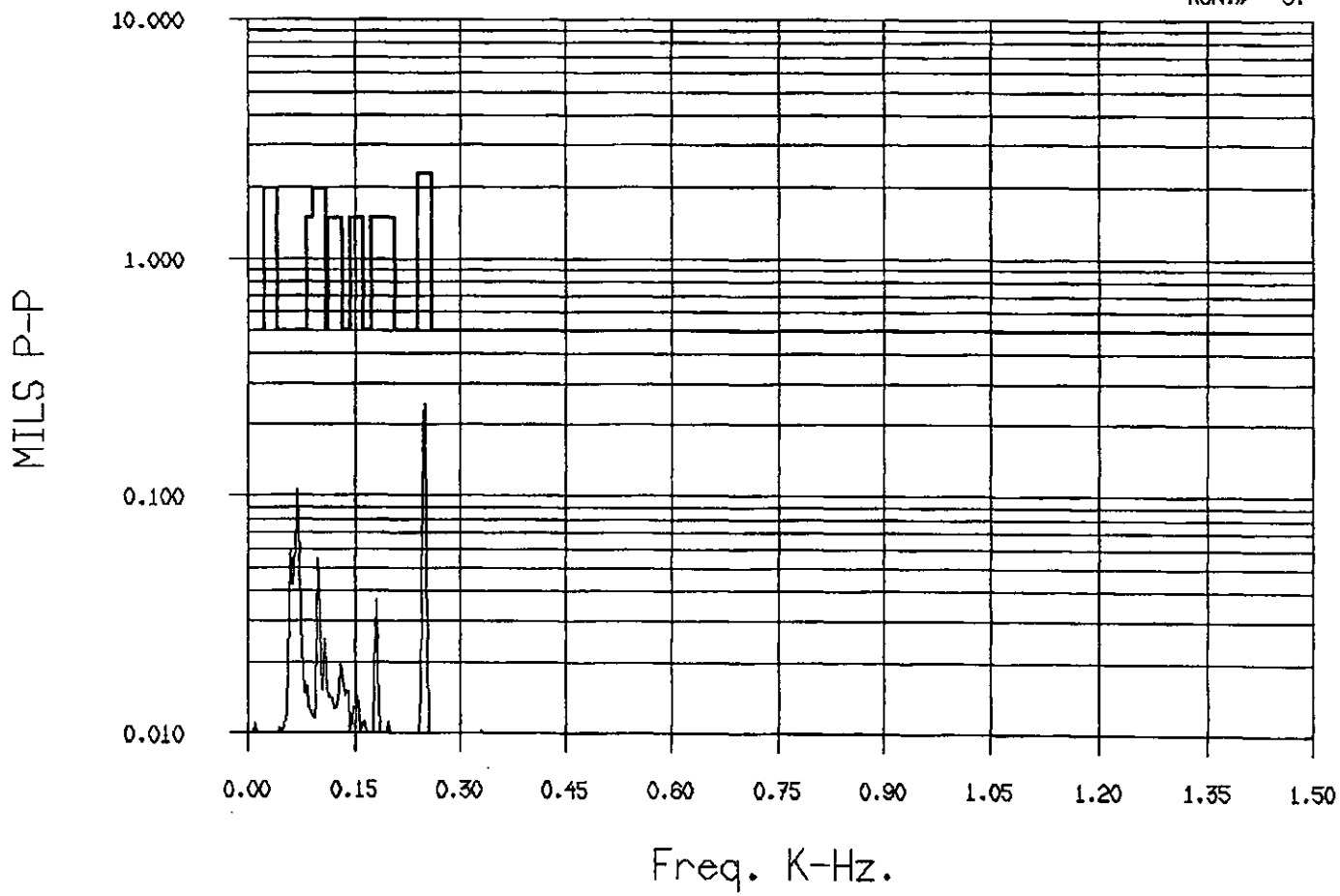
VBRG.3.V
18-JAN-01
10:43:10
CELL: 7
2-59731 2
1007T

PEAKS (FREQ= AMPL):
69.0= 0.106
98.6= 0.055
108.6= 0.025
180.0= 0.037
197.9= 0.011
249.0= 0.248
329.6= 0.010

1-E:
NTURB
249.0 Hz.
0.248

OIL TEMP:152. DEG.F
LOAD: 4934. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.



