V. C. SUMMER CHARGING / SAFETY INJECTION PUMP RUNOUT FLOW EVALUATION

Revision 2

Prepared for

SOUTH CAROLINA ELECTRIC & GAS

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V. C. SUMMER CHARGING / SAFETY INJECTION PUMP RUNOUT FLOW EVALUATION (REV. 2)

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1.0 EXECUTIVE SUMMARY

South Carolina Electric & Gas conducted runout flow verification testing of the Virgil C. Summer Nuclear Station (VCSNS) centrifugal charging / safety injection (CH/SI) pumps in response to the concerns of Westinghouse notification letter CGE-91-152, dated 9/27/91 (Ref. 1). The verification testing was performed as part of VCSNS test procedure STP 230.006A & B, which also included system flow balance testing. The test procedure included pump testing at a maximum flow rate of 710 gpm, which bounds the maximum flow that the VCSNS CH/SI pumps will see during any plant normal or accident operating mode. Westinghouse and Ingersoll-Dresser Pumps (IDP) were requested to witness the testing of the CH/SI pumps and to determine the acceptability of pump operation at 710 gpm based on the data and observations from the test.

The test was conducted on VCSNS CH/SI pumps A, B and C. CH/SI pumps A & B were each tested to a maximum runout flow rate of 708 gpm. However, pump C was shut down prior to completion of test procedure STP 230.006A due to light smoke being detected near the inboard bearing housing. Pump C was operating at 696 gpm at the time it was secured. The inboard bearing housing was later disassembled and inspected. The source of the smoke was determined to be a minor rub of the close-tolerance oil seal baffles and not the bearing itself. The problem was resolved by replacement of the oil baffles.

Westinghouse has concluded that CH/SI pumps A & B operated acceptably, under test conditions, at 708 gpm. Westinghouse also concludes that pump C will be acceptable for operation under similar conditions at 708 gpm. The problem encountered with the oil baffles was strictly a mechanical problem which was unrelated to the runout testing. No indications of adverse cavitation were present during the runout testing of Pump C. The pump evaluation, the supporting test data and the bases of the Westinghouse conclusions are presented in this report.

2.0 EVALUATION SCOPE

The current VCSNS Technical Specification limit for CH/SI pump runout is 680 gpm. Based upon Westinghouse letter CGE-91-152, SCE&G has administratively limited maximum CH/SI pump flow to 675 gpm, since the pump vendor does not have sufficient test data to support flow rates higher than 675 gpm. The purpose of the subject pump testing was to verify acceptable pump operation up to 680 gpm and thereby eliminate the need for lower administrative limits, and to demonstrate that the safety injection system can support a higher runout limit. The increased pump runout flow beyond 680 gpm provides additional margin for system operation.

VCSNS CH/SI pumps A, B & C (IDP/Pacific Model 2½ inch RL/I) were tested under SCE&G procedure STP 230.006A to collect data necessary to evaluate the acceptability of pump operation at flow rates up to 710 gpm. This flow rate exceeds the generic 675 gpm flow limitation established in letter CGE-91-152. The 710 gpm was established as a bounding flow for all pump operating modes including post-LOCA injection and recirculation. The pumps were tested under the injection mode suction conditions. This is considered to be more critical than the recirculation mode suction conditions, which include a large pressure boost from the RHR pumps. The scope of this evaluation is to determine if the pumps operated acceptably during the runout flow testing. The basis of the evaluation is the pump data and observations that were recorded during the testing.

3.0 RUNOUT TEST PERFORMANCE

The charging pump runout testing was performed with suction from the RWST and discharge to the RCS through the cold leg branch lines and the normal charging line. The pump recirculation paths were isolated. The RWST level was between 21-22% and the fluid temperature was approximately 70°F during the test. RWST isolation valve LCV-115B was open and LCV-115D was closed. The maximum measured CH/SI pump flow rate was 708 gpm. Based on pump suction pressure measured by means of a Heise gauge, the available NPSH was calculated to be about 63.5 feet. In addition, the hydraulic head loss was calculated based on the measured RWST level and pump suction pressure. The measured head loss was approximately 60% of the head loss determined from hydraulic resistances calculated from the piping layout drawings using handbook loss coefficients. This is consistent with observations made in previous comparisons between measured and calculated system

head losses. The calculated hydraulic resistance were therefore multiplied by 0.6 to provide consistency with test data.

The available NPSH is calculated as:

$$NPSHa = H_{atm} + H_{RWST} - H_{ccp} - \Delta H_{loss} - H_{vp}$$

Where:

H_{atm} = atmospheric head, ft

H_{RWST} = elevation head, ft

H_{CCP} = CH/SI pump centerline elevation, ft

ΔH_{loss} = hydraulic losses between RWST and CH/SI pump, ft

H_{VP} = equivalent head at vapor pressure, ft

The values of the above parameters during runout testing are shown in Column 1 of Table 1.

The CH/SI pumps were operated for the runout flow test in accordance with the identified test procedure, which was based on Westinghouse letter CGE-92-064 (Reference 2). The termination criteria established in the procedure (see Attachment 1) were closely monitored at each flow point. The pump flow, developed head fluctuations, thrust bearing oil temperature, vibration levels, motor amperage and motor amperage fluctuations were monitored in accordance with the test procedure. Throughout the duration of the test, each pump's hydraulic noise was carefully monitored for audible signs of cavitation. The suction and 2nd stage areas of the pump are typically the areas where signs of cavitation are first detected. No discernible cavitation noises were observed. In fact, all of the monitored parameters stayed within the appropriate termination criteria as identified in Attachment 1.

Since the test termination criteria were not met, pumps A and B were run out to the maximum allowable test flow point (nominally 710 gpm) in accordance with the test procedure. However, pump C was secured prematurely, at a flow rate of 696 gpm, when light smoke was observed coming from the inboard pump bearing housing.

4.0 TEST DATA COLLECTION

CH/SI pump suction pressure, discharge pressure, lube oil temperature, bearing housing vibration (recorded with vibration meter), motor amperage and suction temperature were all recorded per procedure STP-230.006A. The CH/SI pumps were continuously and carefully monitored during the execution of the test procedure. The procedure required the operation of the pumps at increasing flow rates of approximately 620 gpm, 660 gpm, 675 gpm, 680 gpm, 690 gpm, 700 gpm and 710 gpm. All critical parameters were monitored at each flow point and the data was scrutinized for development of potential adverse trends at each flow point.

The pump vibrations were monitored during testing with both a vibration analyzer and a vibration meter. The vibration analyzer (CSI model 2110) provided vibration spectra and overall velocity readings. The vibration meter (IRD model 306) provided overall velocity and displacement readings. The vibration meter was the official device used for comparison to the test termination criteria. The analyzer, which is used at VCSNS for predictive maintenance, was used to record supplemental data for use in this evaluation. The vibration analyzer data collected during the runout flow tests is included in Attachments 2 and 3.

The vibration levels in Attachment 2 represent overall velocity readings that were recorded with the vibration analyzer. As recommended by Westinghouse, data was collected twice over an interval of several minutes at each flow rate. No appreciable differences in the two readings were noted. The data tabulated and graphed in Attachment 2 are the averages of the two sets of test readings.

The vibration spectra for each of the official test flow points are included in Attachment 3. The readings were taken with the analyzer probe manually held against each test point (inboard and outboard bearing housings and pump casing). For pump casing readings (labelled "Piping High Freq" in the analyzer output from Attachment 3), the probe was held to the pump casing near the suction nozzle, in a radial orientation, about 30° to 45° above horizontal.

5.0 EVALUATION OF PUMP TEST RESULTS

The specific flow rates at which each pump was tested are documented in Reference 3 (see Attachment 5). The maximum actual test flow rate for pumps A and B is 708 gpm (each). As stated previously, pump C was secured at a maximum flow rate of 696 gpm, when light smoke was observed coming from the inboard pump bearing housing. No vibration analyzer readings were able to be taken at 696 gpm before pump C was secured. The maximum actual flow rate at which vibration data was taken was 688 gpm.

All data recorded during the testing was within the allowable values established by the termination criteria. The fact that the termination criteria was satisfied at all flow rates indicated that the there were no significant hydraulic or mechanical mechanisms that could result in short-term damage to the pumps.

In general, the overall vibration data for each pump indicate that the increased flow rates did not result in significantly increased vibration levels. The pump casing readings for pumps A and C do show an increase with increased flow, but all readings are well below the termination limit of 0.4 in/sec. The pump B casing vibration increased with flows up to 673 gpm, but then began decreasing.

The detailed vibration data and response spectra plots in Attachment 3 show general agreement with the trends identified in the overall vibration readings in Attachment 2. All significant vibrations at the bearing housings occurred at discrete frequencies, generally 1x, 2x, 6x and 18x running speed (~80 Hz). These are mechanically produced vibrations associated with shaft alignment, bearing noise and blade passing noise. These vibrations appear to be unrelated to flow rate.

The response spectra of the pump casings show somewhat broad, low level vibration, generally in the range of 2000 - 3000 Hz. Although the vibration energy increased with increasing flow rate in pumps A and C, no new frequencies developed at the higher flow rates. This may indicate hydraulic noise, low level cavitation, or both. However, since the vibration readings were well below the termination criteria for the runout test, any low level cavitation present would not adversely affect the pumps at the flow rates tested. This vibration pattern had essentially disappeared in pump B by 700 gpm.

Attachment 4 contains performance (developed head vs. flow) curves for each of the three pumps. Each curve presents an overlay of runout test data (see Attachment 5) with the applicable vendor shop test curve. For each pump, the runout test performance curve shows a gradual drop in head as the flow rate approaches the runout test limit, consistent with the slope of the vendor curve. This indicates that little or no cavitation effects were present during the runout testing.

The vibration and developed head data clearly demonstrate that, as the flow through each pump was increased to the maximum test point, there was no significant increase in vibration levels at any monitored frequency. No new frequency responses can be detected at the higher flow rates. Based on this data, it is concluded that there was no detectible or detrimental cavitation at the maximum test flow of 708 gpm.

Additionally, the hydraulic sound in each pump was carefully listened to at each flow point. A long metal rod was used as a "stethoscope" to amplify the pump noises and provide early detection of abnormal or changing noise patterns. The audible noise energy seemed to increase slightly, but gradually, with increasing flow for each pump. However, no definite cavitation noise was detected by human ear in the pump suction nozzle, the pump suction cavity and the first several pump stages.

After completion of the runout test program, the inboard bearing housing from Pump C was disassembled and inspected. The source of the smoke was determined to be a minor rub of the close-tolerance oil seal baffles and not the bearing itself. The problem was resolved by replacement of the oil baffles. This is considered to be strictly a mechanical problem which was unrelated to the runout testing. No indications of adverse cavitation were present during the runout testing of Pump C.

6.0 PUMP EVALUATION SUMMARY AND CONCLUSIONS

The charging pump runout testing was performed with suction from the RWST and discharge to the RCS through the cold leg branch lines and the normal charging line. The pump recirculation paths were isolated. The RWST level was between 21-22% and the fluid temperature was approximately 70°F during the test. RWST isolation valve LCV-115B was open and LCV-115D was closed. The

maximum measured CH/SI pump flow rate was 708 gpm. Based on pump suction pressure measured by means of a Heise gauge, the available NPSH was calculated to be about 63.5 feet. In addition, the hydraulic head loss was calculated based on the measured RWST level and pump suction pressure. The measured head loss was approximately 60% of the head loss determined from hydraulic resistances calculated from the piping layout drawings using handbook loss coefficients. This is consistent with observations made in previous comparisons between measured and calculated system head losses. The calculated hydraulic resistance were therefore multiplied by 0.6 to provide consistency with test data.

Table 1 provides a summary of the NPSH available to the CH/SI pumps during the test conditions and during various postulated post-accident conditions. Four different post-accident conditions were considered: i) failure of an electrical train, ii) failure of a CH/SI pump to start, iii) failure of valve LCV-115D to open, and iv) RWST empty alarm reached during switchover sequence. Virgil Summer operating procedure EOP 2.2, Transfer to Cold Leg Recirculation, instructs the operator to isolate the containment spray (CS) pump suction from the RWST before isolating the RHR pump suction from the RWST. After the CS and RHR pumps are isolated from the RWST, the operator aligns the charging pump suction to the RHR pump discharge and isolates the charging pump suction from the RWST. As a result of the switchover sequence, the available NPSH to the charging pumps was calculated at 3 distinct points during each post-accident condition: a) just prior to isolating the CS pumps from the RWST, b) just prior to isolating the RHR pumps from the RWST, and c) just prior to isolating the CH/SI pumps from the RWST. It was assumed that the CS pumps are isolated from the RWST within 2 minutes after the RWST Lo-Lo Trip setpoint (18%), and the RHR pumps and charging pumps are isolated from the RWST in subsequent 1 minute intervals. The final case assumes that the RWST empty alarm setpoint is reached before the switchover sequence is completed. Once again, three cases were considered: a) assume CS, RHR, and CH/SI pumps are drawing from RWST when empty alarm is reached, b) assume RHR and CH/SI pumps are drawing from RWST when empty alarm is reached, and c) assumed only CH/SI pumps are drawing from RWST when empty alarm is reached. It was assumed that any pumps operating when the RWST empty alarm is reached are immediately isolated.

The following observations are made concerning the results reported in Table 1.

1) The available NPSH to the CH/SI pump during runout testing was 63.6 feet.

2) A post-accident RWST fluid temperature of 90°F was assumed. This was the highest RWST temperature measured during Cycle 6 operation. The monthly average temperatures during Cycle 6 varied from a low of 59.5°F (Feb, 91) to a high of 87.4°F (July, 90).

3) RWST level measurement uncertainties were not considered in calculating the NPSHa during either test or postulated post accident conditions. Therefore, the Lo-Lo trip setpoint was assumed to occur at 18% water level and the empty alarm at 6% water level.

4) As previously discussed, for Cases 2-4 it was assumed that the CS, RHR, and CH/SI pumps were isolated from the RWST 2, 3, and 4 minutes, respectively, after receipt of the Lo-Lo trip.

5) For Case 5 it was assumed that the RWST level variation between receipt of empty alarm and isolation of any operating pumps is negligible.

6) The minimum NPSHa during postulated post-accident conditions occurred for Case 5a and was 52 feet. This case is very conservative since it assumes the operator does not isolate any of the operating pumps from the RWST before the empty alarm is reached.

The results of the runout testing, in conjunction with the data in Table 1, were used to establish operating limits for the CH/SI pumps.

All three V. C. Summer CH/SI pumps operated acceptably during the pump runout flow testing performed per procedure STP 230.006A. This conclusion is based upon test results, observations and engineering evaluation of the test data. Pumps A and B were each successfully tested at a maximum runout flow rate of 708 gpm. Pump C was tested at flow rates up to 696 gpm. The operating

characteristics of pump C were consistent with those of pumps A and B, at similar flow rates. It is therefore concluded that all three CH/SI pumps can operate at flow rates as high as 708 gpm during the post-LOCA injection or recirculation modes with no unusual damage or degradation to the pumps. This conclusion is justified as long as the net positive suction head available (NPSHa) to the operating pump is greater than or equal to the test level of 63.5 feet.

During post-LOCA conditions with two spray pumps, 2 RHR pumps, and 1 CH/SI pump operating, the available NPSH to the CH/SI pump decreases to 63.5 feet when the RWST level is at 30% due to the increased line losses resulting from the high RWST outflow. The available NPSH decreases to 52 feet when the RWST empty alarm (6%) is reached. In order to assess pump runout operation at NPSHa as low as 52 feet, Westinghouse and Ingersoll-Dresser Pumps have reviewed performance data (horsepower, developed head and NPSH required versus flow rate) recorded during shop tests of similar pumps. The NPSH required by these pumps increases rapidly as the pump flow approaches runout. This means that small changes in NPSH available can have potentially significant impact on pump reliability. Therefore, after review of available shop and field test data, the maximum flow rate at which these pumps may be continuously operated is concluded to be 700 gpm at a NPSHa of greater than 52 feet.

7.0 IMPLEMENTATION OF INCREASED RUNOUT LIMITS

Virgil Summer ECCS technical specification 4.5.2.h places limits on the CH/SI system hydraulic characteristics. This is accomplished by placing limits on the minimum and maximum allowed system flow rates during flow balance testing performed following system modifications. The minimum flow limit requires that the sum of the injection line flow rates, excluding the highest flow rate, is greater than or equal to 338 gpm. This limit verifies that the CHG/SI emergency core cooling flow rate exceeds the minimum performance assumed in the FSAR accident analyses. The maximum flow limit currently requires that the total pump flow rate is less than or equal to 680 gpm. This limit verifies that pump runout flow rate is within component and system limitations.

The minimum flow limit in specification 4.5.2.h will remain at 338 gpm. However, the pump runout limit will be revised to 700 gpm. This revision will increase the band between minimum and maximum allowed flow rates and will facilitate system set-up and operability verification. The

justification for this revision is summarized below.

The minimum NPSH available to a single operating CH/SI pump during post-LOCA operation is 52 feet. W Auxiliary Equipment Engineering and Ingersoll-Dresser Pumps have concluded that a CH/SI pump can operate indefinitely at an NPSHa of 52 feet if the pump flow rate does not exceed 700 gpm. This conclusion is based on the CH/SI pump runout flow test data documented herein. Therefore, 700 gpm is an acceptable upper limit for CH/SI pump runout flow rate.

A CH/SI pump runout flow rate of 700 gpm is approximately 3% higher than the original pump design runout flow rate of 680 gpm. This slight increase in flow rate is acceptable as regards system performance. System head losses and velocities remain within acceptable limits.

8.0 REFERENCES

1. W Letter CGE-91-152, 9/27/91, "Emergency Core Cooling System Pump Runout Limit Issues"
2. W Letter CGE-92-064, 6/16/92, "Updated Guidelines for SI Pump Runout Test"
3. SCE&G Engineer's Technical Work Record, "Engineering Evaluation for STP 230.006A & B RF-7," Tab 93-10, Serial 251394263, by W. T. Wood, 4/16/93.
4. W Letter CGE-93-0020SGUL, 5/17/93, "VCSNS RSG/Uprating: Draft Report on Charging Pump Flow Test"
5. IDP Letter to SCE&G, 6/14/93, "Steam Generator Project / CH/SI Pump Runout Evaluation"

V. C. SUMMER CHARGING / SAFETY INJECTION PUMP
RUNOUT FLOW EVALUATION (Rev. 2)

TABLE 1

Available NPSH Based on Resistance Reduction Factor = 0.6

Case	1	2a	2b	2c	3a	3b	3c	4a	4b	4c	5a	5b	5c
Fluid Temp.	70°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F	90°F
RWST Flow													
CSS	0	3000	0	0	6000	0	0	6000	0	0	6000	0	0
RHR	0	4500	4500	0	6900	6900	0	6900	6900	0	6900	4500	0
CH/SI	710	710	710	710	710	710	710	1200	1200	1200	710	710	710
ATM Pressure	34	34	34	34	34	34	34	34	34	34	34	34	34
RWST Level	425.7	422.35	421.8	421.7	421.2	420.4	420.3	421.1	420.2	420.1	417.7	417.7	417.7
CHG/SI Elev.	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5	391.5
Head Loss	3.75	5.2	4.3	3.75	6.6	3.9	2.7	8.8	6.0	4.7	6.6	4.3	3.75
Vapor Press	0.84	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
NPSHa	63.6	58.1	58.4	58.8	55.5	57.4	58.5	53.2	55.1	56.3	52.0	54.3	54.8
CH/SI Pump Flow	710	710	710	710	710	710	710	600	600	600	710	710	710

TABLE 1 LEGEND

CASE No.	DESCRIPTION
1 -	Test Conditions
2 -	Post-Accident - Train Failure
3 -	Post-Accident - CH/SI Failure
4 -	Post-Accident - LCV-115D Fail to Open
5 -	Post-Accident - RWST at Empty Alarm

a - RWST level prior to isolating CSS from RWST

$$\text{Level} = 424.1 - \frac{(\text{RWST Outflow})\ (2\ \text{min})}{9400\ \text{gal/ft}} = L_a$$

b - RWST level prior to isolating RHR from RWST

$$\text{Level} = L_a - \frac{(\text{RWST Outflow})\ (1\ \text{min})}{9400\ \text{gal/ft}} = L_b$$

c - RWST level prior to isolating CH/SI from RWST

$$\text{Level} = L_b - \frac{(\text{RWST Outflow})\ (1\ \text{min})}{9400\ \text{gal/ft}}$$

ATTACHMENT 1

TEST TERMINATION CRITERIA

FROM

SCE&G PROCEDURE STP-230.006A

TEST DATA SHEET
CHARGING/SI PUMP A RUNOUT TEST

		INITIAL	DATE
6.2.1	Pump Runout testing of XPP0043A, CHARGING/SI PUMP A		
	C. XVG08485A-CS, THROTTLED CLOSED 9.75 turns,	_____	_____
	D. FCV-122, CLOSED	_____	_____
	E. MVG-8107 and MVG-8108, OPEN	_____	_____
6.2.1.F.2	Calculated flow for IFE00122, _____GPM		
6.2.1.H.11	Flow greater than 100 gpm on FI-943.	_____	_____
6.2.1.H.12	MVT-8109A, CLOSED	_____	_____

Charging/SI Pump Runout Test Termination Criteria To Prevent Pump Damage:

A. Flow - Total pump flow shall not exceed 710 gpm.

B. Developed Head - No fluctuations greater than 5% while operating at a fixed system resistance.

C. Thrust bearing temperature - Lube oil temperature shall not exceed 155°F at the bearing housing outlet.

D. Bearing housing vibration - Bearing housing displacement shall not exceed 1.5 mils peak-to-peak or velocities not to exceed 0.4 in/sec. All values are to be filtered to running speed. The use of overall readings is acceptable.

E. Motor current - Motor current shall not exceed the following:

1. At a bus voltage of 6900 V, 75 amps.

2. At a bus voltage of 7200 V, 72 amps.

3. At a bus voltage of 7450 V, 69.5 amps.

F Sound - No discernable cavitation "marble" noises.

ATTACHMENT 2

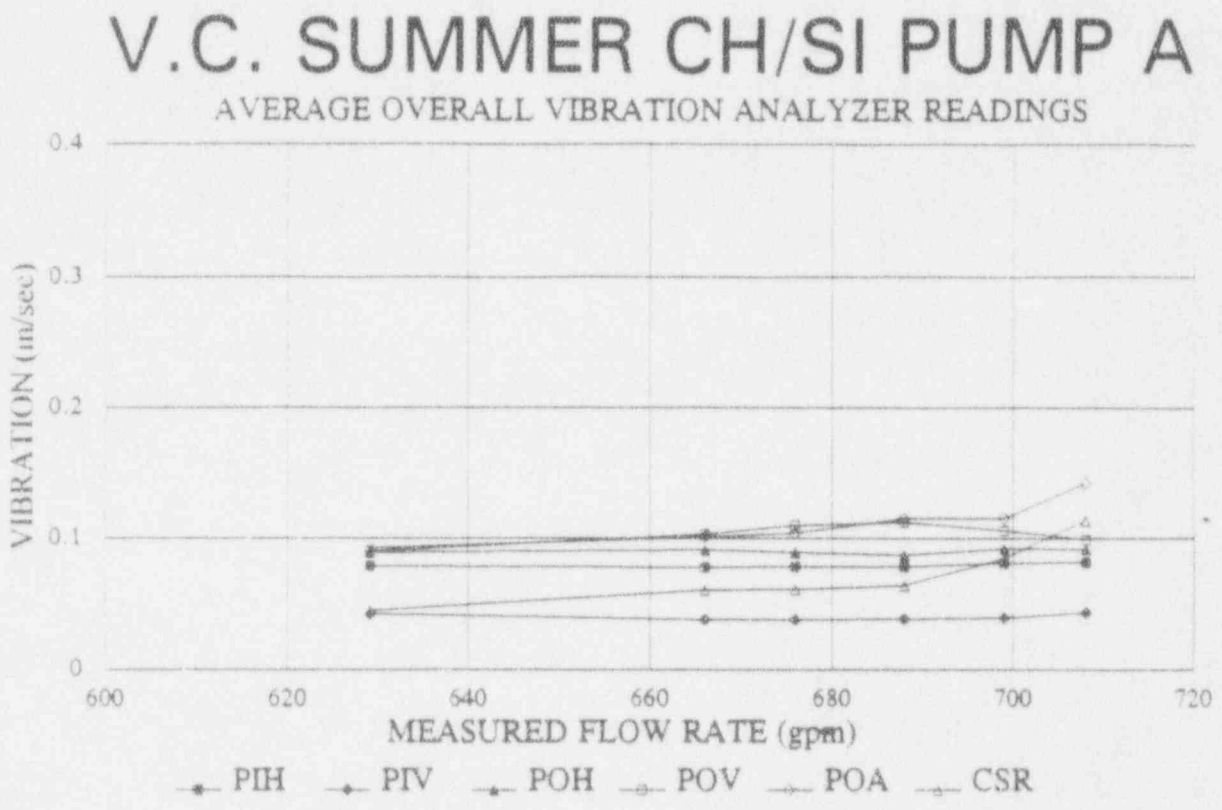
AVERAGE OVERALL VIBRATION ANALYZER READINGS

Tables and graphs of the overall vibration data that was recorded with the vibration analyzer are included in this attachment.

Note: The following abbreviations are used in this report to refer to the locations where vibration measurements were recorded:

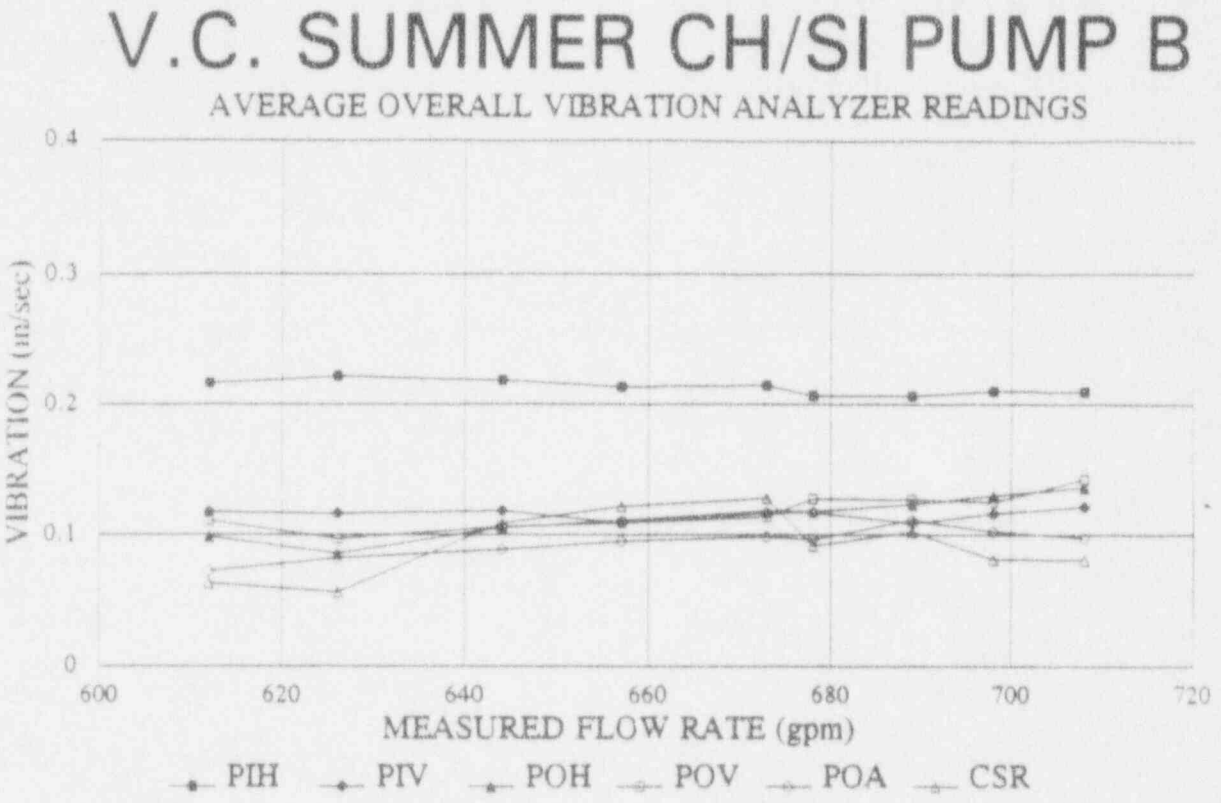
PIH - pump inboard bearing, horizontal, in/sec
PIV - pump inboard bearing, vertical, in/sec
POH - pump outboard bearing, horizontal, in/sec
POV - pump outboard bearing, vertical, in/sec
POA - pump outboard bearing, axial, in/sec
CSR - pump casing at suction nozzle, radial, in/sec

V.C. SUMMER CH/SI PUMP RUNOUT TEST DATA - PUMP A



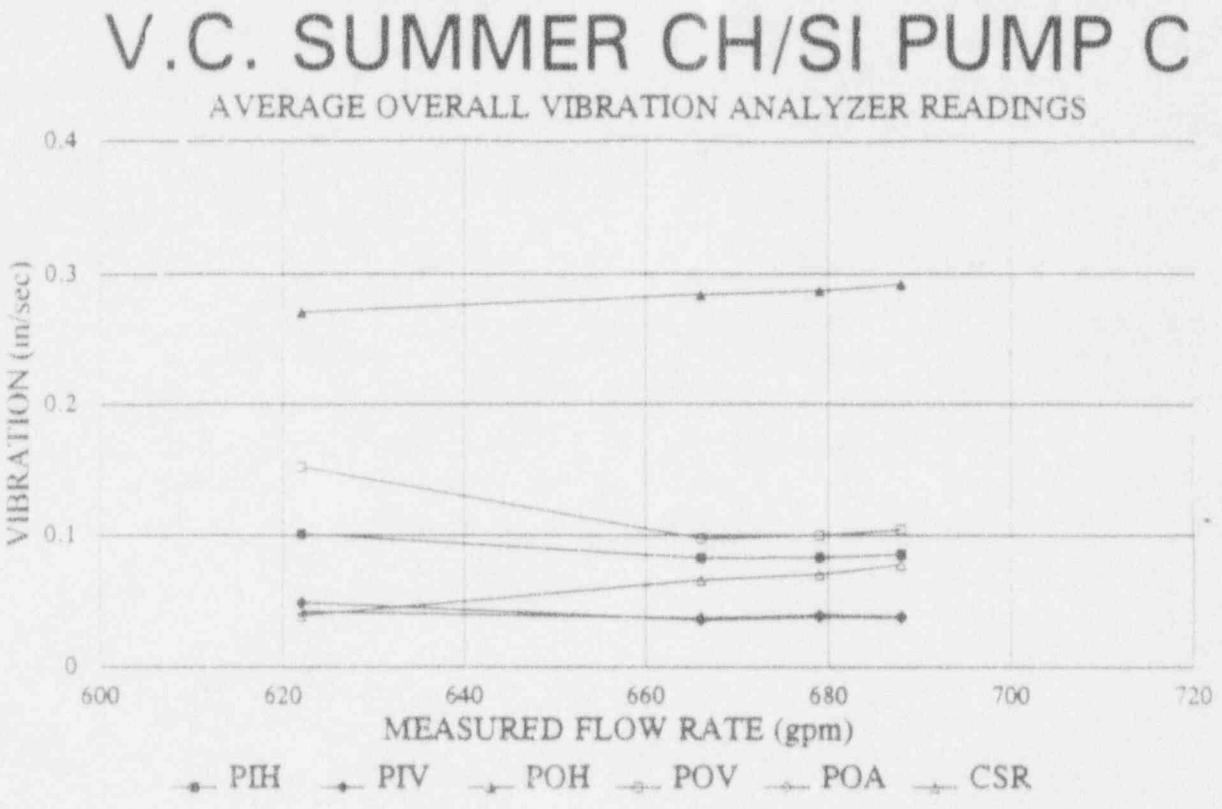
LOCATION ----->	PIH	PIV	POH	POV	POA	CSR
Flow (gpm)	AVERAGE OVERALL VIBRATION ANALYZER READINGS (in/sec)					
629	0.0790	0.0426	0.0892	0.0904	0.0926	0.0449
666	0.0778	0.0379	0.0911	0.1030	0.1012	0.0609
676	0.0783	0.0377	0.0890	0.1099	0.1042	0.0613
688	0.0787	0.0384	0.0870	0.1125	0.1153	0.0642
699	0.0814	0.0394	0.0922	0.1062	0.1155	0.0846
708	0.0817	0.0433	0.0917	0.0992	0.1425	0.1137

V.C. SUMMER CH/SI PUMP RUNOUT TEST DATA - PUMP B



LOCATION ----->	PIH	PIV	POH	POV	POA	CSR
Flow (gpm)	AVERAGE OVERALL VIBRATION ANALYZER READINGS (in/sec)					
612	0.2163	0.1172	0.0987	0.1109	0.0724	0.0632
626	0.2220	0.1165	0.0858	0.0970	0.0823	0.0565
644	0.2186	0.1186	0.1054	0.1062	0.0888	0.1089
657	0.2135	0.1091	0.1111	0.1095	0.0951	0.1219
673	0.2143	0.1167	0.1184	0.1137	0.0989	0.1280
678	0.2067	0.1172	0.1181	0.1279	0.0966	0.0916
689	0.2068	0.1091	0.1237	0.1270	0.1116	0.1023
698	0.2102	0.1163	0.1302	0.1251	0.1028	0.0812
708	0.2098	0.1218	0.1366	0.1426	0.0978	0.0810

V.C. SUMMER CH/SI PUMP RUNOUT TEST DATA - PUMP C

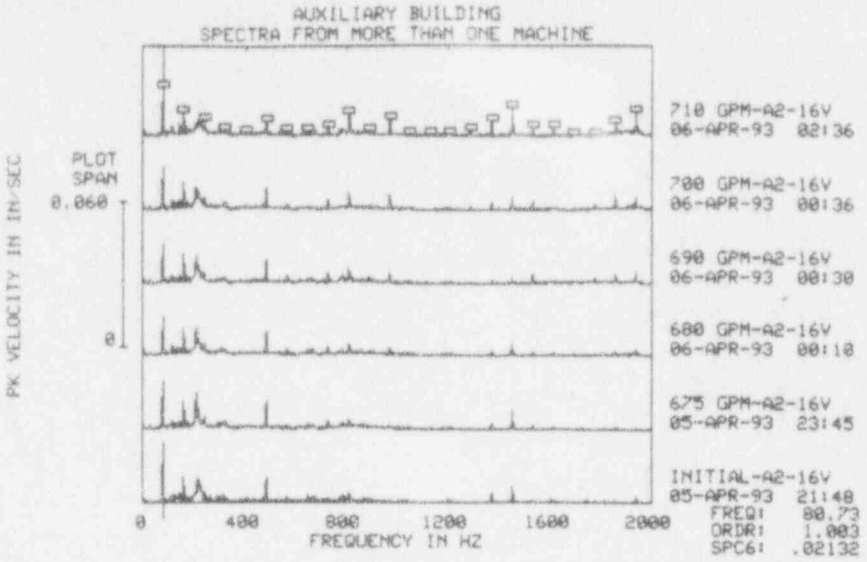


LOCATION ----->	PIH	PIV	PCH	POV	POA	CSR
Flow (gpm)	AVERAGE OVERALL VIBRATION ANALYZER READINGS (in/sec)					
622	0.1014	0.0489	0.2706	0.1526	0.0418	0.0388
666	0.0827	0.0354	0.2837	0.0976	0.0371	0.0663
679	0.0835	0.0378	0.2869	0.1001	0.0392	0.0705
688	0.0858	0.0373	0.2917	0.1043	0.0386	0.0781

ATTACHMENT 3

DETAILED VIBRATION ANALYZER DATA

The detailed vibration test data recorded under test procedure STP-230.006A is included in this attachment. Velocity vs. frequency response spectra are included for all three pumps.



LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-16V --> PUMP INBD VERTICAL
Date/Time: 06-APR-93 02:36:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0213	1.00	13	769.41	.0032	9.56
2	117.79	.0037	1.46	14	783.89	.0032	9.74
3	146.87	.0050	1.83	15	807.71	.0093	10.04
4	161.48	.0107	2.01	16	814.04	.0031	10.12
5	211.25	.0063	2.63	17	968.69	.0084	12.04
6	221.06	.0073	2.75	18	1372.32	.0065	17.05
7	226.33	.0061	2.81	19	1453.06	.0121	18.06
8	236.17	.0033	2.94	20	1533.75	.0048	19.06
9	242.18	.0066	3.01	21	1614.51	.0039	20.06
10	484.24	.0066	6.02	22	1856.98	.0054	23.08
11	676.03	.0030	8.40	23	1893.78	.0032	23.53
12	726.32	.0049	9.03	24	1937.62	.0099	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0446	.0028 / 0%	.0295 / 44%	.0333 / 56%

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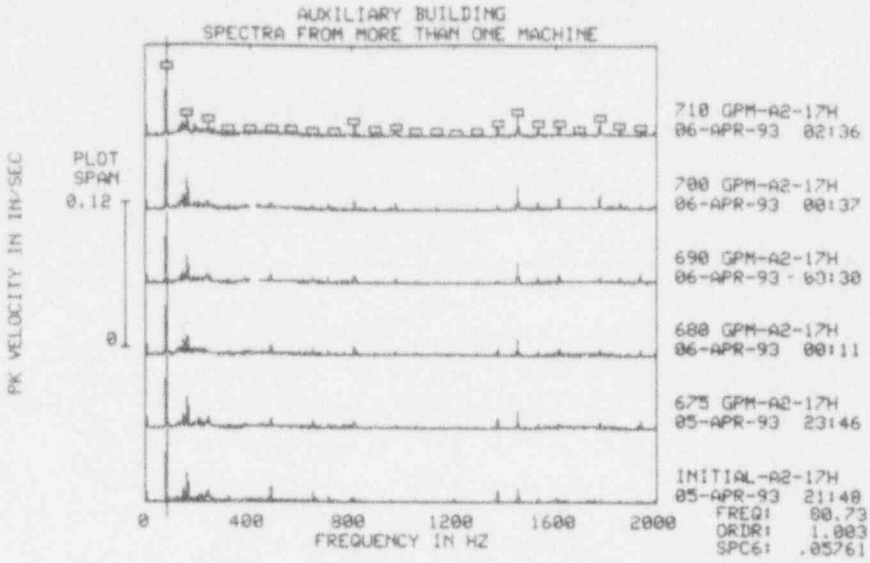

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-17H --> PUMP INBD HORIZONTAL
Date/Time: 06-APR-93 02:36:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0576	1.00	13	264.01	.0064	3.28
2	131.55	.0063	1.63	14	383.30	.0048	4.76
3	138.41	.0086	1.72	15	707.73	.0052	8.80
4	146.69	.0115	1.82	16	807.18	.0091	10.03
5	153.73	.0048	1.91	17	968.58	.0056	12.04
6	161.38	.0188	2.01	18	1372.27	.0082	17.05
7	191.04	.0100	2.37	19	1453.01	.0183	18.06
8	196.58	.0061	2.44	20	1533.83	.0090	19.06
9	205.74	.0052	2.56	21	1614.56	.0087	20.06
10	220.87	.0053	2.74	22	1776.06	.0140	22.07
11	228.49	.0050	2.84	23	1856.47	.0063	23.07
12	242.19	.0114	3.01	24	1937.37	.0053	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0794	.0078 / 1%	.0640 / 65%	.0464 / 34%

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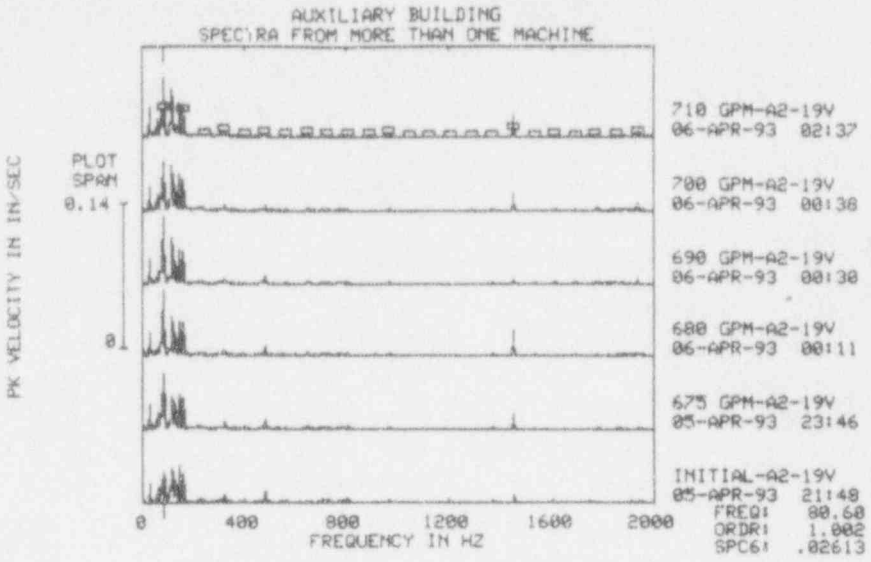

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-19V --> PUMP OUTBD VERTICAL
Date/Time: 06-APR-93 02:37:04 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0284	.37	13	221.69	.0034	2.76
2	44.07	.0032	.55	14	264.18	.0036	3.28
3	59.02	.0181	.73	15	310.88	.0034	3.86
4	73.39	.0277	.91	16	316.06	.0039	3.93
5	80.60	.0261	1.00	17	322.98	.0062	4.01
6	88.12	.0337	1.10	18	473.78	.0032	5.89
7	102.87	.0042	1.28	19	484.07	.0036	6.02
8	118.07	.0453	1.47	20	645.46	.0032	8.02
9	131.43	.0123	1.63	21	707.97	.0034	8.80
10	146.76	.0336	1.82	22	968.48	.0032	12.04
11	161.47	.0308	2.01	23	1452.92	.0207	18.06
12	176.50	.0042	2.19	24	1937.15	.0048	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0973	.0405 / 17%	.0419 / 18%	.0780 / 64%

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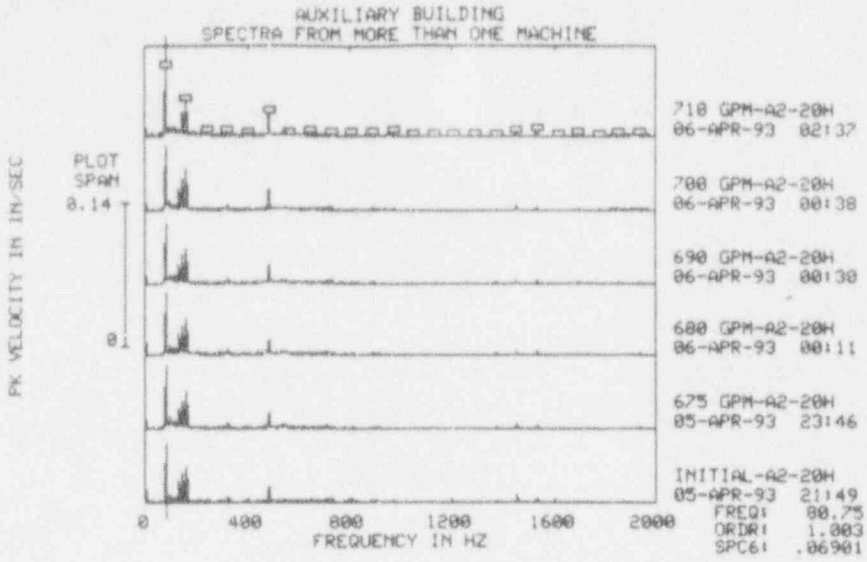

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 02:37:19 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0043	.37	13	190.88	.0065	2.37
2	58.90	.0037	.73	14	308.35	.0034	3.83
3	73.03	.0035	.91	15	322.90	.0031	4.01
4	80.75	.0690	1.00	16	396.49	.0042	4.93
5	98.08	.0102	1.22	17	410.94	.0035	5.11
6	106.27	.0075	1.32	18	478.35	.0053	5.94
7	118.07	.0093	1.47	19	484.34	.0236	6.02
8	131.61	.0056	1.64	20	556.98	.0034	6.92
9	141.11	.0060	1.75	21	707.74	.0051	8.80
10	146.67	.0248	1.82	22	968.65	.0036	12.04
11	161.44	.0380	2.01	23	1452.94	.0046	18.06
12	176.19	.0038	2.19	24	1533.73	.0059	19.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0931	.0099 / 1%	.0824 / 78%	.0423 / 21%