MACHINERY VIBRATION SIGNATURE

VBRG.3.H
18-JAN-01
10:43:10
CELL: 7
2-59731 2
1007T

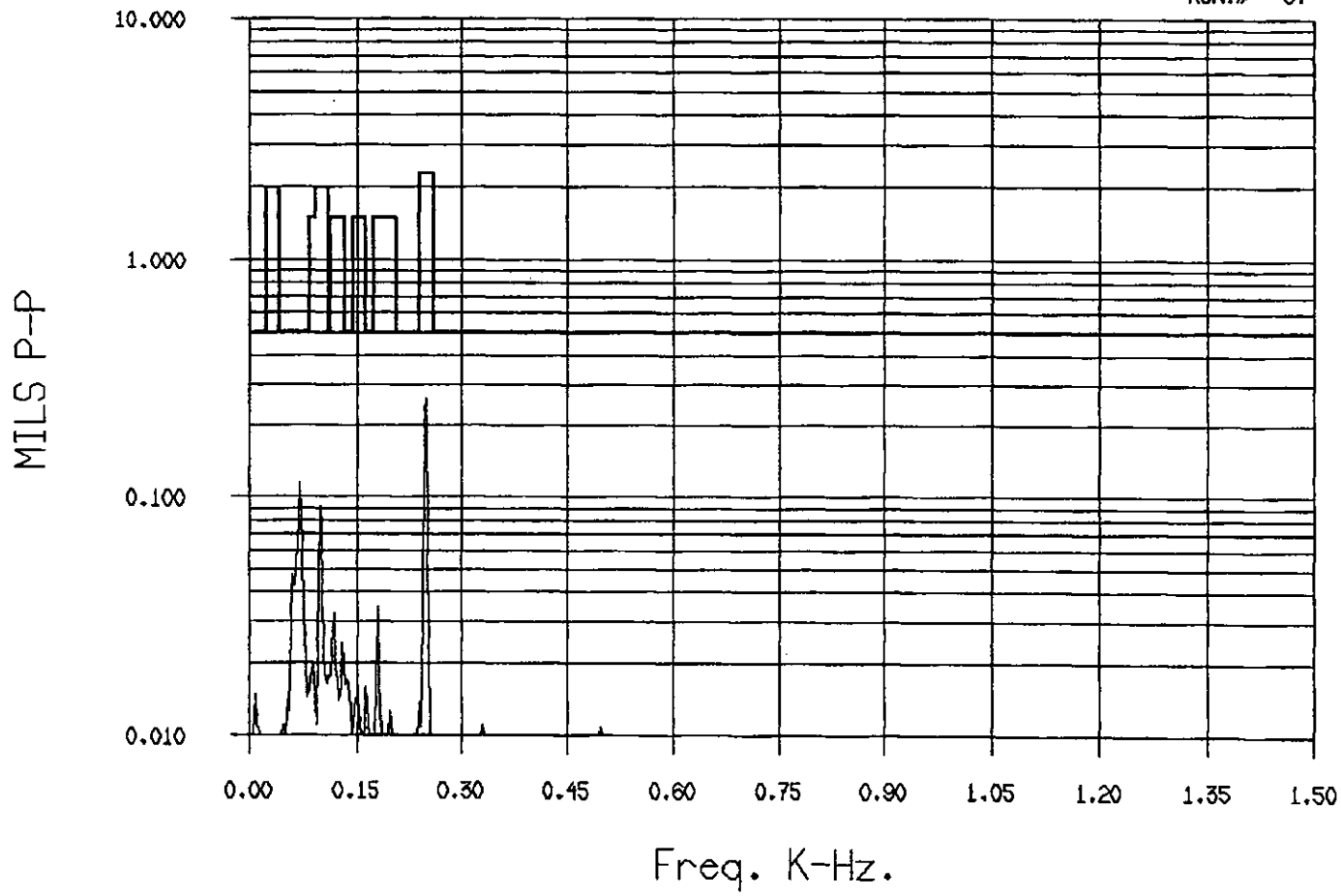
PEAKS (FREQ= AMPL):

8.6= 0.015	163.7= 0.016
69.0= 0.113	180.0= 0.034
98.6= 0.092	197.8= 0.013
116.4= 0.032	249.0= 0.262
130.9= 0.024	329.7= 0.011

1-E:
NTURB
249.0 Hz.
0.262

OIL TEMP:152. DEG.F
LOAD: 4934. KW -UNCORRECTED
FUEL: NGAS

RUN.# 3.