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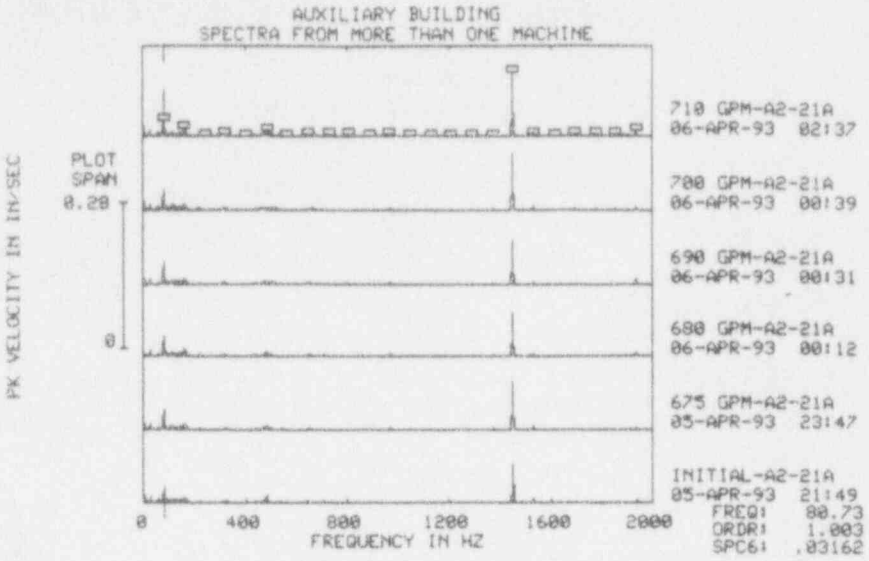

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-21A --> PUMP OUTBOARD AXIAL
Date/Time: 06-APR-93 02:37:35 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0127	.37	13	465.23	.0028	5.79
2	59.02	.0077	.73	14	473.46	.0045	5.88
3	73.44	.0051	.91	15	484.22	.0113	6.02
4	80.73	.0316	1.00	16	707.87	.0033	8.80
5	88.19	.0105	1.10	17	726.57	.0035	9.03
6	116.97	.0079	1.45	18	806.98	.0026	10.03
7	131.89	.0031	1.64	19	968.58	.0053	12.04
8	146.92	.0067	1.83	20	1452.88	.1225	18.06
9	161.47	.0154	2.01	21	1533.63	.0066	19.06
10	176.90	.0037	2.20	22	1775.82	.0033	22.07
11	316.11	.0038	3.93	23	1856.14	.0048	23.07
12	321.64	.0033	4.00	24	1937.17	.0119	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1337	.0224 / 3%	.0546 / 17%	.1200 / 81%

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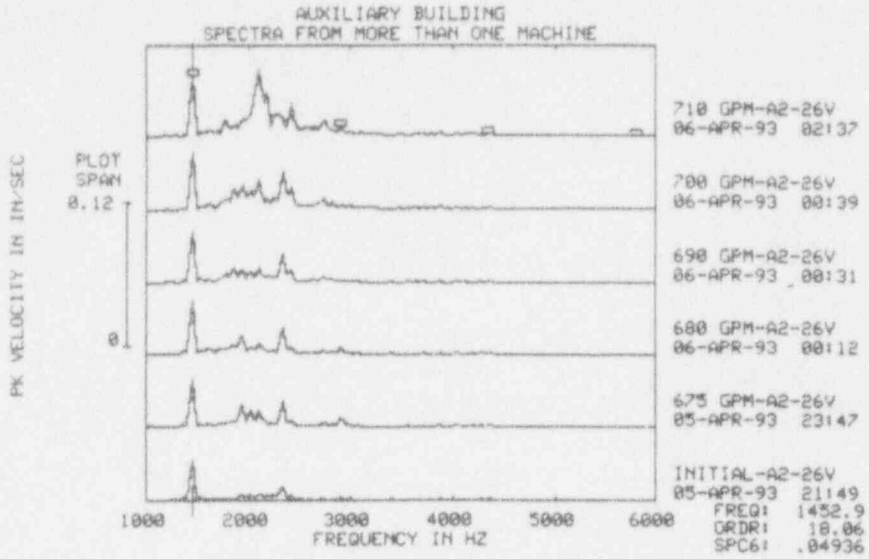

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: 710 GPM-A2-26V --> PIPING HIGH FREQ
Date/Time: 06-APR-93 02:37:57 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1452.88	.0494	18.06	13	2581.14	.0090	32.08
2	1537.50	.0041	19.11	14	2642.84	.0076	32.84
3	1613.31	.0057	20.05	15	2744.63	.0137	34.11
4	1690.12	.0049	21.00	16	2902.85	.0077	36.08
5	1779.23	.0126	22.11	17	2992.25	.0040	37.19
6	1864.34	.0102	23.17	18	3111.66	.0028	38.67
7	1959.89	.0163	24.36	19	3234.63	.0023	40.20
8	2091.41	.0584	25.99	20	3635.33	.0015	45.18
9	2167.11	.0372	26.93	21	3793.47	.0015	47.14
10	2262.28	.0204	28.11	22	3870.79	.0028	48.10
11	2422.05	.0275	30.10	23	4042.72	.0013	50.24
12	2508.30	.0062	31.17	24	4129.09	.0015	51.31

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1124	Undefined / 0%	Undefined / 0%	Undefined / 0%

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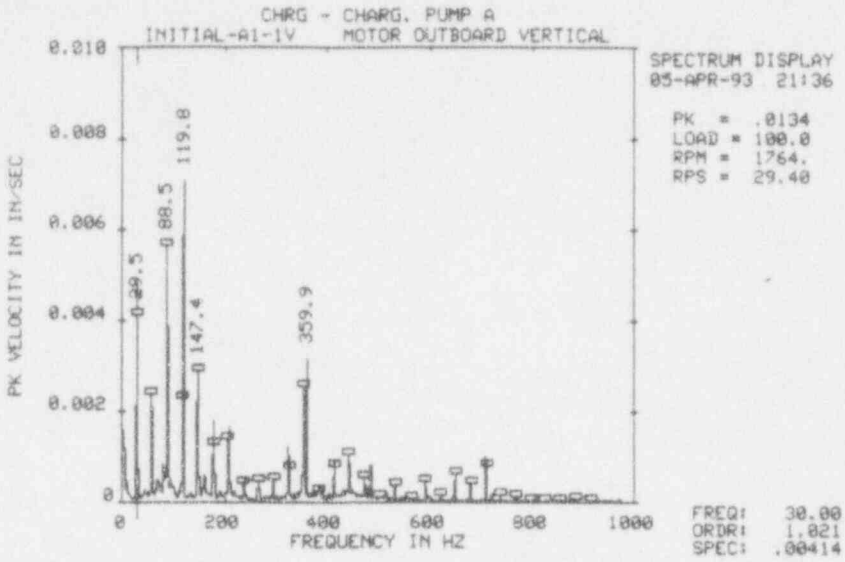

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-1V --> MOTOR OUTBOARD VERTICAL
Date/Time: 05-APR-93 21:36:12 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.51	.0046	1.00	13	206.73	.0015	7.03
2	59.09	.0025	2.01	14	208.44	.0017	7.09
3	69.51	.0006	2.36	15	239.29	.0006	8.14
4	73.13	.0006	2.49	16	323.20	.0014	10.99
5	80.86	.0009	2.75	17	354.04	.0026	12.04
6	83.35	.0007	2.84	18	359.94	.0032	12.24
7	88.48	.0058	3.01	19	413.03	.0010	14.05
8	94.56	.0005	3.22	20	442.60	.0011	15.06
9	119.75	.0072	4.07	21	471.92	.0007	16.05
10	147.45	.0029	5.02	22	484.36	.0009	16.48
11	161.76	.0007	5.50	23	648.94	.0006	22.08
12	178.44	.0019	6.07	24	707.92	.0011	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0134	.0017 / 2%	.0101 / 57%	.0086 / 41%

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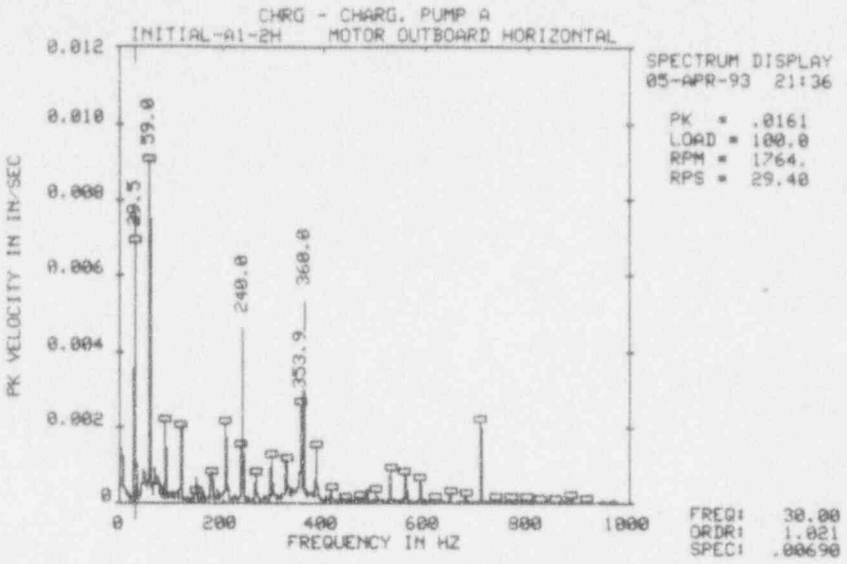

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-2H --> MOTOR OUTBOARD HORIZONTAL
Date/Time: 05-APR-93 21:36:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0077	1.00	13	235.99	.0015	8.03
2	45.74	.0010	1.56	14	240.04	.0046	8.17
3	50.43	.0009	1.72	15	265.47	.0009	9.03
4	53.37	.0006	1.82	16	294.99	.0012	10.04
5	58.99	.0093	2.01	17	324.36	.0013	11.03
6	69.23	.0010	2.35	18	353.94	.0027	12.04
7	74.44	.0008	2.53	19	359.97	.0053	12.25
8	88.50	.0022	3.01	20	383.48	.0015	13.05
9	119.42	.0024	4.06	21	531.00	.0009	18.06
10	149.53	.0007	5.09	22	560.47	.0009	19.07
11	179.39	.0009	6.10	23	589.90	.0006	20.07
12	206.47	.0021	7.02	24	707.99	.0024	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0161	.0017 / 1%	.0132 / 68%	.0090 / 31%

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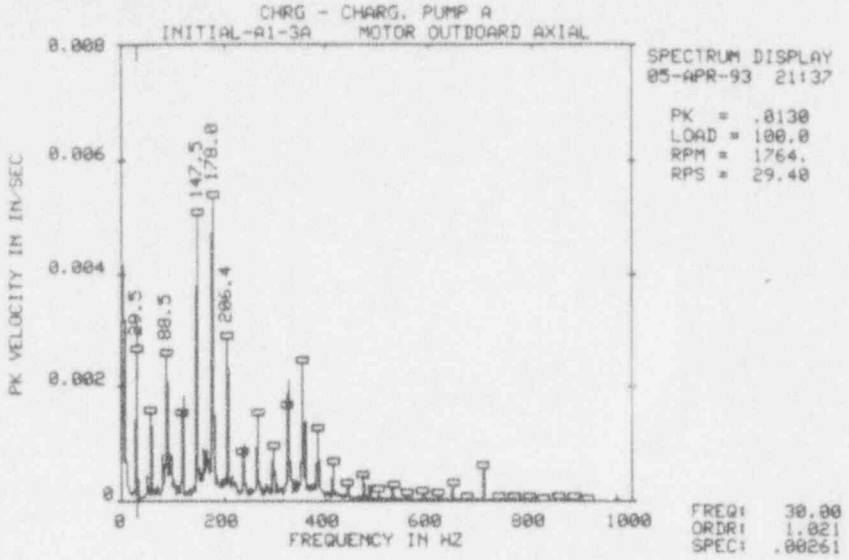

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-3A --> MOTOR OUTBOARD AXIAL
Date/Time: 05-APR-93 21:37:04 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0029	1.00	13	178.00	.0059	6.06
2	59.04	.0016	2.01	14	206.42	.0029	7.02
3	80.81	.0009	2.75	15	237.03	.0011	8.06
4	88.50	.0026	3.01	16	239.46	.0009	8.15
5	95.59	.0010	3.25	17	265.59	.0017	9.03
6	118.02	.0017	4.01	18	295.37	.0010	10.05
7	119.67	.0019	4.07	19	324.61	.0023	11.04
8	147.50	.0050	5.02	20	354.12	.0026	12.05
9	153.41	.0006	5.22	21	359.86	.0014	12.24
10	156.94	.0005	5.34	22	383.36	.0013	13.04
11	161.67	.0010	5.50	23	413.02	.0007	14.05
12	168.01	.0010	5.72	24	707.97	.0006	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0130	.0040 / 10%	.0101 / 61%	.0071 / 30%

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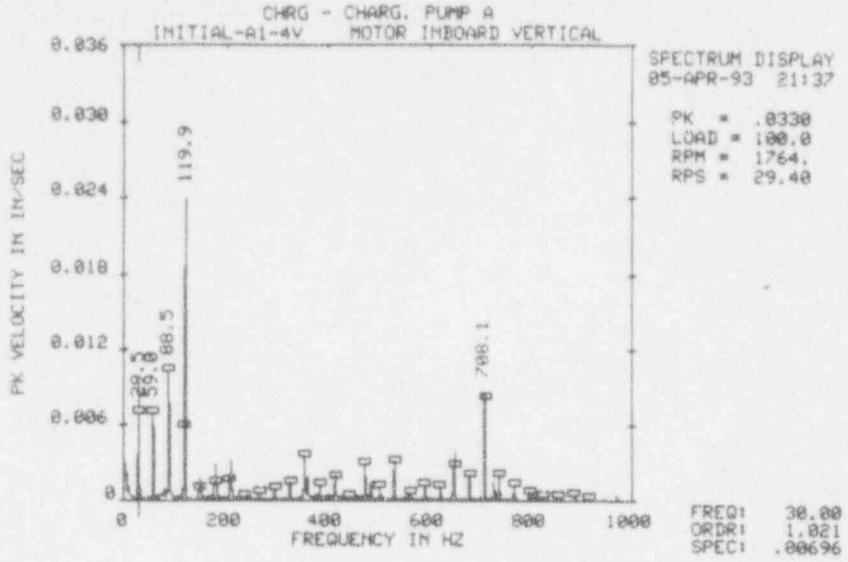

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-4V --> MOTOR INBOARD VERTICAL
Date/Time: 05-APR-93 21:37:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.52	.0077	1.00	13	472.01	.0032	16.06
2	59.00	.0071	2.01	14	484.46	.0018	16.48
3	88.53	.0105	3.01	15	531.08	.0031	18.07
4	119.92	.0240	4.08	16	590.13	.0013	20.08
5	149.52	.0018	5.09	17	619.59	.0012	21.08
6	179.10	.0031	6.09	18	646.87	.0017	22.01
7	208.41	.0034	7.09	19	649.08	.0040	22.08
8	324.35	.0016	11.03	20	678.58	.0020	23.08
9	354.06	.0037	12.04	21	708.08	.0099	24.09
10	359.88	.0018	12.24	22	726.71	.0017	24.72
11	383.44	.0012	13.04	23	737.60	.0020	25.09
12	413.06	.0023	14.05	24	767.10	.0014	26.10

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0330	.0031 / 1%	.0203 / 38%	.0259 / 62%

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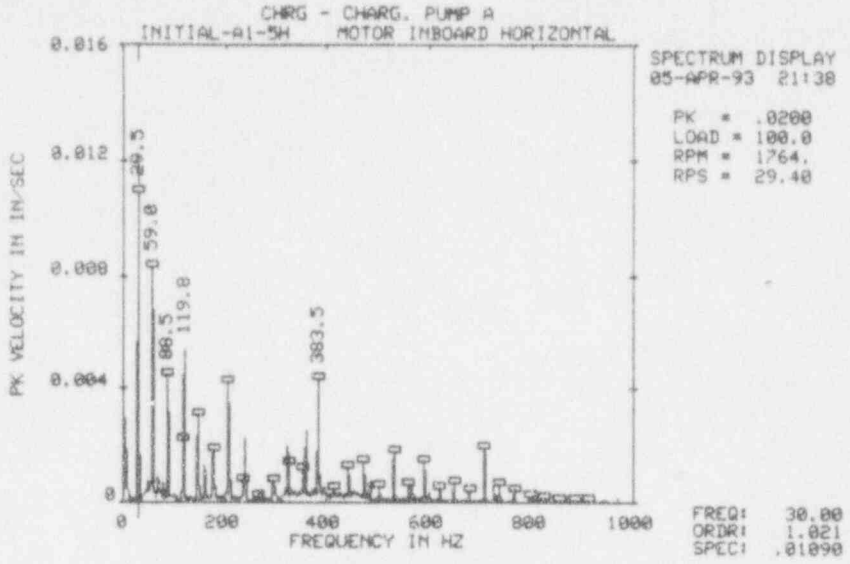

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-5H --> MOTOR INBOARD HORIZONTAL
Date/Time: 05-APR-93 21:38:16 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0121	1.00	13	294.97	.0007	10.03
2	50.66	.0009	1.72	14	323.16	.0023	10.99
3	58.96	.0085	2.01	15	354.02	.0012	12.04
4	69.71	.0009	2.37	16	360.01	.0025	12.25
5	80.74	.0008	2.75	17	383.50	.0045	13.05
6	88.50	.0046	3.01	18	442.59	.0012	15.06
7	119.76	.0055	4.07	19	471.98	.0016	16.06
8	147.47	.0030	5.02	20	484.50	.0008	16.48
9	161.47	.0013	5.49	21	531.00	.0018	18.06
10	177.05	.0020	6.02	22	589.96	.0015	20.07
11	206.45	.0043	7.02	23	649.05	.0007	22.08
12	239.84	.0023	8.16	24	708.00	.0021	24.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0200	.0026 / 2%	.0177 / 79%	.0088 / 20%

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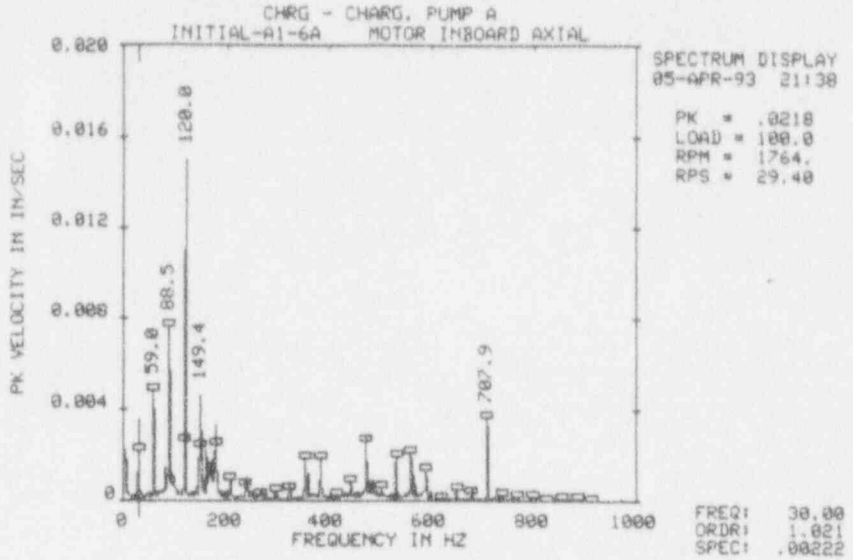

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-6A --> MOTOR INBOARD AXIAL
Date/Time: 05-APR-93 21:38:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0025	1.00	13	178.38	.0035	6.07
2	58.97	.0050	2.01	14	238.08	.0012	8.10
3	80.86	.0015	2.75	15	354.02	.0019	12.04
4	88.51	.0079	3.01	16	359.88	.0012	12.24
5	95.69	.0014	3.26	17	383.43	.0019	13.04
6	98.26	.0010	3.34	18	471.94	.0032	16.05
7	120.00	.0150	4.08	19	484.32	.0010	16.48
8	149.40	.0054	5.08	20	530.90	.0021	18.06
9	161.48	.0022	5.49	21	560.39	.0022	19.06
10	166.65	.0017	5.67	22	565.09	.0011	19.22
11	170.37	.0019	5.80	23	589.80	.0014	20.06
12	174.35	.0011	5.93	24	707.91	.0039	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0218	.0023 / 1%	.0135 / 38%	.0170 / 61%

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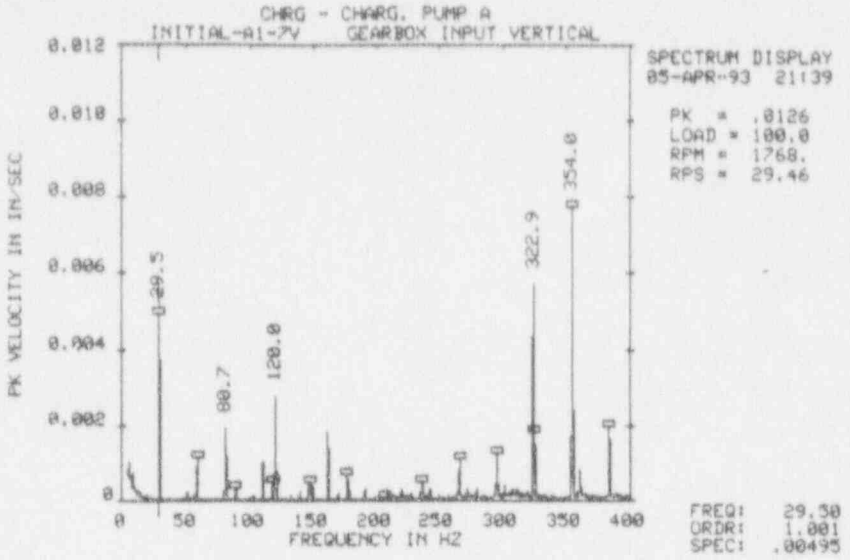

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-7V --> GEARBOX INPUT VERTICAL
Date/Time: 05-APR-93 21:39:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.80	.0012	.20	13	177.00	.0007	6.01
2	8.83	.0008	.30	14	220.24	3.65E-04	7.47
3	29.50	.0050	1.00	15	236.00	.0005	8.01
4	58.98	.0012	2.00	16	265.50	.0011	9.01
5	80.74	.0023	2.74	17	293.59	4.66E-04	9.96
6	88.46	3.83E-04	3.00	18	295.02	.0013	10.01
7	110.24	.0012	3.74	19	300.96	3.86E-04	10.21
8	118.01	.0005	4.01	20	322.95	.0057	10.96
9	120.00	.0028	4.07	21	324.52	.0018	11.01
10	147.28	.0006	5.00	22	354 01	.0078	12.01
11	149.52	4.56E-04	5.07	23	360.02	.0008	12.22
12	161.48	.0018	5.48	24	383.52	.0020	13.02

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0126	.0019 / 2%	.0094 / 55%	.0082 / 42%

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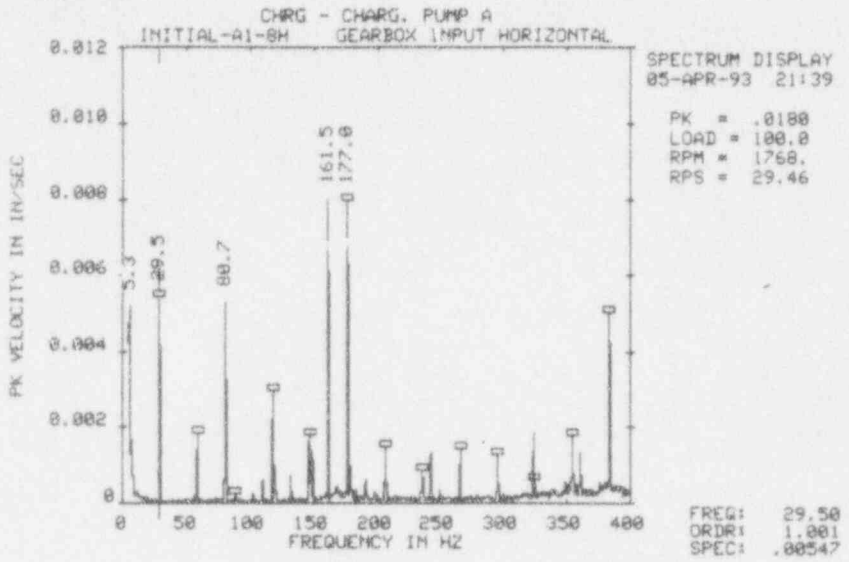

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-8H --> GEARBOX INPUT HORIZONTAL
Date/Time: 05-APR-93 21:39:52 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.33	.0057	.18	13	177.02	.0081	6.01
2	7.19	.0018	.24	14	178.98	.0010	6.07
3	29.51	.0055	1.00	15	206.53	.0015	7.01
4	59.01	.0018	2.00	16	236.00	.0009	8.01
5	80.74	.0062	2.74	17	242.25	.0015	8.22
6	110.27	.0007	3.74	18	265.54	.0014	9.01
7	118.01	.0030	4.01	19	295.06	.0013	10.01
8	120.00	.0010	4.07	20	322.99	.0018	10.96
9	132.12	.0007	4.48	21	354.07	.0018	12.02
10	147.21	.0021	5.00	22	360.10	.0014	12.22
11	149.53	.0014	5.07	23	375.69	.0006	12.75
12	161.50	.0080	5.48	24	383.56	.0052	13.02

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0180	.0062 / 12%	.0120 / 44%	.0120 / 44%

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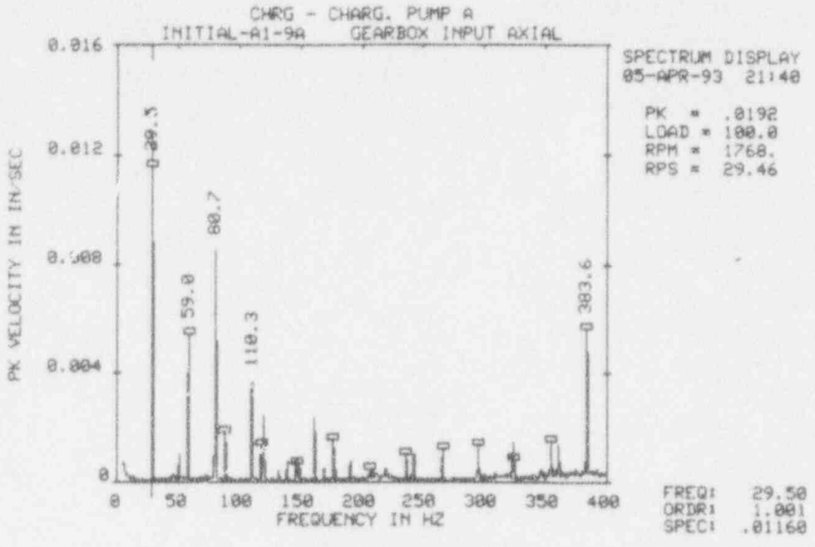

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-9A --> GEARBOX INPUT AXIAL
Date/Time: 05-APR-93 21:40:36 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0116	1.00	13	177.03	.0016	6.01
2	51.25	.0012	1.74	14	191.05	.0008	6.48
3	59.01	.0054	2.00	15	236.03	.0010	8.01
4	80.75	.0099	2.74	16	242.26	.0012	8.22
5	88.53	.0018	3.00	17	265.56	.0013	9.01
6	110.26	.0042	3.74	18	295.04	.0014	10.01
7	118.03	.0013	4.01	19	323.00	.0015	10.96
8	120.02	.0025	4.07	20	324.54	.0008	11.01
9	139.76	.0008	4.74	21	354.07	.0016	12.02
10	147.15	.0010	4.99	22	360.08	.0014	12.22
11	149.52	.0006	5.07	23	381.73	.0009	12.96
12	161.51	.0024	5.48	24	383.56	.0058	13.02

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0192	.0012 / 0%	.0143 / 55%	.0128 / 44%

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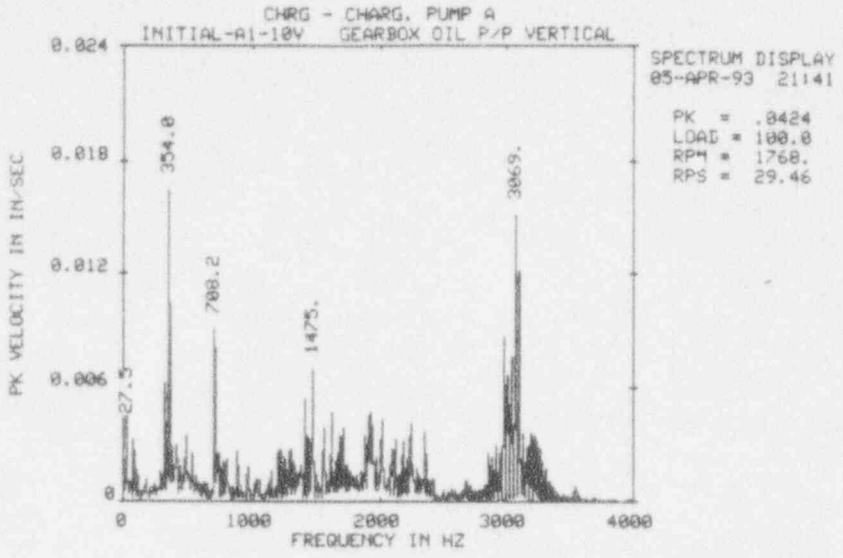

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-10V --> GEARBOX OIL P/P VERTICAL
Date/Time: 05-APR-93 21:41:12 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.40	.0053	1.00	13	1938.96	.0049	65.81
2	323.32	.0066	10.97	14	2019.00	.0043	68.52
3	354.01	.0179	12.01	15	2242.43	.0042	76.11
4	484.88	.0039	16.46	16	2360.74	.0039	80.12
5	708.17	.0096	24.03	17	2980.22	.0088	101.15
6	1416.49	.0059	48.07	18	3009.71	.0075	102.15
7	1452.40	.0037	49.29	19	3039.12	.0080	103.14
8	1475.45	.0070	50.08	20	3068.64	.0152	104.15
9	1563.90	.0040	53.08	21	3098.18	.0129	105.15
10	1622.73	.0051	55.07	22	3127.78	.0041	106.15
11	1710.80	.0041	58.06	23	3186.47	.0037	108.15
12	1917.14	.0047	65.07	24	3216.22	.0039	109.16

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0424	Undefined / 0%	.0405 / 91%	.0125 / 9%

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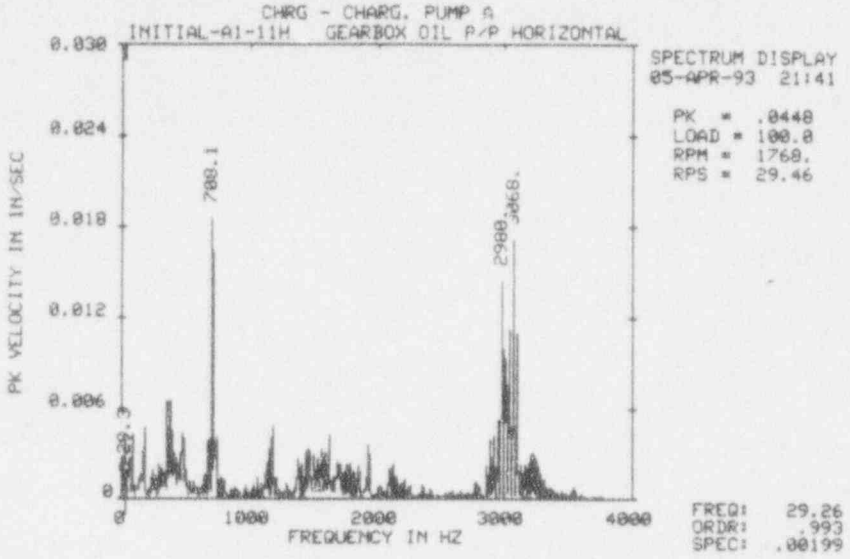

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-11H --> GEARBOX OIL P/P HORIZONTAL
Date/Time: 05-APR-93 21:41:32 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.60	.0058	2.74	13	1564.46	.0035	53.10
2	176.93	.0050	6.00	14	1622.57	.0046	55.07
3	354.80	.0067	12.04	15	1938.37	.0036	65.79
4	384.32	.0076	13.04	16	2891.62	.0043	98.14
5	471.72	.0050	16.01	17	2920.92	.0045	99.13
6	678.53	.0044	23.03	18	2950.40	.0052	100.13
7	708.12	.0196	24.03	19	2980.00	.0148	101.14
8	735.05	.0045	24.95	20	3009.64	.0107	102.14
9	1150.60	.0034	39.05	21	3038.94	.0116	103.14
10	1180.00	.0049	40.05	22	3068.47	.0171	104.14
11	1454.21	.0036	49.35	23	3097.95	.0117	105.14
12	1475.68	.0032	50.08	24	3216.03	.0035	109.15

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0448	Undefined / 0%	.0428 / 91%	.0131 / 9%

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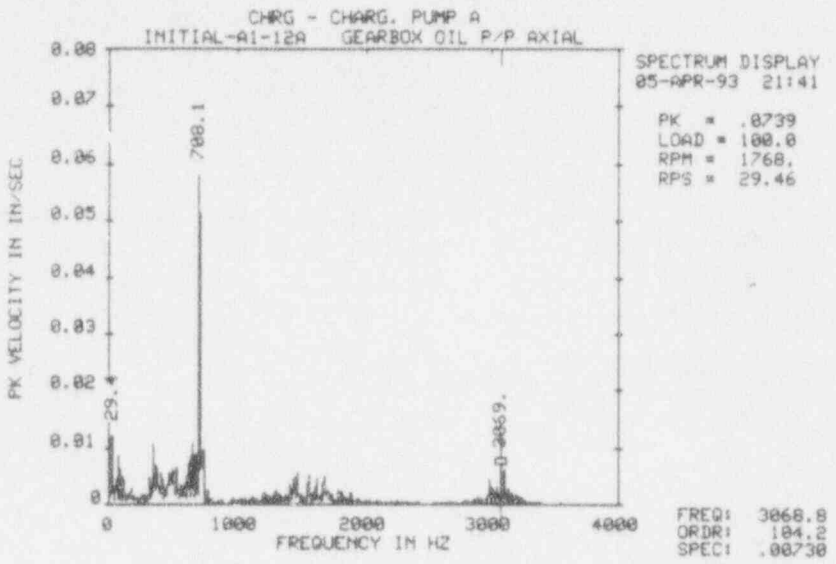

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-12A --> GEARBOX OIL P/P AXIAL
Date/Time: 05-APR-93 21:41:56 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.40	.0126	1.00	13	649.19	.0106	22.03
2	59.19	.0050	2.01	14	678.77	.0099	23.04
3	80.56	.0085	2.73	15	708.07	.0612	24.03
4	115.03	.0053	3.90	16	726.71	.0096	24.66
5	323.04	.0049	10.96	17	735.96	.0098	24.98
6	353.66	.0117	12.00	18	1453.66	.0053	49.34
7	382.40	.0065	12.98	19	1475.00	.0055	50.06
8	413.19	.0056	14.02	20	1563.56	.0051	53.07
9	472.29	.0060	16.03	21	1622.19	.0051	55.06
10	502.54	.0070	17.06	22	1681.69	.0047	57.08
11	530.66	.0066	18.01	23	3068.82	.0073	104.15
12	619.65	.0072	21.03	24	3098.35	.0066	105.16

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0739	Undefined / 0%	.0720 / 95%	.0166 / 5%

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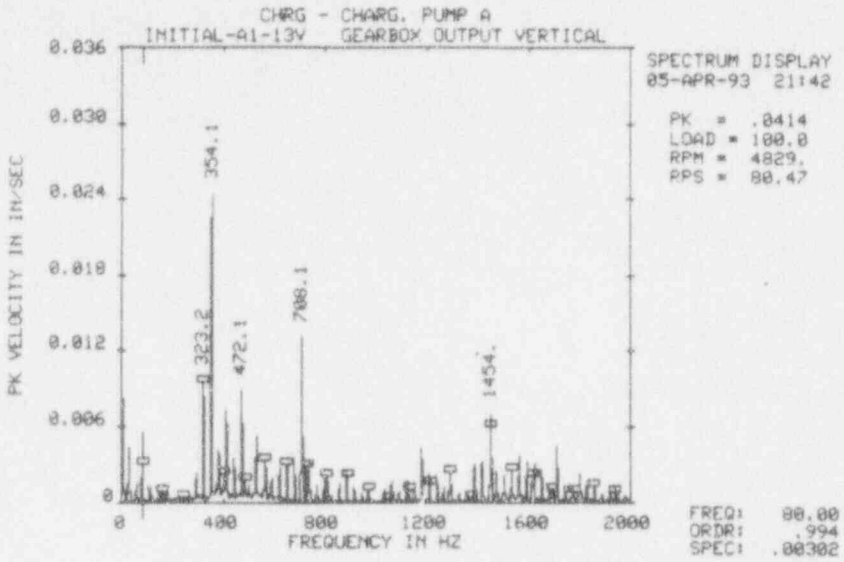

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-13V --> GEARBOX OUTPUT VERTICAL
Date/Time: 05-APR-93 21:42:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0043	.37	13	708.14	.0136	8.80
2	80.78	.0032	1.00	14	726.76	.0031	9.03
3	323.21	.0100	4.02	15	737.66	.0034	9.17
4	354.07	.0267	4.40	16	1180.20	.0043	14.67
5	383.49	.0046	4.77	17	1386.75	.0033	17.23
6	413.05	.0074	5.13	18	1416.28	.0037	17.60
7	442.59	.0036	5.50	19	1453.50	.0077	18.06
8	472.14	.0089	5.87	20	1534.28	.0028	19.07
9	531.03	.0058	6.60	21	1563.80	.0043	19.43
10	565.37	.0035	7.03	22	1593.17	.0034	19.80
11	648.62	.0036	8.06	23	1622.79	.0031	20.17
12	678.67	.0041	8.43	24	1711.36	.0050	21.27

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0414	.0086 / 4%	.0134 / 11%	.0382 / 85%

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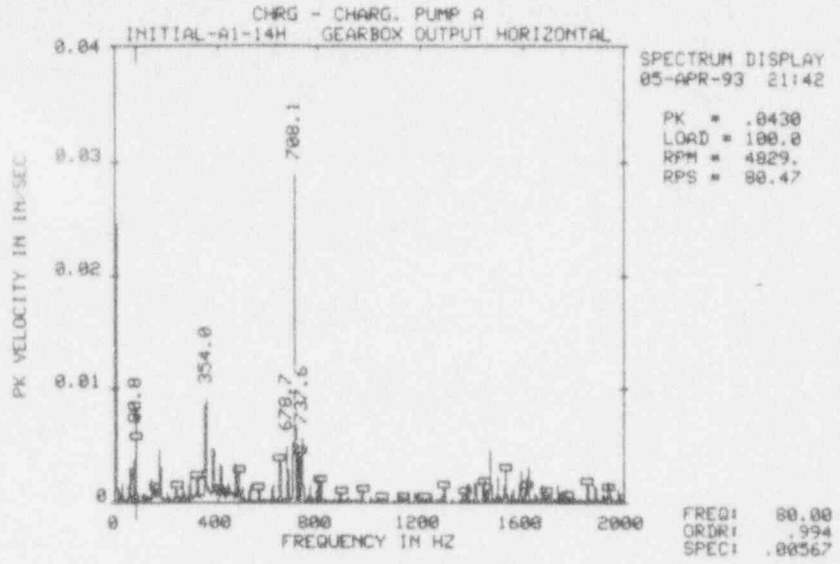

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-14H --> GEARBOX OUTPUT HORIZONTAL
Date/Time: 05-APR-93 21:42:44 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	59.01	.0034	.73	13	678.66	.0056	8.43
2	80.79	.0060	1.00	14	708.13	.0300	8.80
3	147.92	.0020	1.84	15	726.71	.0047	9.03
4	177.01	.0046	2.20	16	737.58	.0056	9.17
5	295.18	.0020	3.67	17	796.62	.0022	9.90
6	323.93	.0028	4.03	18	1416.22	.0020	17.60
7	354.00	.0099	4.40	19	1453.49	.0023	18.06
8	383.71	.0055	4.77	20	1475.23	.0047	18.33
9	413.28	.0037	5.14	21	1504.79	.0022	18.70
10	472.34	.0034	5.87	22	1534.12	.0032	19.06
11	484.68	.0028	6.02	23	1593.33	.0029	19.80
12	648.42	.0040	8.06	24	1622.73	.0030	20.16

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0430	.0207 / 23%	.0103 / 6%	.0363 / 71%

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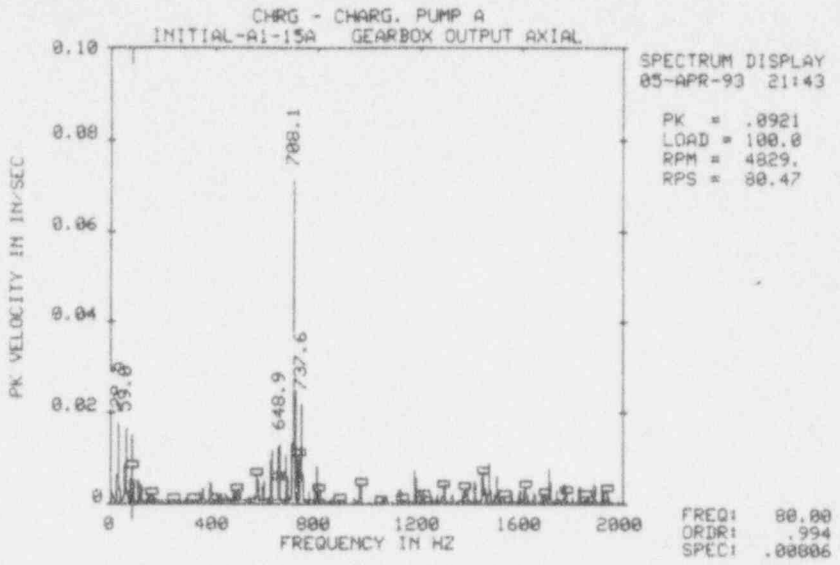

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-15A --> GEARBOX OUTPUT AXIAL
Date/Time: 05-APR-93 21:43:04 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.52	.0177	.37	13	726.75	.0113	9.03
2	59.01	.0182	.73	14	737.61	.0219	9.17
3	80.75	.0086	1.00	15	796.62	.0089	9.90
4	88.54	.0059	1.10	16	969.00	.0046	12.04
5	110.29	.0050	1.37	17	1180.17	.0073	14.67
6	383.65	.0053	4.77	18	1416.22	.0056	17.60
7	565.16	.0066	7.02	19	1445.73	.0061	17.96
8	590.02	.0050	7.33	20	1453.44	.0076	18.06
9	619.62	.0117	7.70	21	1475.15	.0090	18.33
10	648.85	.0148	8.06	22	1504.70	.0059	18.70
11	678.60	.0123	8.43	23	1711.22	.0092	21.26
12	708.11	.0740	8.80	24	1888.25	.0047	23.46

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0921	.0257 / 8%	.0217 / 6%	.0857 / 87%

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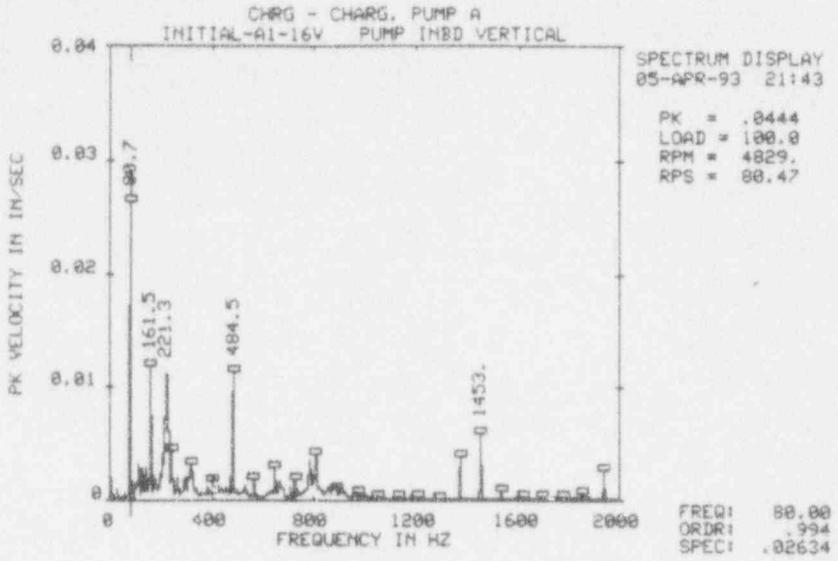