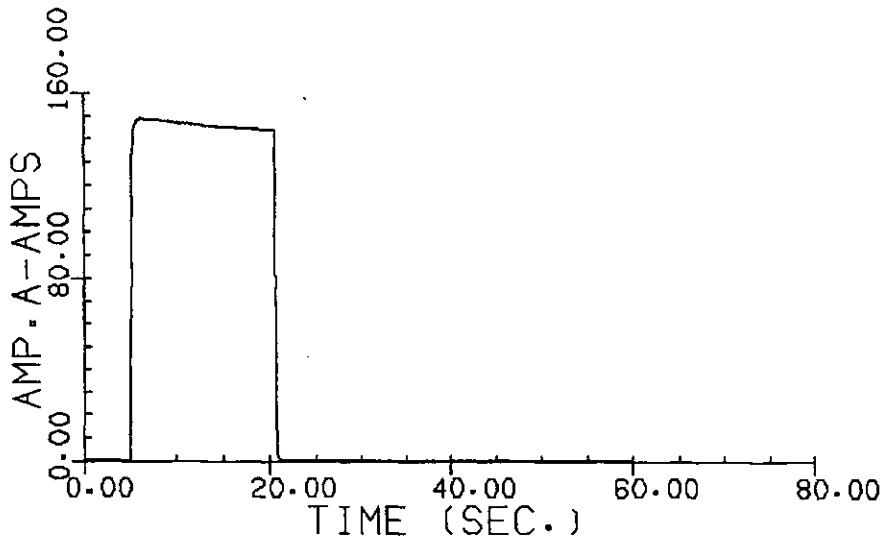


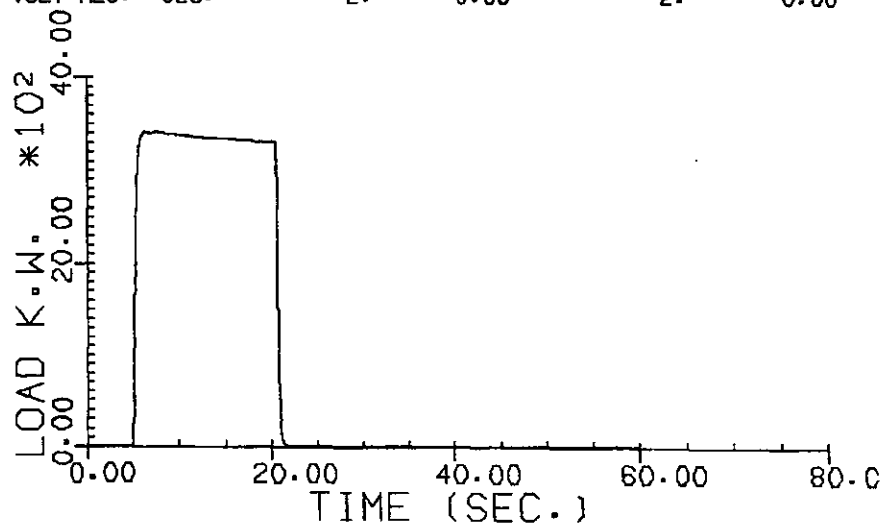
ITEM 6. SUDDEN LOAD TESTS

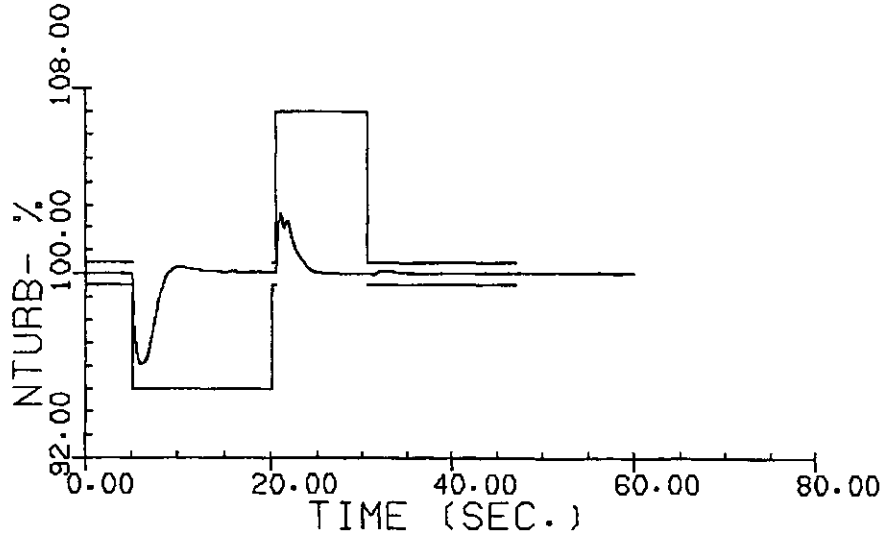
SOLAR TURBINES INCORPORATED

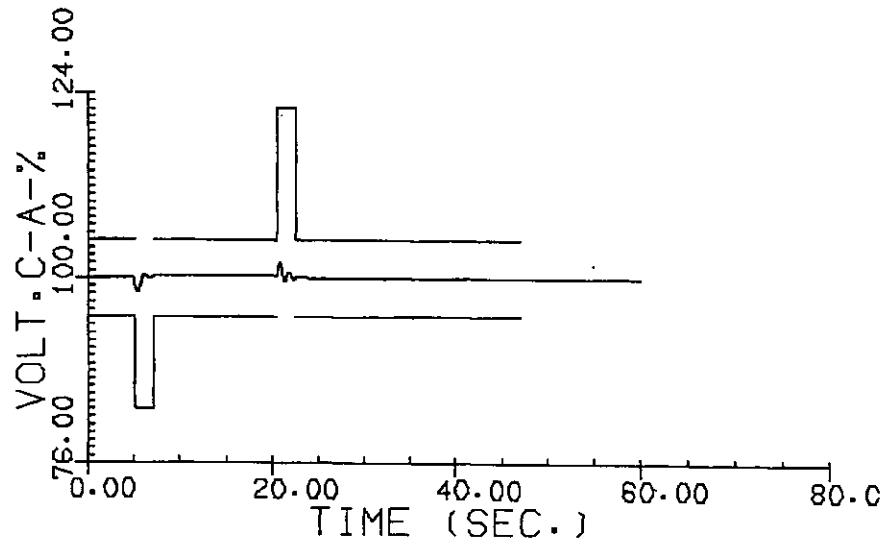
18-JAN-01 11:31:52 07	UNIT NO.	: 2	
CUSTOMER NAME :	FUEL	: NAT.GAS	
P.O.NO. : 2X59731	ENG S/N	: 1007T	
AIR INLET TEMP. : 60.9	KW (ACTUAL)	: 3381.	
POWER FACTOR : 0.00	KW (NO LOSSES)	: 3562.	

	ON LOAD		OFF LOAD	
	LIM	ACT	LIM	ACT
SPEED DEV-% :	5.	3.91	7.	2.66
SPEED REC.-SEC:	15.	3.55	10.	3.35
VOLTAGE DEV-% :	17.	1.79	22.	2.16
VOLT REC.- SEC:	2.	0.00	2.	0.00









ITEM 7. DRY EMISSIONS

DRY Emissions (REV 1.0) Page - 1

Engine ID :TDSDAA-1500-007
Engine S/N :1007T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken :19-JAN-01 09:10:51
Load : 2506.88 (50.%) KW

T.AMB	-	DEG.F	:	53.8750
T.NG	-	DEG.F	:	47.8973
P.BARO	-	IN.HG	:	29.8297
%R.H.	-	%	:	43.0938
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	1829.1157
WA	-	PPS	:	29.9213
T2.AVG	-	DEG.F	:	576.5059
%NTURB	-	%	:	99.8994
T5.AVG	-	DEG.F	:	1205.5742
T7.AVG	-	DEG.F	:	1015.1026
FUELTYPE	-		:	1.0000
RUN.#	-		:	0.0000
PCD	-	PSIG	:	95.5229
TRIT	-	DEG.F	:	1808.7350
TPZ.C	-	DEG.F	:	3271.0808
TPZ.O	-	DEG.F	:	0.0000
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY	:	0.03	%
LOAD_INSTABILITY	:	0.00	%KW
T7AVG_INSTABILITY	:	0.87	DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	6.	5.	6.	
CO2	-	%	:	3.21	3.19	3.22	
NO	-	ppmv	:	14.	14.	14.	
NOX	-	ppmv	:	18.	17.	18.	
UHC	-	ppmv	:	<1	<1	<1	
O2	-	%	:	15.50	15.44	15.53	