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-16V --> PUMP INBD VERTICAL
Date/Time: 05-APR-93 21:43:24 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.75	.0279	1.00	13	313.06	.0030	3.89
2	117.99	.0033	1.47	14	321.51	.0035	4.00
3	131.88	.0031	1.64	15	404.23	.0023	5.02
4	147.02	.0030	1.83	16	471.75	.0022	5.86
5	161.47	.0133	2.01	17	484.53	.0117	6.02
6	176.72	.0023	2.20	18	645.84	.0031	8.03
7	198.64	.0027	2.47	19	783.29	.0038	9.73
8	206.50	.0045	2.57	20	803.68	.0025	9.99
9	221.32	.0130	2.75	21	808.28	.0044	10.04
10	242.26	.0045	3.01	22	1372.75	.0039	17.06
11	265.56	.0022	3.30	23	1453.47	.0066	18.06
12	308.63	.0023	3.84	24	1937.85	.0027	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0444	.0025 / 0%	.0340 / 58%	.0285 / 41%

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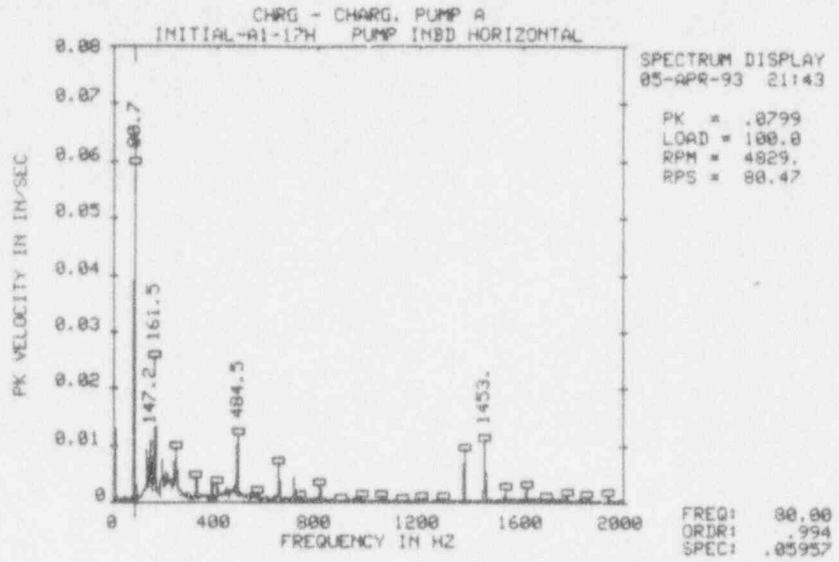

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-17H --> PUMP INBD HORIZONTAL
Date/Time: 05-APR-93 21:43:40 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0630	1.00	13	234.79	.0072	2.92
2	126.01	.0032	1.57	14	242.26	.0096	3.01
3	132.06	.0092	1.64	15	249.38	.0059	3.10
4	140.64	.0054	1.75	16	323.11	.0046	4.01
5	147.20	.0110	1.83	17	383.28	.0038	4.76
6	161.49	.0285	2.01	18	403.68	.0038	5.02
7	190.87	.0079	2.37	19	471.67	.0034	5.86
8	198.80	.0040	2.47	20	484.46	.0124	6.02
9	206.31	.0063	2.56	21	645.96	.0077	8.03
10	216.42	.0044	2.69	22	708.03	.0045	8.80
11	221.56	.0044	2.75	23	1372.62	.0093	17.06
12	228.22	.0042	2.84	24	1453.35	.0118	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0799	.0115 / 2%	.0714 / 80%	.0339 / 18%

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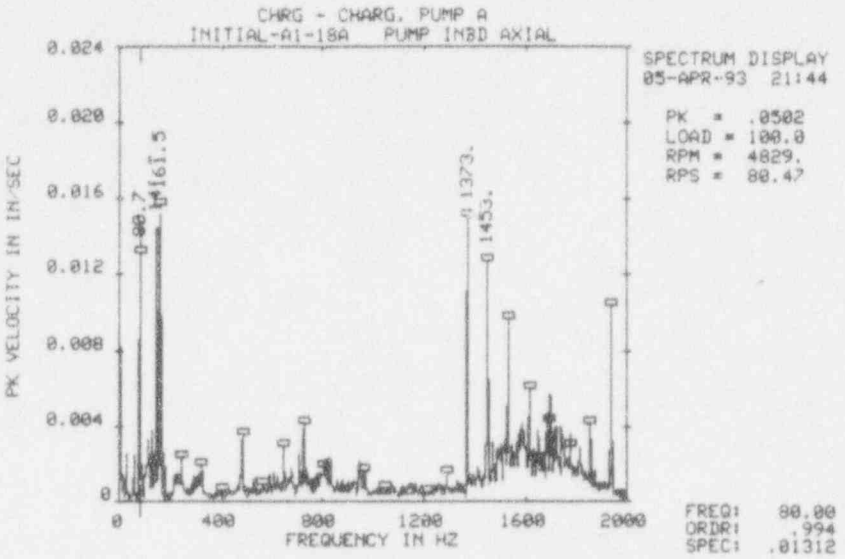

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-18A --> PUMP INBD AXIAL
Date/Time: 05-APR-93 21:44:12 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0139	1.00	13	1588.89	.0047	19.74
2	132.04	.0038	1.64	14	1615.48	.0062	20.07
3	146.93	.0150	1.83	15	1649.00	.0042	20.49
4	161.47	.0176	2.01	16	1686.46	.0053	20.96
5	484.08	.0039	6.02	17	1698.65	.0066	21.11
6	726.58	.0045	9.03	18	1714.08	.0044	21.30
7	1372.56	.0151	17.06	19	1723.37	.0044	21.41
8	1453.33	.0137	18.06	20	1743.39	.0044	21.66
9	1534.06	.0106	19.06	21	1746.33	.0040	21.70
10	1566.34	.0037	19.46	22	1776.60	.0039	22.08
11	1575.75	.0038	19.58	23	1857.01	.0043	23.08
12	1583.35	.0041	19.68	24	1937.71	.0104	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0502	.0080 / 3%	.0270 / 29%	.0416 / 69%

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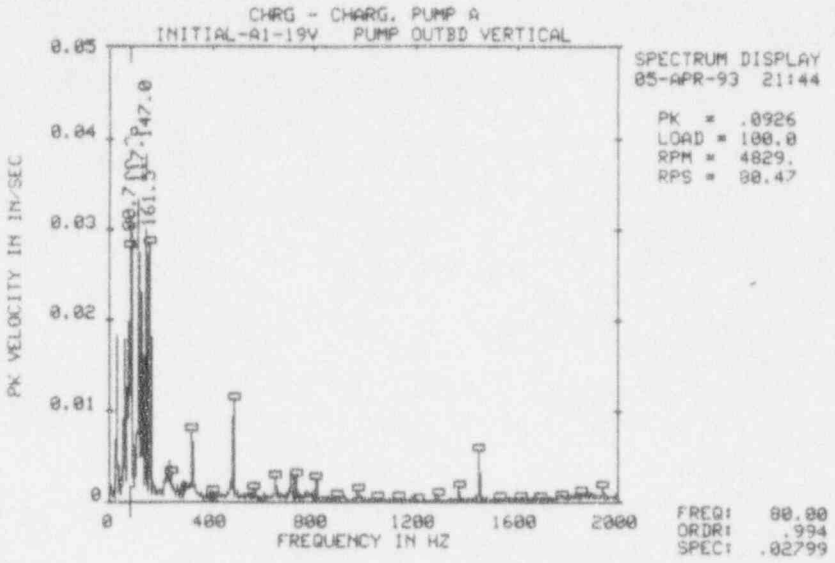

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-19V --> PUMP OUTBD VERTICAL
Date/Time: 05-APR-93 21:44:32 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0189	.37	13	161.52	.0316	2.01
2	43.54	.0028	.54	14	219.16	.0035	2.72
3	51.09	.0026	.63	15	228.47	.0036	2.84
4	58.98	.0200	.73	16	234.33	.0047	2.91
5	73.37	.0215	.91	17	242.84	.0033	3.02
6	80.75	.0297	1.00	18	323.01	.0082	4.01
7	88.19	.0354	1.10	19	471.25	.0028	5.86
8	102.42	.0061	1.27	20	484.59	.0115	6.02
9	117.93	.0341	1.47	21	646.12	.0032	8.03
10	126.22	.0063	1.57	22	707.08	.0029	8.79
11	131.95	.0236	1.64	23	726.76	.0031	9.03
12	146.97	.0394	1.83	24	1453.65	.0065	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0926	.0328 / 13%	.0456 / 24%	.0736 / 63%

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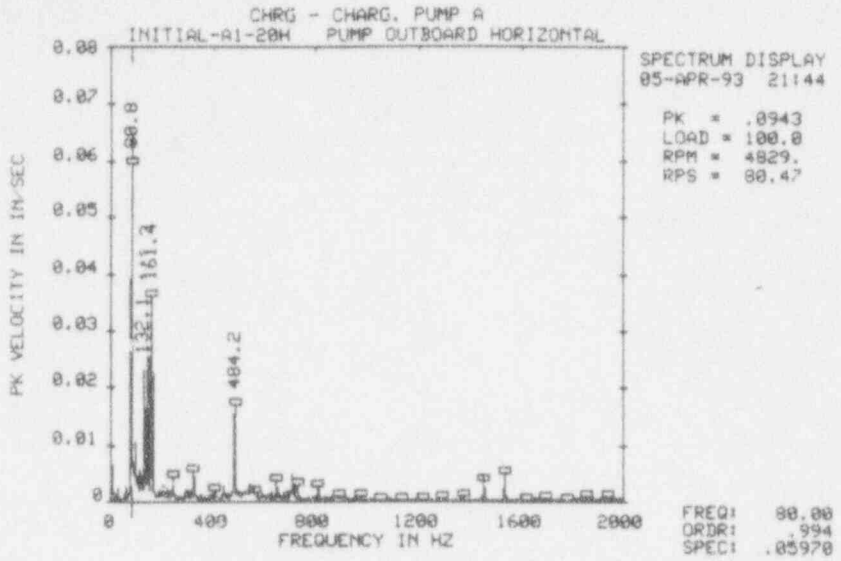

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 05-APR-93 21:44:52 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	58.95	.0032	.73	13	242.02	.0044	3.01
2	80.77	.0635	1.00	14	322.98	.0055	4.01
3	86.37	.0078	1.07	15	440.39	.0027	5.47
4	96.71	.0114	1.20	16	484.24	.0182	6.02
5	103.14	.0055	1.28	17	543.34	.0034	6.75
6	117.84	.0058	1.46	18	550.99	.0034	6.85
7	121.36	.0042	1.51	19	646.14	.0042	8.03
8	132.14	.0236	1.64	20	708.09	.0050	8.80
9	146.92	.0370	1.83	21	726.64	.0033	9.03
10	161.43	.0408	2.01	22	807.44	.0026	10.03
11	168.88	.0025	2.10	23	1453.40	.0047	18.06
12	205.63	.0032	2.56	24	1534.08	.0055	19.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0943	.0074 / 1%	.0780 / 68%	.0524 / 31%

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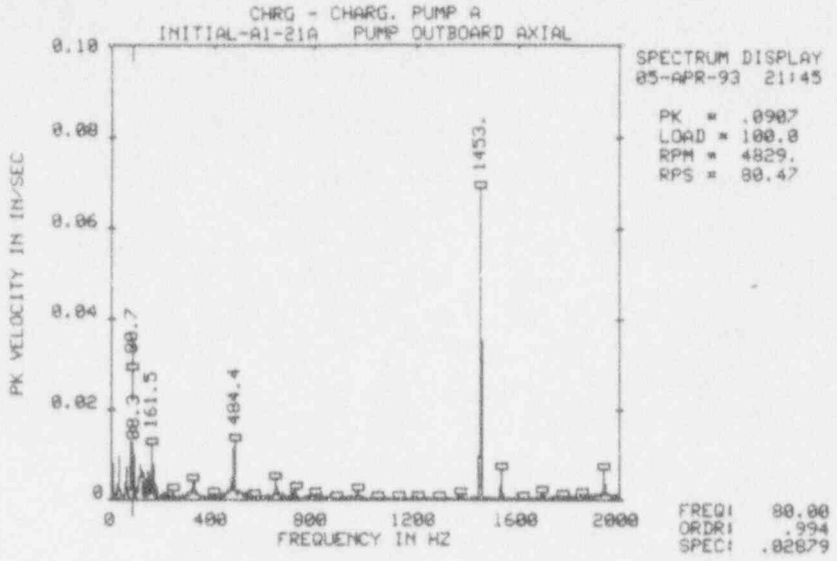

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-21A --> PUMP OUTBOARD AXIAL
Date/Time: 05-APR-93 21:45:12 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.54	.0097	.37	13	322.99	.0045	4.01
2	59.03	.0079	.73	14	330.58	.0022	4.11
3	73.47	.0046	.91	15	463.27	.0026	5.76
4	80.75	.0305	1.00	16	471.71	.0050	5.86
5	88.32	.0105	1.10	17	484.36	.0136	6.02
6	103.33	.0025	1.28	18	501.30	.0024	6.23
7	111.18	.0061	1.38	19	646.22	.0052	8.03
8	116.95	.0080	1.45	20	708.11	.0024	8.80
9	132.02	.0061	1.64	21	726.64	.0028	9.03
10	147.02	.0067	1.83	22	1453.50	.0765	18.06
11	161.47	.0137	2.01	23	1534.30	.0072	19.07
12	177.01	.0036	2.20	24	1938.26	.0071	24.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0907	.0152 / 3%	.0399 / 19%	.0801 / 78%

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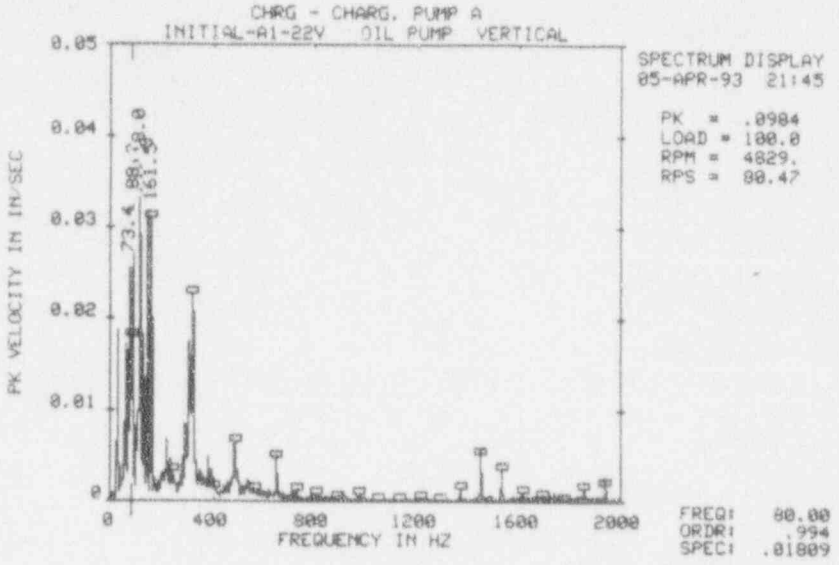

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-22V --> OIL PUMP VERTICAL
Date/Time: 05-APR-93 21:45:52 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0191	.37	13	228.45	.0041	2.84
2	59.02	.0191	.73	14	234.00	.0052	2.91
3	73.37	.0276	.91	15	278.95	.0054	3.47
4	80.79	.0193	1.00	16	293.64	.0098	3.65
5	88.21	.0341	1.10	17	300.63	.0070	3.74
6	103.49	.0092	1.29	18	308.33	.0188	3.83
7	118.01	.0358	1.47	19	323.35	.0245	4.02
8	123.99	.0058	1.54	20	329.15	.0058	4.09
9	131.95	.0190	1.64	21	381.87	.0051	4.75
10	146.85	.0332	1.82	22	483.71	.0079	6.01
11	161.50	.0344	2.01	23	646.15	.0059	8.03
12	220.33	.0069	2.74	24	1453.57	.0066	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0984	.0351 / 13%	.0482 / 24%	.0782 / 63%

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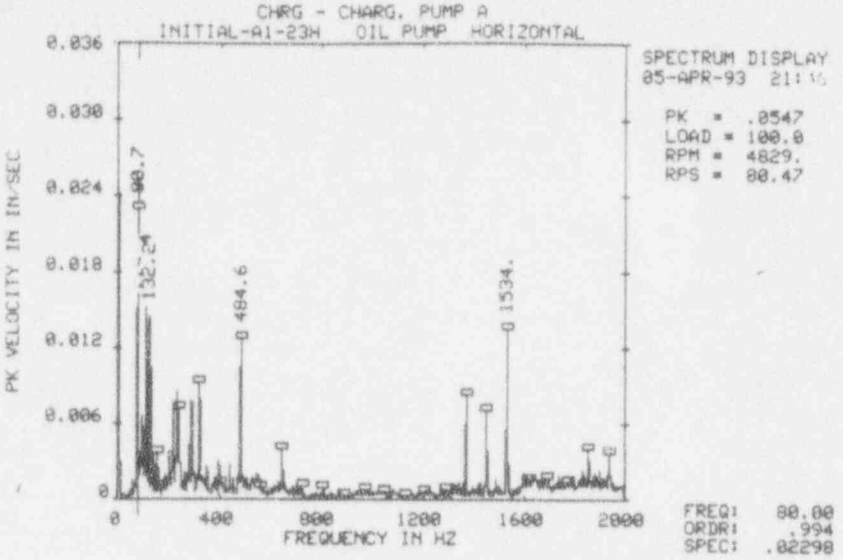

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-23H --> OIL PUMP HORIZONTAL
Date/Time: 05-APR-93 21:46:20 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.74	.0243	1.00	13	242.31	.0072	3.01
2	88.35	.0039	1.10	14	279.24	.0046	3.47
3	96.35	.0041	1.20	15	293.73	.0091	3.65
4	103.08	.0068	1.28	16	323.09	.0096	4.01
5	117.42	.0152	1.46	17	396.90	.0033	4.93
6	132.21	.0146	1.64	18	484.57	.0130	6.02
7	147.21	.0036	1.83	19	646.06	.0044	8.03
8	161.51	.0040	2.01	20	1372.84	.0084	17.06
9	205.51	.0039	2.55	21	1453.54	.0080	18.06
10	220.20	.0071	2.74	22	1534.35	.0141	19.07
11	228.25	.0036	2.84	23	1857.22	.0040	23.08
12	235.09	.0085	2.92	24	1938.08	.0038	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0547	.0210 / 15%	.0321 / 34%	.0390 / 51%

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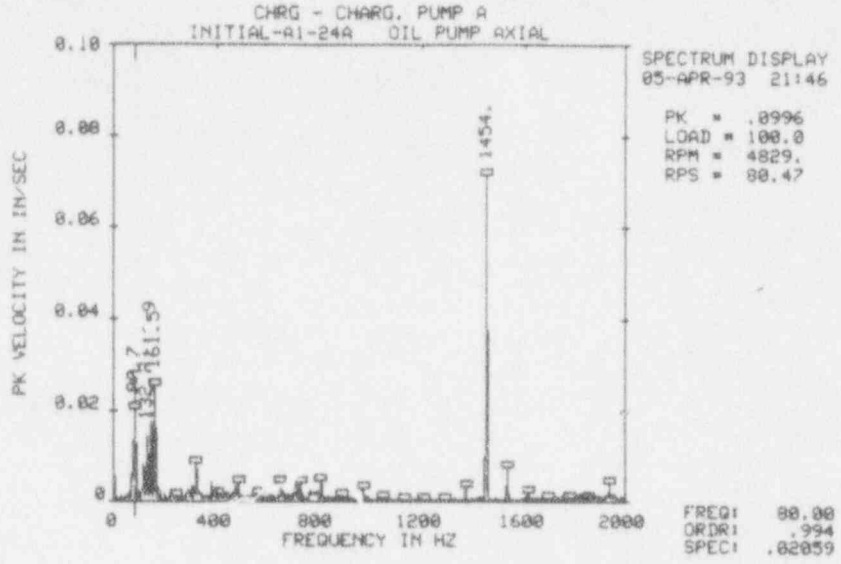

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-24A --> OIL PUMP AXIAL
Date/Time: 05-APR-93 21:46:36 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	73.49	.0101	.91	13	396.40	.0031	4.93
2	80.74	.0218	1.00	14	471.42	.0037	5.86
3	88.15	.0134	1.10	15	484.60	.0044	6.02
4	118.03	.0088	1.47	16	646.14	.0051	8.03
5	132.22	.0146	1.64	17	708.11	.0042	8.80
6	146.88	.0288	1.83	18	726.64	.0046	9.03
7	161.49	.0282	2.01	19	807.64	.0049	10.04
8	176.84	.0029	2.20	20	969.26	.0031	12.04
9	293.67	.0028	3.65	21	1372.75	.0034	17.06
10	308.37	.0035	3.83	22	1453.53	.0801	18.06
11	322.97	.0088	4.01	23	1534.26	.0081	19.07
12	381.74	.0043	4.74	24	1937.96	.0043	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0996	.0102 / 1%	.0409 / 17%	.0902 / 82%

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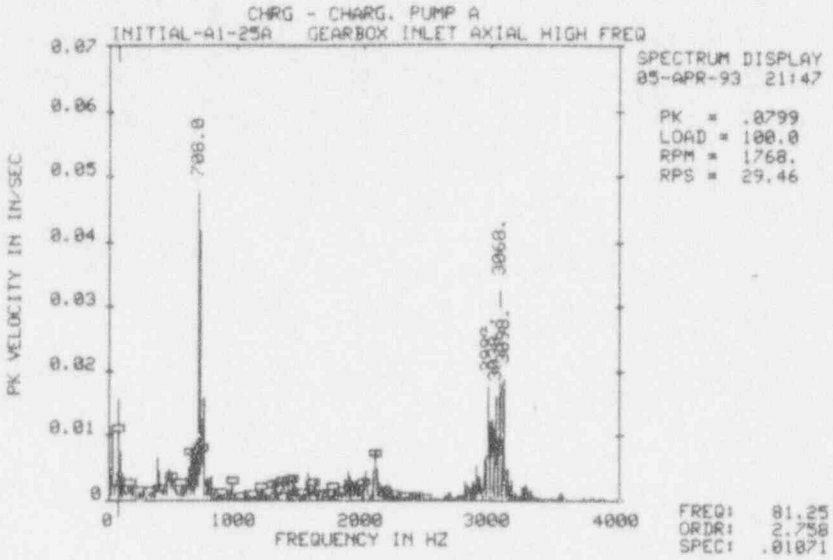

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-25A --> GEARBOX INLET AXIAL HIGH FREQ
Date/Time: 05-APR-93 21:47:04 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.54	.0120	1.00	13	796.82	.0043	27.04
2	59.60	.0047	2.02	14	1888.01	.0045	64.08
3	80.49	.0108	2.73	15	2018.31	.0044	68.50
4	110.40	.0046	3.75	16	2097.24	.0084	71.18
5	383.82	.0074	13.03	17	2891.20	.0059	98.12
6	471.19	.0053	15.99	18	2950.00	.0063	100.12
7	485.48	.0043	16.48	19	2979.63	.0185	101.13
8	619.81	.0052	21.04	20	3009.23	.0144	102.13
9	647.88	.0094	21.99	21	3038.65	.0165	103.13
10	678.78	.0103	23.04	22	3068.24	.0325	104.13
11	708.03	.0503	24.03	23	3097.58	.0207	105.13
12	737.30	.0158	25.02	24	3127.18	.0053	106.13

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0799	Undefined / 0%	.0775 / 94%	.0165 / 4%

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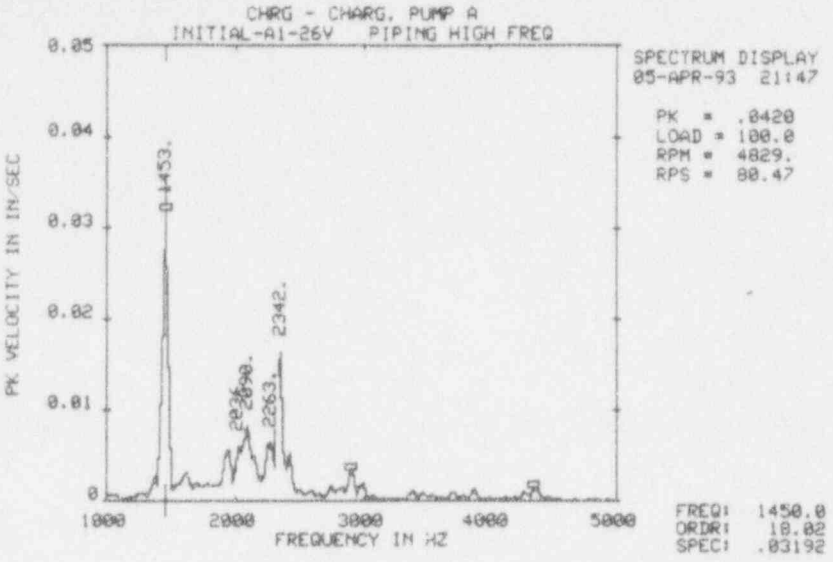

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Initial-A1-26V --> PIPING HIGH FREQ
Date/Time: 05-APR-93 21:47:36 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1377.90	.0028	17.12	13	2420.16	.0054	30.07
2	1453.09	.0322	18.06	14	2505.80	.0014	31.14
3	1615.07	.0035	20.07	15	2586.14	.0013	32.14
4	1710.84	.0021	21.26	16	2742.79	.0018	34.08
5	1786.86	.0021	22.20	17	2820.17	.0016	35.04
6	1860.98	.0020	23.12	18	2906.70	.0036	36.12
7	1937.29	.0065	24.07	19	2988.80	.0021	37.14
8	2035.84	.0067	25.30	20	3390.68	.0012	42.13
9	2090.08	.0092	25.97	21	3713.35	.0010	46.14
10	2137.98	.0057	26.57	22	3877.54	.0013	48.18
11	2262.87	.0073	28.12	23	4279.79	.0010	53.18
12	2341.66	.0176	29.10	24	4359.37	.0017	54.17

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0420	Undefined / 0%	Undefined / 0%	Undefined / 0%

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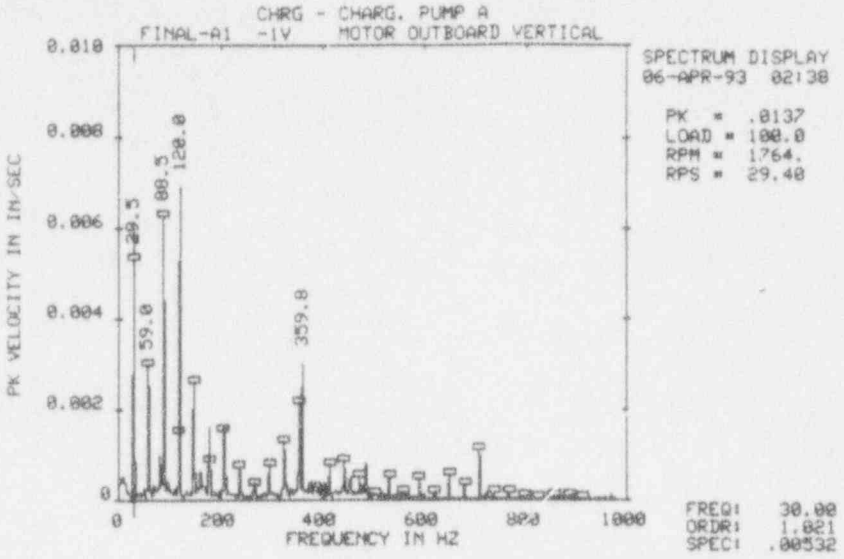

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -1V --> MOTOR OUTBOARD VERTICAL
Date/Time: 06-APR-93 02:38:16 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	9.35	.0006	.32	13	295.10	.0008	10.04
2	29.49	.0059	1.00	14	323.24	.0014	11.00
3	59.00	.0031	2.01	15	353.89	.0022	12.04
4	80.76	.0011	2.75	16	359.81	.0031	12.24
5	88.50	.0064	3.01	17	412.91	.0008	14.05
6	119.95	.0069	4.08	18	442.27	.0009	15.05
7	147.70	.0026	5.02	19	454.59	.0006	15.46
8	161.73	.0007	5.50	20	471.89	.0006	16.05
9	179.00	.0016	6.09	21	484.27	.0009	16.47
10	208.13	.0019	7.08	22	530.82	.0006	18.06
11	236.62	.0008	8.05	23	648.78	.0005	22.07
12	239.46	.0006	8.15	24	707.83	.0011	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0137	.0011 / 1%	.0108 / 63%	.0083 / 37%

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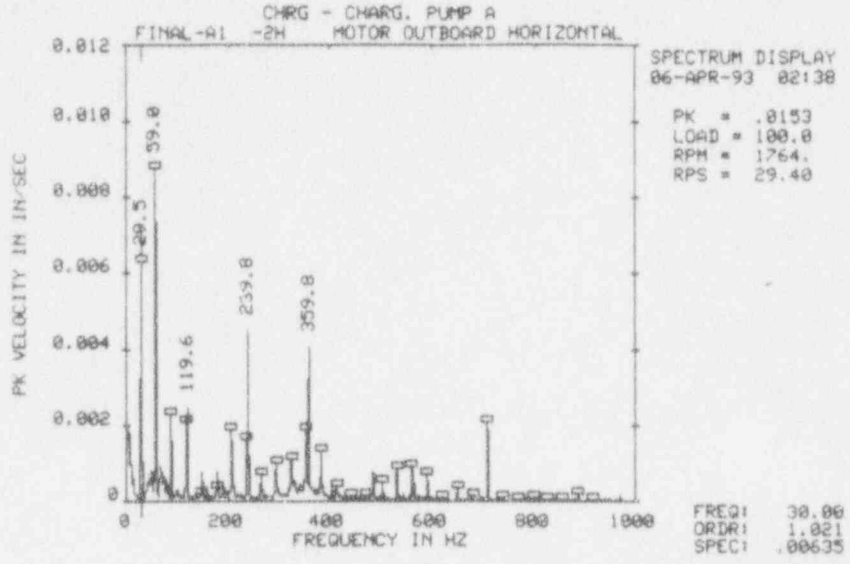

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -2H --> MOTOR OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 02:38:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0071	1.00	13	235.89	.0017	8.02
2	44.30	.0007	1.51	14	239.84	.0046	8.16
3	51.73	.0009	1.76	15	265.51	.0008	9.03
4	59.01	.0090	2.01	16	294.81	.0010	10.03
5	69.21	.0010	2.35	17	324.38	.0013	11.04
6	74.04	.0008	2.52	18	353.88	.0019	12.04
7	88.50	.0024	3.01	19	359.84	.0041	12.24
8	118.09	.0024	4.02	20	383.41	.0014	13.04
9	119.56	.0027	4.07	21	484.35	.0009	16.48
10	149.47	.0008	5.08	22	530.90	.0009	18.06
11	179.19	.0008	6.10	23	560.39	.0010	19.06
12	206.48	.0019	7.02	24	707.88	.0022	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0153	.0028 / 3%	.0126 / 68%	.0083 / 29%

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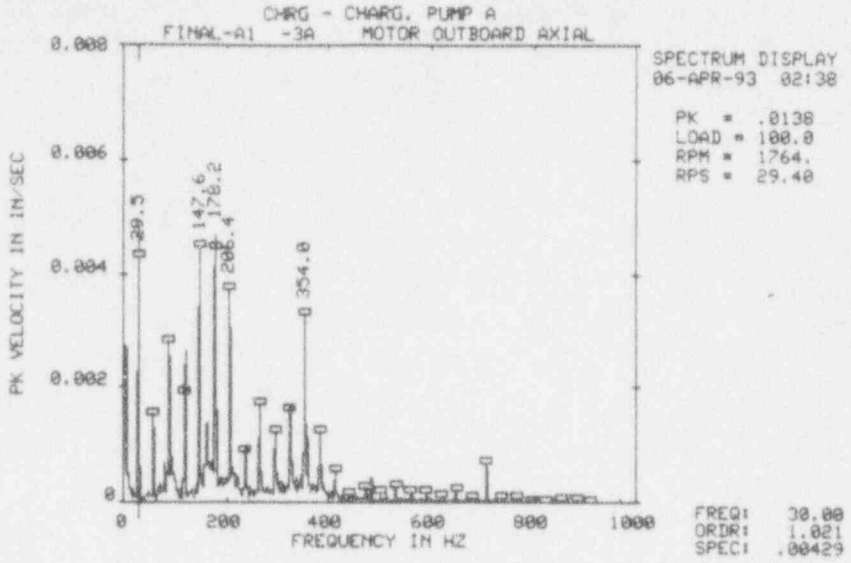

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -3A --> MOTOR OUTBOARD AXIAL
Date/Time: 06-APR-93 02:38:49 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	9.40	.0006	.32	13	206.44	.0038	7.02
2	29.49	.0048	1.00	14	213.20	.0007	7.25
3	59.03	.0016	2.01	15	236.93	.0011	8.06
4	80.63	.0008	2.74	16	265.51	.0019	9.03
5	89.17	.0030	3.03	17	295.34	.0013	10.05
6	94.61	.0008	3.22	18	324.43	.0019	11.04
7	119.60	.0028	4.07	19	346.94	.0005	11.80
8	147.57	.0045	5.02	20	353.96	.0033	12.04
9	161.92	.0016	5.51	21	359.70	.0012	12.24
10	168.16	.0007	5.72	22	383.48	.0013	13.05
11	171.89	.0008	5.85	23	412.96	.0006	14.05
12	178.17	.0053	6.06	24	707.89	.0007	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0138	.0033 / 6%	.0110 / 63%	.0076 / 31%

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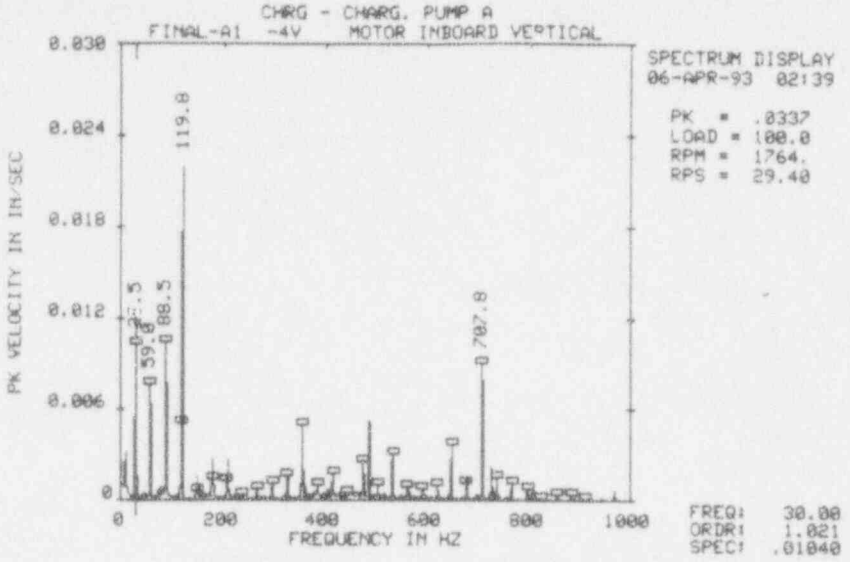

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -4V --> MOTOR INBOARD VERTICAL
Date/Time: 06-APR-93 02:39:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	10.59	.0038	.36	13	412.91	.0019	14.05
2	29.48	.0116	1.00	14	471.92	.0030	16.05
3	58.98	.0078	2.01	15	484.29	.0059	16.47
4	88.45	.0109	3.01	16	501.41	.0011	17.06
5	119.85	.0222	4.08	17	530.91	.0032	18.06
6	149.40	.0017	5.08	18	619.37	.0013	21.07
7	178.94	.0027	6.09	19	648.86	.0037	22.07
8	208.42	.0028	7.09	20	678.38	.0016	23.08
9	294.86	.0011	10.03	21	707.84	.0095	24.08
10	323.16	.0019	10.99	22	726.49	.0023	24.71
11	353.96	.0051	12.04	23	737.33	.0015	25.08
12	383.30	.0011	13.04	24	766.83	.0013	26.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0337	.0045 / 2%	.0226 / 45%	.0245 / 53%

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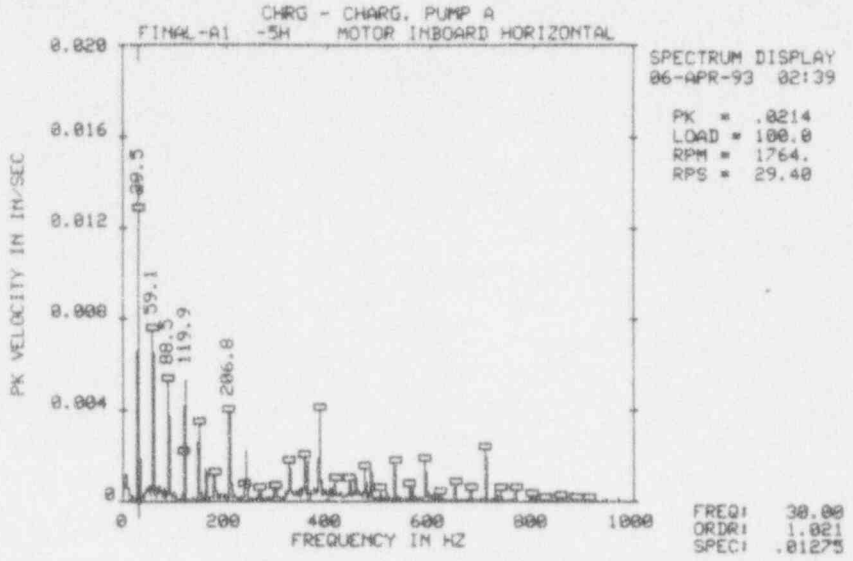

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -5H --> MOTOR INBOARD HORIZONTAL
Date/Time: 06-APR-93 02:39:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.64	.0014	.19	13	353.93	.0020	12.04
2	29.49	.0142	1.00	14	359.79	.0019	12.24
3	51.88	.0008	1.76	15	383.42	.0042	13.04
4	59.07	.0078	2.01	16	412.87	.0009	14.05
5	88.45	.0054	3.01	17	442.16	.0010	15.04
6	119.86	.0053	4.08	18	454.88	.0010	15.47
7	147.54	.0034	5.02	19	471.85	.0017	16.05
8	161.37	.0014	5.49	20	484.29	.0016	16.47
9	176.93	.0013	6.02	21	530.85	.0018	18.06
10	206.82	.0045	7.04	22	589.80	.0018	20.06
11	239.74	.0023	8.16	23	707.79	.0024	24.08
12	323.29	.0018	11.00	24	726.43	.0008	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0214	.0018 / 1%	.0192 / 81%	.0092 / 19%

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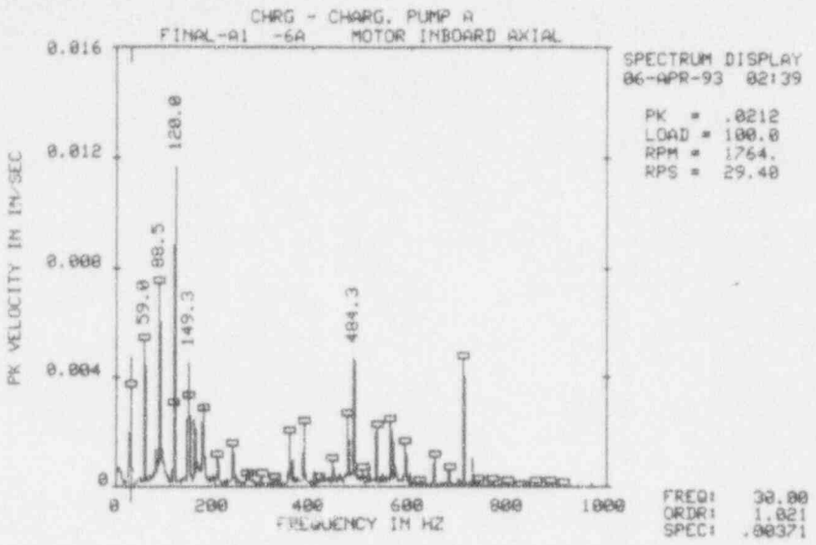

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -6A --> MOTOR INBOARD AXIAL
Date/Time: 06-APR-93 02:39:57 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0041	1.00	13	239.67	.0011	8.15
2	58.97	.0055	2.01	14	353.90	.0020	12.04
3	80.60	.0016	2.74	15	383.33	.0025	13.04
4	88.51	.0076	3.01	16	471.88	.0031	16.05
5	94.57	.0015	3.22	17	484.31	.0053	16.48
6	119.99	.0116	4.08	18	530.86	.0023	18.06
7	149.29	.0051	5.08	19	560.31	.0025	19.06
8	161.55	.0026	5.50	20	565.03	.0017	19.22
9	167.96	.0010	5.71	21	589.73	.0016	20.06
10	178.21	.0035	6.06	22	648.79	.0011	22.07
11	206.16	.0011	7.01	23	707.80	.0048	24.08
12	235.88	.0016	8.02	24	726.43	.0010	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0212	.0013 / 0%	.0143 / 45%	.0156 / 54%

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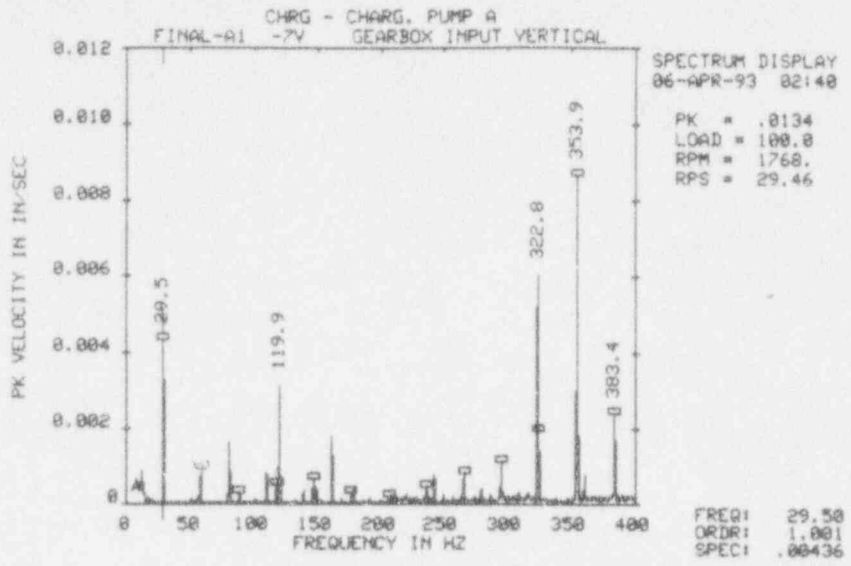

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -7V --> GEARBOX INPUT VERTICAL
Date/Time: 06-APR-93 02:40:29 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.69	.0005	.19	13	147.34	.0007	5.00
2	6.74	.0006	.23	14	149.41	4.75E-04	5.07
3	7.68	.0007	.26	15	161.42	.0018	5.48
4	8.28	.0007	.28	16	235.87	4.67E-04	8.01
5	10.74	5.00E-04	.36	17	242.13	.0008	8.22
6	12.15	.0009	.41	18	265.37	.0008	9.01
7	29.49	.0044	1.00	19	294.89	.0011	10.01
8	58.99	.0010	2.00	20	322.83	.0063	10.96
9	80.71	.0019	2.74	21	324.38	.0020	11.01
10	110.20	.0009	3.74	22	353.87	.0088	12.01
11	117.94	.0005	4.00	23	359.80	.0008	12.21
12	119.94	.0031	4.07	24	383.35	.0025	13.01

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0134	.0019 / 2%	.0103 / 59%	.0084 / 39%

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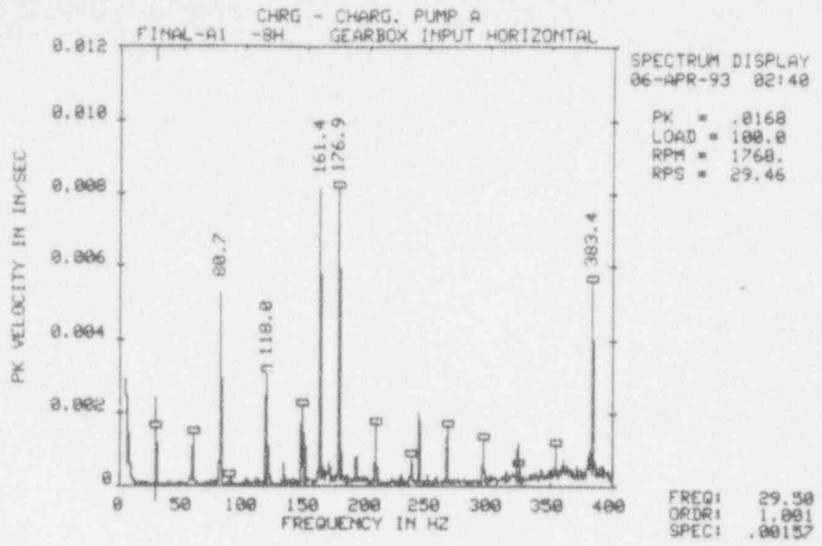