Fuel Factor 1.68

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	19.	18.	19.	
NOX	20.	19.	19.	2.88
CO	6.	6.	6.	0.56
UHC	2.	2.	2.	0.12

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***

DRY Emissions (REV 1.0) Page - 1

Engine ID :TD8DAA-1500-007
Engine S/N :1007T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken :19-JAN-01 09:46:41
Load : 3698.97 (75.%) KW

T.AMB	-	DEG.F	:	56.1340
T.NG	-	DEG.F	:	53.3573
P.BARO	-	IN.HG	:	29.8368
%R.H.	-	%	:	40.5938
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	2226.6128
WA	-	PPS	:	37.4792
T2.AVG	-	DEG.F	:	616.7264
%NTURB	-	%	:	100.0562
T5.AVG	-	DEG.F	:	1202.0669
T7.AVG	-	DEG.F	:	946.4567
FUELTYPE	-		:	1.0000
RUN.#	-		:	0.0000
PCD	-	PSIG	:	123.1613
TRIT	-	DEG.F	:	1827.5634
TPZ.C	-	DEG.F	:	3264.5222
TPZ.O	-	DEG.F	:	0.0000
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY : 0.03 %
LOAD_INSTABILITY : 0.05 %KW
T7AVG_INSTABILITY : 0.61 DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	8.	7.	8.	
CO2	-	%	:	3.14	3.12	3.15	
NO	-	ppmv	:	11.	11.	12.	
NOX	-	ppmv	:	16.	15.	16.	
UHC	-	ppmv	:	1.	1.	4.	
O2	-	%	:	15.65	15.59	15.69	

Fuel Factor 1.67

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	17.	16.	17.	
NOX	18.	17.	18.	3.22
CO	9.	9.	9.	0.98
UHC	2.	2.	2.	0.15

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***

DRY Emissions (REV 1.0) Page 1

Engine ID :TDSDAA-1500-007
Engine S/N :1007T
Fuel Type :NATURAL GAS
Test Def File: TT73GEN
Data Taken :18-JAN-01 10:33:55
Load : 4935.09 (100.%) KW

T.AMB	-	DEG.F	:	56.6001
T.NG	-	DEG.F	:	49.6116
P.BARO	-	IN.HG	:	29.8442
%R.H.	-	%	:	33.0938
F.WATER	-	GPM	:	0.0000
WF.AVG	-	PPH	:	2763.3059
WA	-	PPS	:	47.1800
T2.AVG	-	DEG.F	:	687.5755
%NTURB	-	%	:	99.9902
T5.AVG	-	DEG.F	:	1209.4364
T7.AVG	-	DEG.F	:	917.8940
FUELTYPE	-		:	1.0000
RUN.#	-		:	3.1000
PCD	-	PSIG	:	159.3412
TRIT	-	DEG.F	:	1881.3346
TPZ.C	-	DEG.F	:	0.0000
TPZ.O	-	DEG.F	:	3025.5295
T5.SETPT	-	DEG.F	:	1250.0000

SPEED_INSTABILITY : 0.05 %
LOAD_INSTABILITY : 0.03 %KW
T7AVG_INSTABILITY : 0.00 DEG.F

					MIN SAMPLE	MAX SAMPLE	(***NOT LIMITS***)
CO	-	ppmv	:	4.	4.	4.	
CO2	-	%	:	3.11	3.08	3.13	
NO	-	ppmv	:	12.	12.	12.	
NOX	-	ppmv	:	15.	15.	15.	
UHC	-	ppmv	:	<1	<1	<1	
O2	-	%	:	15.74	15.69	15.78	

Fuel Factor 1.66

RESULTS CORRECTED TO 15% OXYGEN DRY BASIS

	FA(ppmv)	CO2(ppmv)	O2(ppmv)	O2(pph)
ISO NOX	16.	16.	16.	
NOX	17.	16.	17.	3.87
CO	4.	4.	4.	0.60
UHC	2.	2.	2.	0.19

*** ISO CONDITIONS: SEA LEVEL, 60%RH, 14.696 PSIA, 59 DEGF ***