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -8H --> GEARBOX INPUT HORIZONTAL
Date/Time: 06-APR-93 02:40:47 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	7.19	.0016	.24	13	206.43	.0017	7.01
2	29.50	.0016	1.00	14	235.94	.0008	8.01
3	58.99	.0015	2.00	15	242.13	.0021	8.22
4	80.71	.0060	2.74	16	265.41	.0017	9.01
5	117.95	.0031	4.00	17	294.87	.0013	10.01
6	119.96	.0011	4.07	18	322.83	.0012	10.96
7	147.28	.0024	5.00	19	353.90	.0011	12.01
8	149.44	.0015	5.07	20	360.06	.0007	12.22
9	161.42	.0082	5.48	21	380.20	.0009	12.90
10	176.93	.0082	6.01	22	381.55	.0010	12.95
11	178.87	.0010	6.07	23	383.39	.0057	13.01
12	190.78	.0009	6.47	24	385.67	.0008	13.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0168	.0036 / 5%	.0112 / 45%	.0119 / 50%

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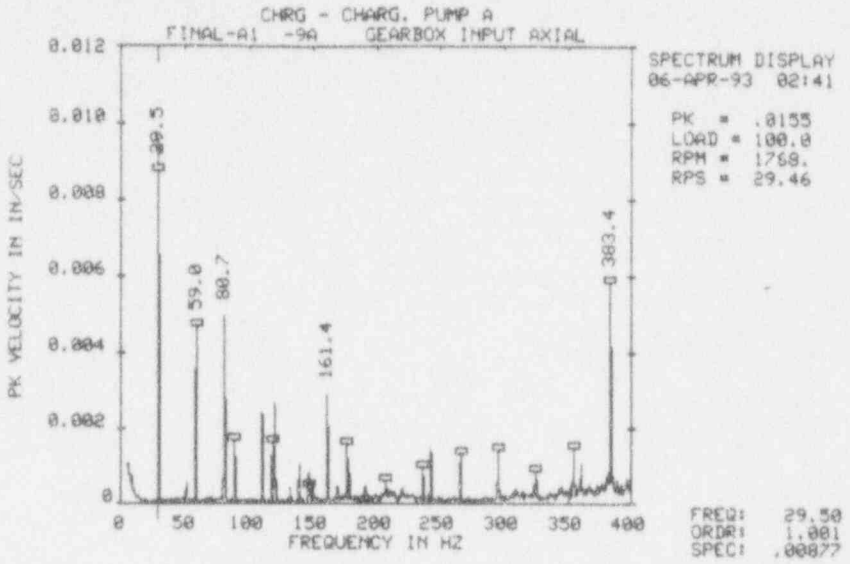

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHAF PUMP A
Meas. Point: Final-A1 -9A --> GEARBOX INPUT AXIAL
Date/Time: 06-APR-93 02:41:03 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.79	.0012	.20	13	176.94	.0016	6.01
2	8.22	.0009	.28	14	178.88	.0008	6.07
3	29.49	.0088	1.00	15	235.94	.0010	8.01
4	58.98	.0047	2.00	16	242.14	.0016	8.22
5	80.71	.0057	2.74	17	265.42	.0013	9.01
6	88.43	.0017	3.00	18	294.90	.0014	10.01
7	110.21	.0028	3.74	19	324.41	.0009	11.01
8	117.95	.0017	4.00	20	353.87	.0015	12.01
9	119.95	.0027	4.07	21	359.84	.0011	12.21
10	139.71	.0012	4.74	22	381.70	.0009	12.95
11	146.74	.0009	4.98	23	383.40	.0059	13.01
12	161.43	.0029	5.48	24	385.16	.0008	13.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0155	.0021 / 2%	.0121 / 61%	.0094 / 37%

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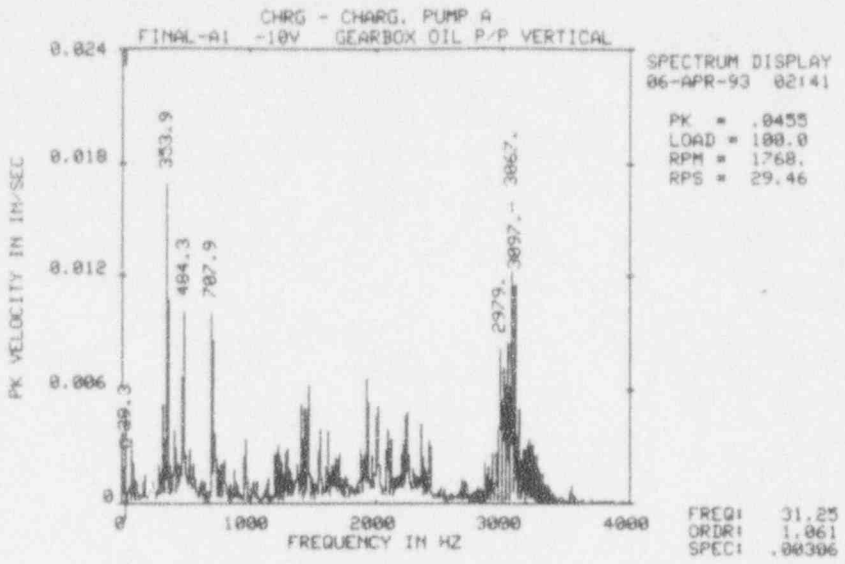

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -10V --> GEARBOX OIL P/P VERTICAL
Date/Time: 06-APR-93 02:41:25 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	322.80	.0056	10.96	13	2016.79	.0055	68.45
2	353.92	.0185	12.01	14	2095.46	.0041	71.12
3	412.64	.0039	14.00	15	2241.17	.0054	76.06
4	484.25	.0118	16.44	16	2359.11	.0048	80.07
5	707.85	.0104	24.02	17	2420.81	.0035	82.16
6	726.49	.0038	24.66	18	2978.95	.0089	101.10
7	1415.93	.0060	48.06	19	3008.41	.0077	102.10
8	1451.85	.0053	49.27	20	3037.76	.0085	103.10
9	1474.53	.0063	50.04	21	3067.28	.0165	104.10
10	1563.18	.0039	53.05	22	3096.82	.0135	105.10
11	1622.72	.0042	55.07	23	3126.30	.0051	106.10
12	1938.44	.0066	65.79	24	3214.81	.0036	109.11

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0455	Undefined / 0%	.0424 / 87%	.0164 / 13%

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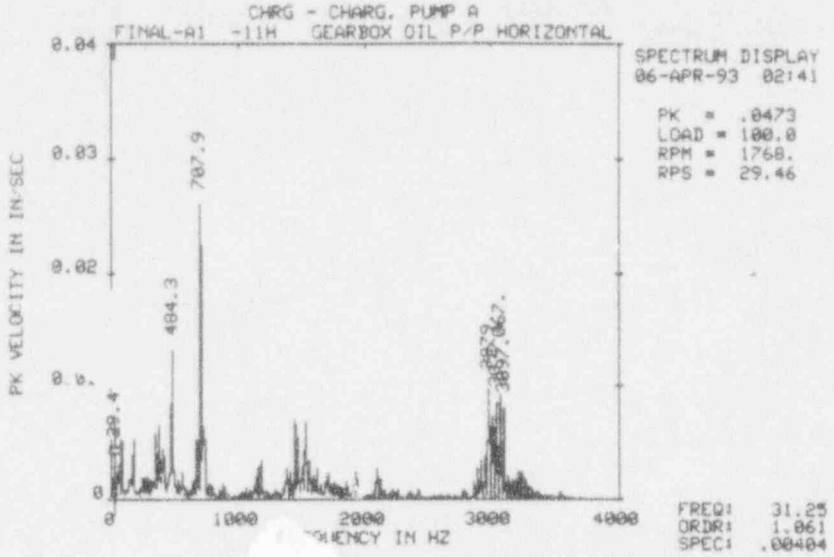

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -11H --> GEARBOX OIL P/P HORIZONTAL
Date/Time: 06-APR-93 02:41:42 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.40	.0043	1.00	13	1452.27	.0077	49.29
2	58.48	.0034	1.98	14	1474.54	.0054	50.04
3	80.77	.0064	2.74	15	1503.65	.0032	51.03
4	176.65	.0055	6.00	16	1533.45	.0074	52.04
5	353.98	.0064	12.01	17	1563.55	.0034	53.07
6	383.18	.0070	13.00	18	2919.95	.0035	99.10
7	410.78	.0047	13.94	19	2949.36	.0038	100.10
8	484.27	.0152	16.44	20	2978.78	.0112	101.10
9	678.08	.0061	23.01	21	3008.21	.0078	102.10
10	707.88	.0271	24.02	22	3037.79	.0085	103.10
11	727.73	.0071	24.70	23	3067.23	.0123	104.10
12	1179.63	.0035	40.04	24	3096.76	.0093	105.10

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0473	Undefined / 0%	.0435 / 84%	.0185 / 15%

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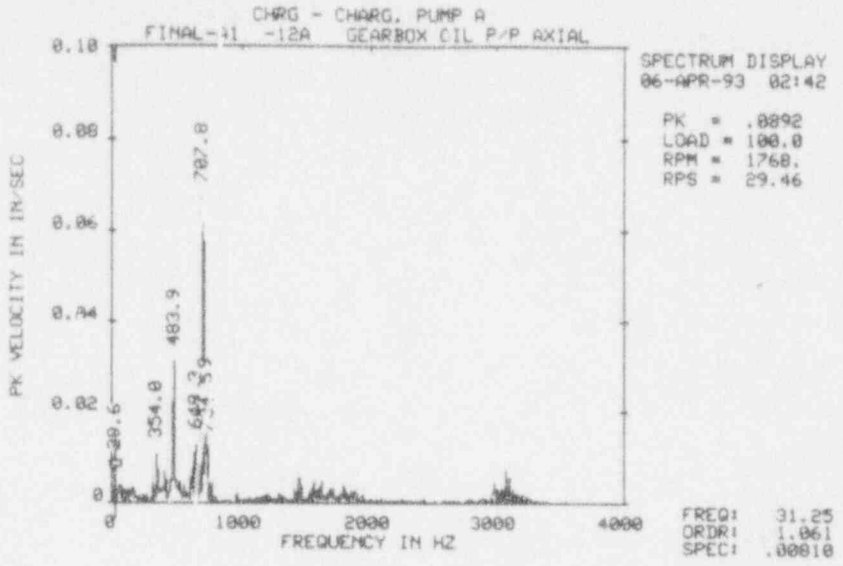

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -12A --> GEARBOX OIL P/P AXIAL
Date/Time: 06-APR-93 02:42:00 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.64	.0085	1.01	13	678.13	.0102	23.01
2	59.33	.0043	2.01	14	707.78	.0701	24.02
3	80.21	.0040	2.72	15	726.88	.0167	24.67
4	322.91	.0046	10.96	16	734.52	.0145	24.93
5	354.04	.0114	12.02	17	767.01	.0043	26.03
6	412.50	.0068	14.00	18	1452.47	.0062	49.30
7	483.87	.0348	16.42	19	1563.00	.0049	53.05
8	510.09	.0046	17.31	20	1622.07	.0056	55.05
9	530.30	.0049	18.00	21	1798.65	.0039	61.04
10	563.69	.0039	19.13	22	2978.61	.0049	101.09
11	619.92	.0079	21.04	23	3067.05	.0074	104.09
12	648.32	.0135	22.00	24	3096.52	.0063	105.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0892	Undefined / 0%	.0805 / 81%	.0384 / 19%

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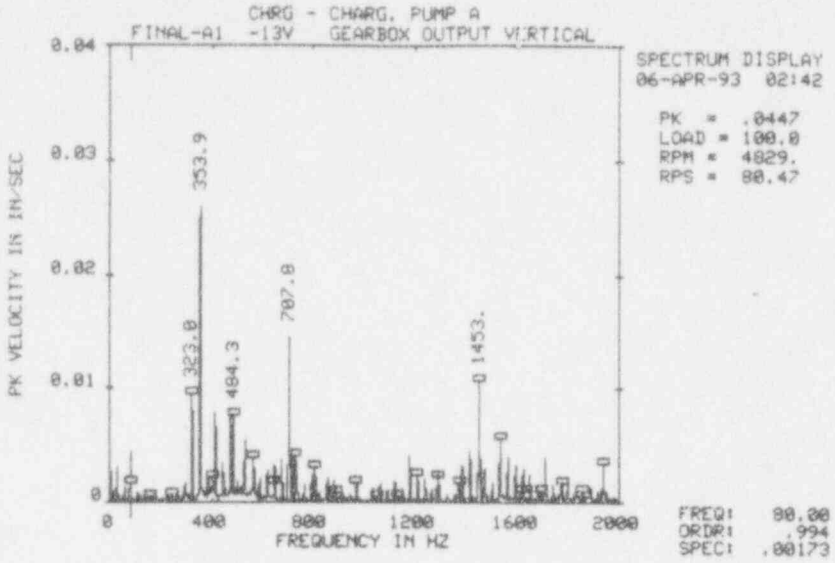

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -13V --> GEARBOX OUTPUT VERTICAL
Date/Time: 06-APR-93 02:42:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0032	.37	13	726.44	.0046	9.03
2	323.01	.0098	4.01	14	737.34	.0036	9.16
3	353.90	.0293	4.40	15	807.21	.0030	10.03
4	412.92	.0080	5.13	16	1179.62	.0042	14.66
5	442.28	.0034	5.50	17	1386.13	.0037	17.22
6	471.96	.0079	5.86	18	1415.54	.0045	17.59
7	484.30	.0081	6.02	19	1452.87	.0109	18.05
8	530.88	.0059	6.60	20	1533.59	.0064	19.06
9	564.77	.0040	7.02	21	1563.09	.0041	19.42
10	648.58	.0037	8.06	22	1592.68	.0033	19.79
11	678.37	.0041	8.43	23	1710.56	.0041	21.26
12	707.81	.0146	8.80	24	1937.13	.0035	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0447	.0045 / 1%	.0168 / 14%	.0412 / 85%

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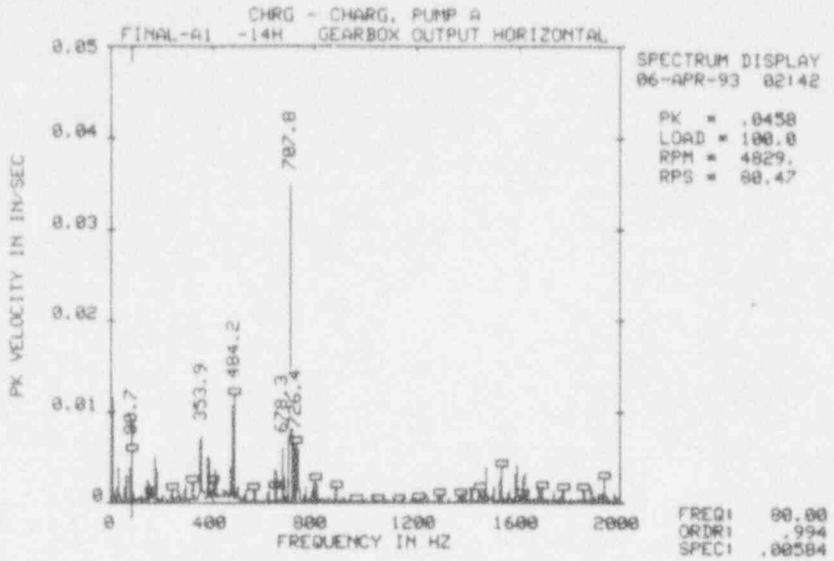

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -14H --> GEARBOX OUTPUT HORIZONTAL
Date/Time: 06-APR-93 02:42:42 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0039	.37	13	648.46	.0039	8.06
2	58.98	.0034	.73	14	678.29	.0063	8.43
3	80.72	.0062	1.00	15	707.76	.0352	8.79
4	148.04	.0027	1.84	16	726.35	.0075	9.03
5	176.95	.0053	2.20	17	737.28	.0061	9.16
6	323.37	.0025	4.02	18	796.36	.0024	9.90
7	353.92	.0082	4.40	19	807.16	.0025	10.03
8	383.59	.0058	4.77	20	1474.50	.0040	18.32
9	403.69	.0026	5.02	21	1533.55	.0046	19.06
10	412.67	.0036	5.13	22	1592.38	.0041	19.79
11	472.02	.0039	5.87	23	1621.93	.0032	20.15
12	484.24	.0125	6.02	24	1937.04	.0028	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0458	.0109 / 6%	.0174 / 14%	.0409 / 80%

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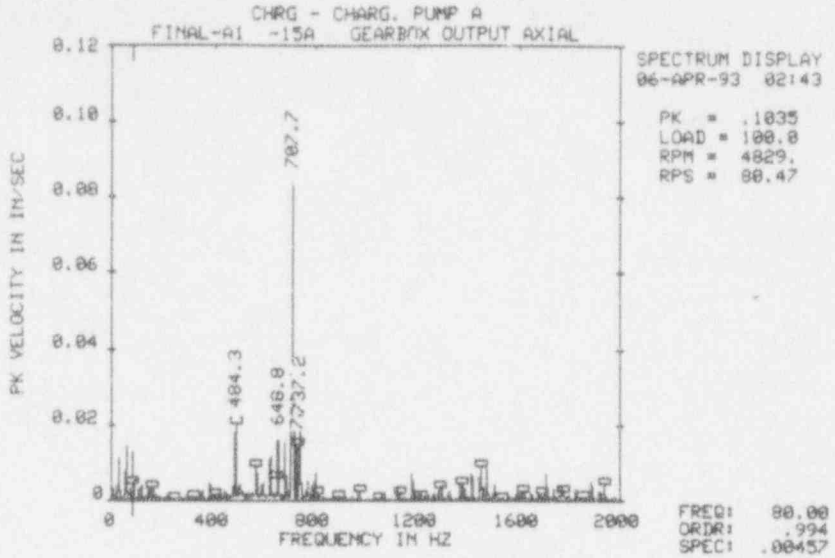

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -15A --> GEARBOX OUTPUT AXIAL
Date/Time: 06-APR-93 02:43:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0117	.37	13	737.23	.0193	9.16
2	58.98	.0162	.73	14	766.89	.0051	9.53
3	80.75	.0048	1.00	15	796.21	.0085	9.89
4	88.48	.0060	1.10	16	1179.58	.0071	14.66
5	383.49	.0053	4.77	17	1371.98	.0050	17.05
6	484.33	.0212	6.02	18	1415.57	.0076	17.59
7	564.84	.0092	7.02	19	1444.86	.0059	17.95
8	619.18	.0127	7.69	20	1452.67	.0093	18.05
9	648.75	.0188	8.06	21	1474.43	.0094	18.32
10	678.22	.0160	8.43	22	1710.35	.0070	21.25
11	707.74	.0841	8.79	23	1887.10	.0050	23.45
12	726.36	.0168	9.03	24	1936.99	.0049	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1035	.0204 / 4%	.0335 / 10%	.0958 / 86%

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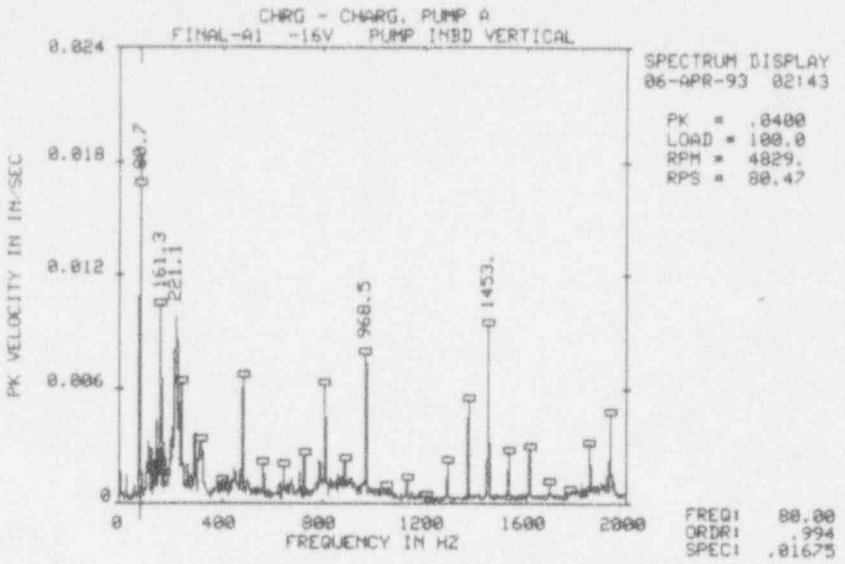

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -16V --> PUMP INBD VERTICAL
Date/Time: 06-APR-93 02:43:52 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.0177	1.00	13	311.39	.0035	3.87
2	118.13	.0034	1.47	14	316.54	.0032	3.93
3	132.13	.0029	1.64	15	321.77	.0034	4.00
4	146.69	.0047	1.82	16	484.14	.0072	6.02
5	161.32	.0121	2.00	17	806.93	.0064	10.03
6	177.35	.0031	2.20	18	968.47	.0087	12.03
7	201.12	.0038	2.50	19	1372.02	.0055	17.05
8	204.22	.0043	2.54	20	1452.83	.0095	18.05
9	221.07	.0110	2.75	21	1533.40	.0029	19.05
10	234.20	.0056	2.91	22	1614.13	.0031	20.06
11	242.24	.0064	3.01	23	1856.17	.0037	23.07
12	293.92	.0042	3.65	24	1936.82	.0050	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0400	.0027 / 0%	.0267 / 44%	.0297 / 55%

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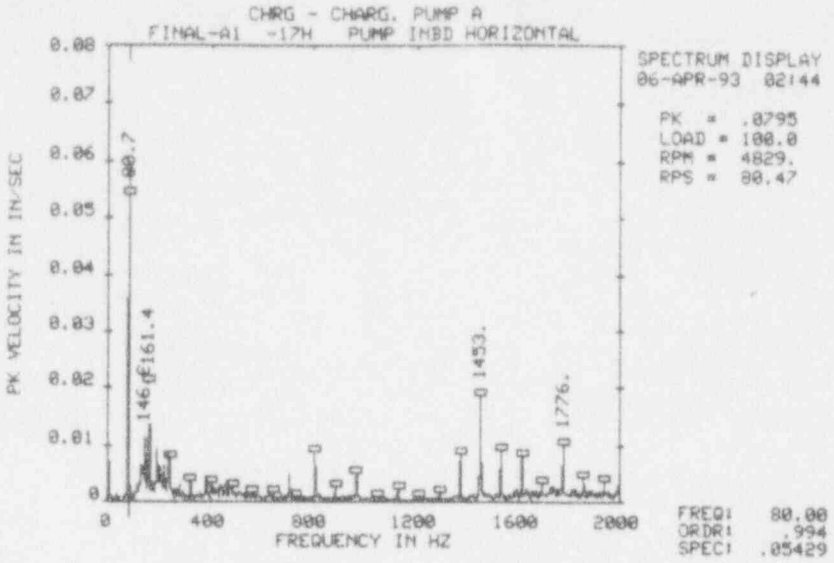

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -17H --> PUMP INBD HORIZONTAL
Date/Time: 06-APR-93 02:44:05 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.0572	1.00	13	242.24	.0079	3.01
2	126.09	.0040	1.57	14	383.54	.0044	4.77
3	133.47	.0071	1.66	15	403.87	.0040	5.02
4	138.80	.0070	1.72	16	707.84	.0050	8.80
5	146.75	.0120	1.82	17	807.04	.0090	10.03
6	161.39	.0241	2.01	18	968.54	.0056	12.04
7	171.03	.0042	2.13	19	1372.14	.0088	17.05
8	190.60	.0094	2.37	20	1452.86	.0188	18.05
9	198.02	.0066	2.46	21	1533.59	.0103	19.06
10	205.95	.0068	2.56	22	1614.02	.0089	20.06
11	219.13	.0069	2.72	23	1775.85	.0108	22.07
12	234.58	.0087	2.91	24	1856.39	.0052	23.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0795	.0075 / 1%	.0651 / 67%	.0450 / 32%

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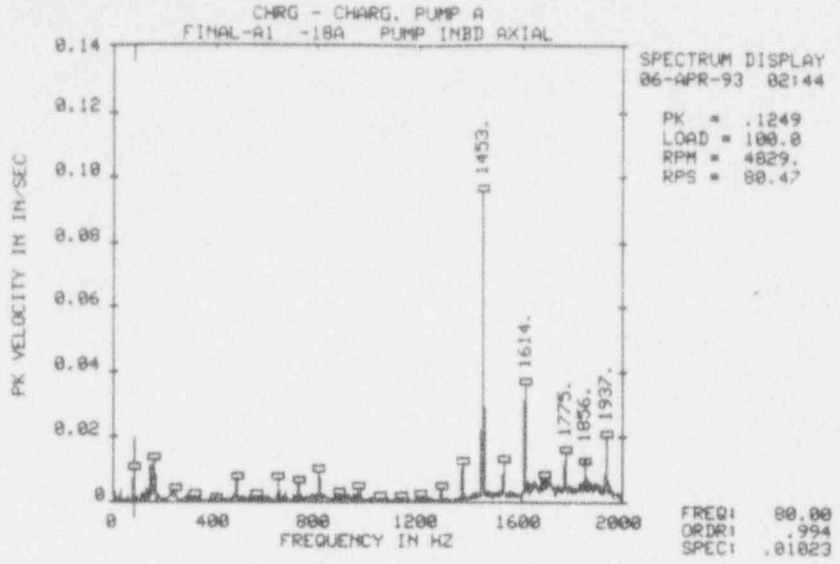

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -18A --> PUMP INBD AXIAL
Date/Time: 06-APR-93 02:44:18 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.72	.0108	1.00	13	1659.18	.0071	20.62
2	146.81	.0118	1.82	14	1684.03	.0084	20.93
3	161.40	.0148	2.01	15	1694.00	.0084	21.05
4	483.95	.0082	6.01	16	1699.22	.0082	21.11
5	645.68	.0076	8.02	17	1710.93	.0085	21.26
6	806.97	.0096	10.03	18	1718.40	.0070	21.35
7	1372.14	.0123	17.05	19	1775.42	.0156	22.06
8	1452.74	.0967	18.05	20	1846.36	.0075	22.94
9	1533.43	.0137	19.05	21	1856.00	.0149	23.06
10	1614.31	.0382	20.06	22	1866.28	.0078	23.19
11	1624.55	.0069	20.19	23	1878.82	.0072	23.35
12	1653.64	.0075	20.55	24	1937.13	.0208	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1249	.0052 / 0%	.0522 / 17%	.1134 / 82%

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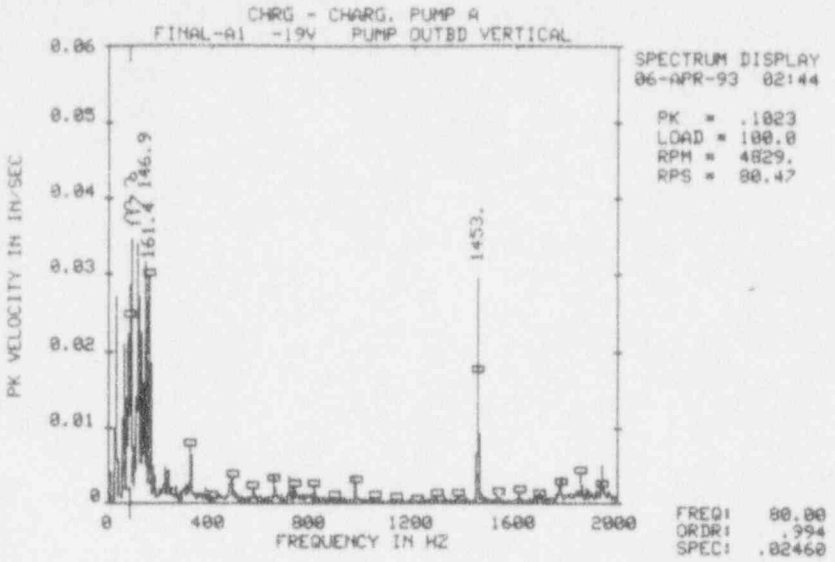

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -19V --> PUMP OUTBD VERTICAL
Date/Time: 06-APR-93 02:44:35 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.52	.0277	.37	13	176.64	.0052	2.20
2	58.94	.0235	.73	14	220.69	.0051	2.74
3	73.46	.0244	.91	15	233.94	.0049	2.91
4	80.79	.0263	1.00	16	322.87	.0078	4.01
5	88.15	.0363	1.10	17	484.07	.0040	6.02
6	102.75	.0073	1.28	18	645.95	.0040	8.03
7	110.99	.0157	1.38	19	707.28	.0036	8.79
8	117.79	.0341	1.46	20	968.53	.0035	12.04
9	131.93	.0232	1.64	21	1452.78	.0298	18.05
10	139.31	.0093	1.73	22	1775.66	.0037	22.06
11	146.91	.0405	1.83	23	1856.23	.0047	23.07
12	161.37	.0341	2.01	24	1936.87	.0054	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1023	.0413 / 16%	.0458 / 20%	.0816 / 64%

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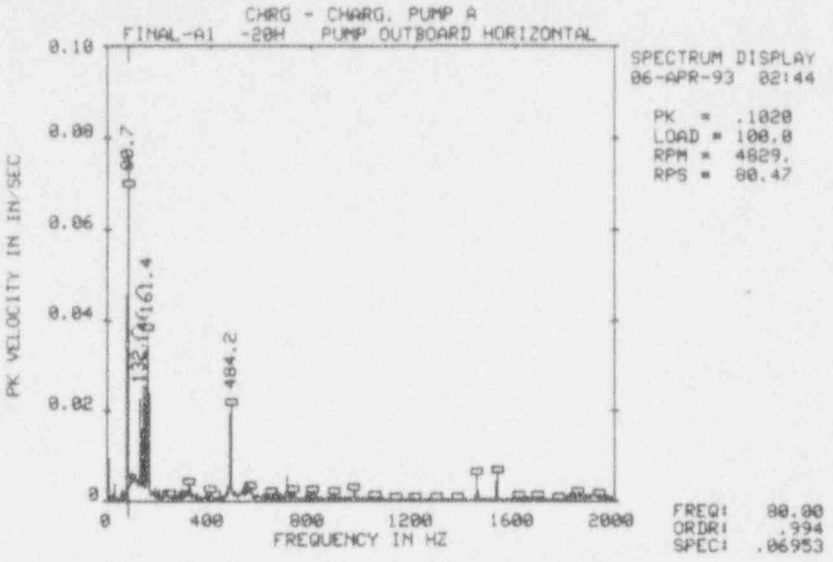

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 02:44:47 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.44	.0041	.37	13	191.02	.0032	2.37
2	58.90	.0030	.73	14	293.68	.0030	3.65
3	80.71	.0733	1.00	15	322.65	.0037	4.01
4	101.06	.0072	1.26	16	475.94	.0044	5.91
5	103.77	.0068	1.29	17	484.21	.0225	6.02
6	113.33	.0066	1.41	18	536.02	.0032	6.66
7	116.54	.0063	1.45	19	551.10	.0040	6.85
8	126.07	.0053	1.57	20	558.29	.0038	6.94
9	131.96	.0232	1.64	21	563.96	.0032	7.01
10	140.96	.0044	1.75	22	707.65	.0054	8.79
11	146.86	.0329	1.82	23	1452.72	.0060	18.05
12	161.40	.0428	2.01	24	1533.45	.0070	19.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1020	.0098 / 1%	.0878 / 74%	.0510 / 25%

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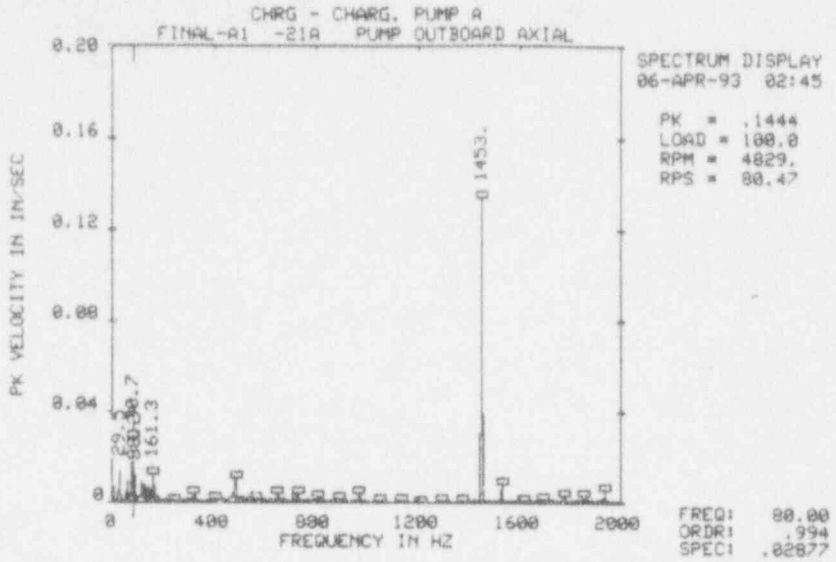

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -21A --> PUMP OUTBOARD AXIAL
Date/Time: 06-APR-93 02:45:03 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0140	.37	13	468.59	.0032	5.82
2	58.93	.0103	.73	14	472.01	.0040	5.87
3	73.42	.0058	.91	15	484.19	.0122	6.02
4	80.72	.0304	1.00	16	646.09	.0045	8.03
5	88.24	.0123	1.10	17	707.81	.0034	8.80
6	103.80	.0031	1.29	18	726.33	.0045	9.03
7	117.70	.0095	1.46	19	968.55	.0047	12.04
8	132.20	.0076	1.64	20	1452.69	.1347	18.05
9	146.92	.0068	1.83	21	1533.38	.0091	19.05
10	161.35	.0146	2.00	22	1775.45	.0035	22.06
11	176.95	.0033	2.20	23	1856.30	.0041	23.07
12	323.04	.0044	4.01	24	1936.80	.0063	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1444	.0190 / 2%	.0618 / 18%	.1291 / 80%

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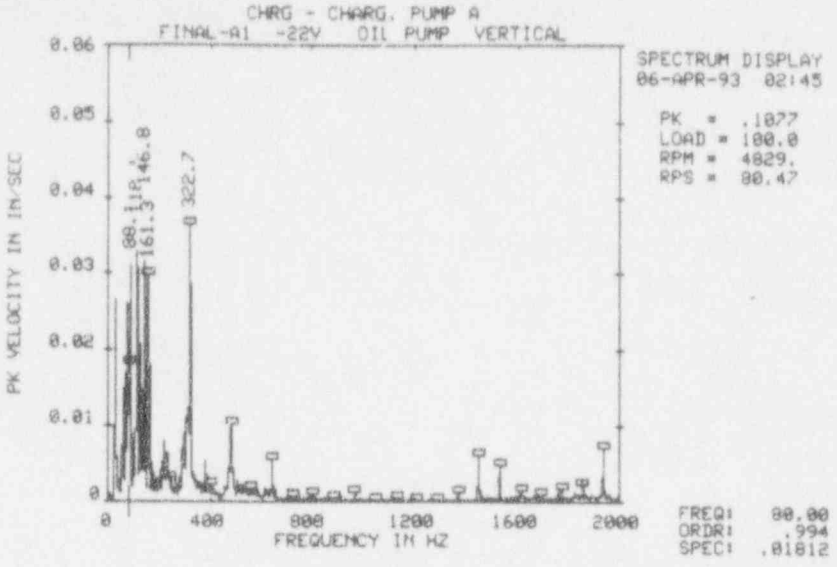

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -22V --> OIL PUMP VERTICAL
Date/Time: 06-APR-93 02:45:19 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0274	.37	13	234.42	.0066	2.91
2	59.00	.0165	.73	14	298.94	.0102	3.71
3	73.41	.0283	.91	15	313.68	.0143	3.90
4	80.72	.0[illegible]	1.00	16	322.71	.0367	4.01
5	88.11	.0325	1.09	17	381.43	.0061	4.74
6	103.38	.0094	1.28	18	476.12	.0060	5.92
7	118.14	.0372	1.47	19	483.94	.0116	6.01
8	131.94	.0213	1.64	20	491.45	.0048	6.11
9	146.81	.0417	1.82	21	645.35	.0056	8.02
10	161.25	.0353	2.00	22	1452.33	.0060	18.05
11	176.43	.0058	2.19	23	1533.09	.0051	19.05
12	219.33	.0082	2.73	24	1936.69	.0076	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1077	.0394 / 13%	.0569 / 28%	.0826 / 59%

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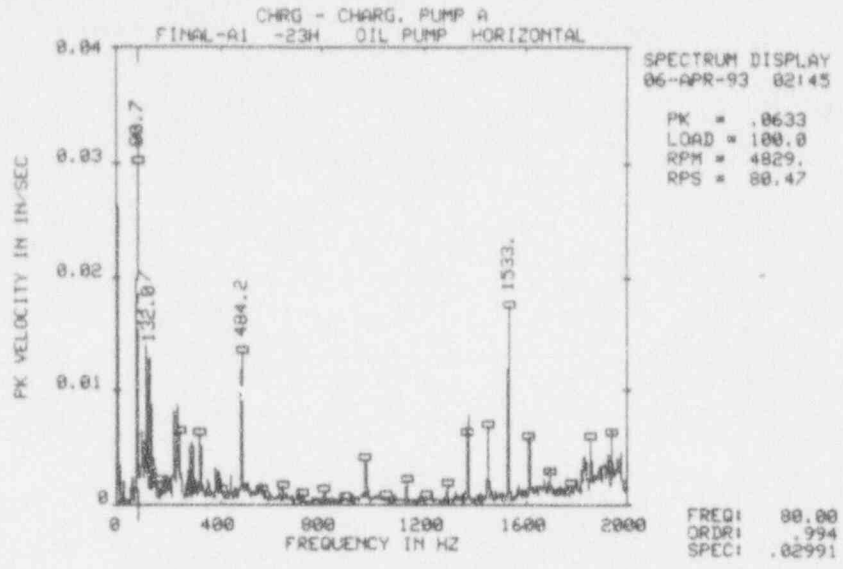

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -23H --> OIL PUMP HORIZONTAL
Date/Time: 06-APR-93 02:45:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.65	.0313	1.00	13	968.29	.0041	12.03
2	101.56	.0071	1.26	14	1371.68	.0083	17.04
3	117.69	.0142	1.46	15	1452.33	.0069	18.05
4	132.00	.0130	1.64	16	1533.08	.0180	19.05
5	147.36	.0041	1.83	17	1613.84	.0069	20.05
6	220.18	.0083	2.74	18	1828.89	.0048	22.73
7	234.78	.0088	2.92	19	1855.94	.0064	23.06
8	242.15	.0064	3.01	20	1908.94	.0042	23.72
9	278.84	.0060	3.46	21	1921.32	.0052	23.87
10	293.47	.0060	3.65	22	1936.36	.0074	24.06
11	322.95	.0063	4.01	23	1961.28	.0047	24.37
12	484.24	.0141	6.02	24	1974.23	.0048	24.53

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0633	.0234 / 14%	.0403 / 41%	.0428 / 46%

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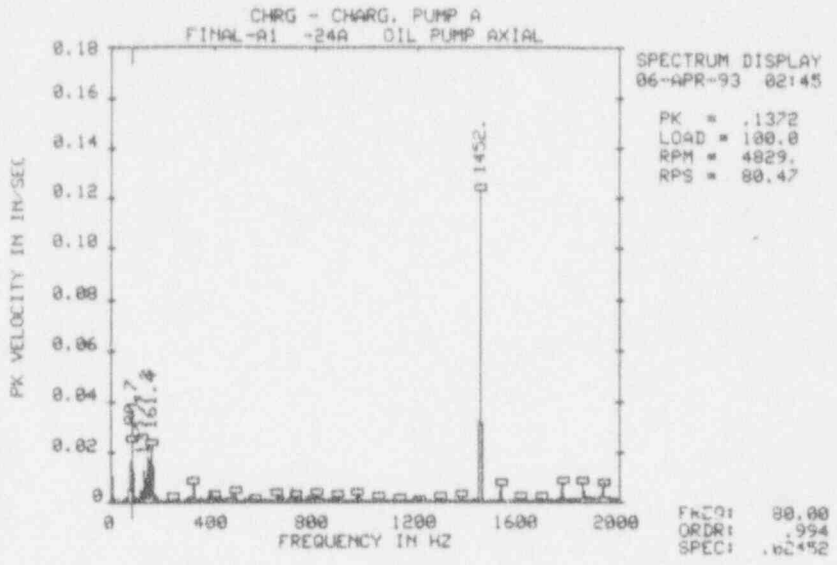

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -24A --> OIL PUMP AXIAL
Date/Time: 06-APR-93 02:45:47 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	73.45	.0089	.91	13	484.03	.0044	6.01
2	80.67	.0257	1.00	14	707.76	.0059	8.79
3	88.11	.0126	1.09	15	726.29	.0031	9.03
4	117.14	.0052	1.40	16	796.52	.0032	9.90
5	132.02	.0130	1.64	17	806.91	.0031	10.03
6	146.79	.0253	1.82	18	968.56	.0034	12.04
7	161.44	.0257	2.01	19	1452.46	.1234	18.05
8	176.77	.0034	2.20	20	1533.13	.0075	19.05
9	322.75	.0077	4.01	21	1775.19	.0074	22.06
10	381.55	.0054	4.74	22	1855.90	.0081	23.06
11	396.12	.0031	4.92	23	1878.75	.0031	23.35
12	471.16	.0031	5.85	24	1936.39	.0084	24.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1372	.0122 / 1%	.0648 / 22%	.1204 / 77%

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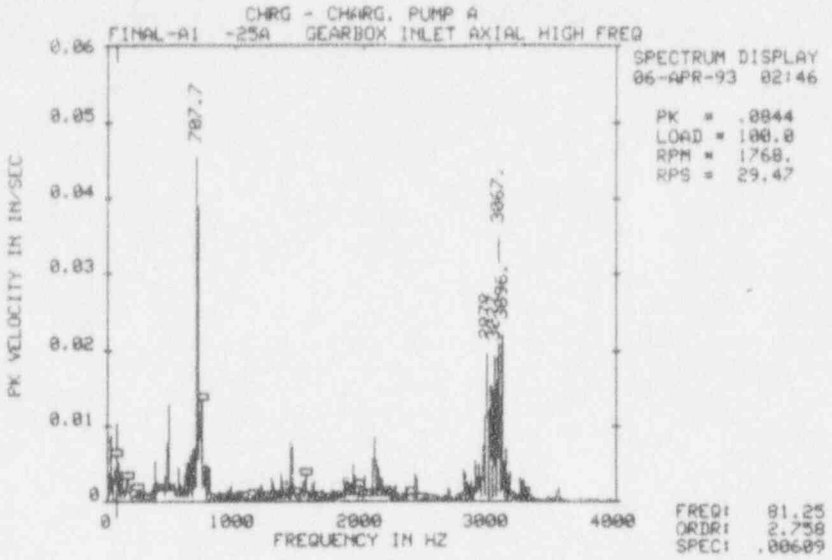

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -25A --> GEARBOX INLET AXIAL HIGH FREQ
Date/Time: 06-APR-93 02:46:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0091	1.00	13	796.64	.0052	27.04
2	82.27	.0062	2.79	14	1452.48	.0084	49.30
3	382.84	.0055	12.99	15	2096.88	.0099	71.16
4	469.01	.0050	15.92	16	2889.87	.0060	98.08
5	484.38	.0150	16.44	17	2919.69	.0050	99.09
6	619.78	.0051	21.03	18	2948.60	.0076	100.07
7	648.98	.0062	22.03	19	2978.30	.0224	101.08
8	678.13	.0081	23.01	20	3007.75	.0160	102.08
9	707.73	.0471	24.02	21	3037.16	.0192	103.08
10	727.73	.0124	24.70	22	3066.64	.0374	104.08
11	735.73	.0141	24.97	23	3096.18	.0243	105.08
12	766.41	.0054	26.01	24	3125.73	.0069	106.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0844	Undefined / 0%	.0810 / 92%	.0204 / 6%

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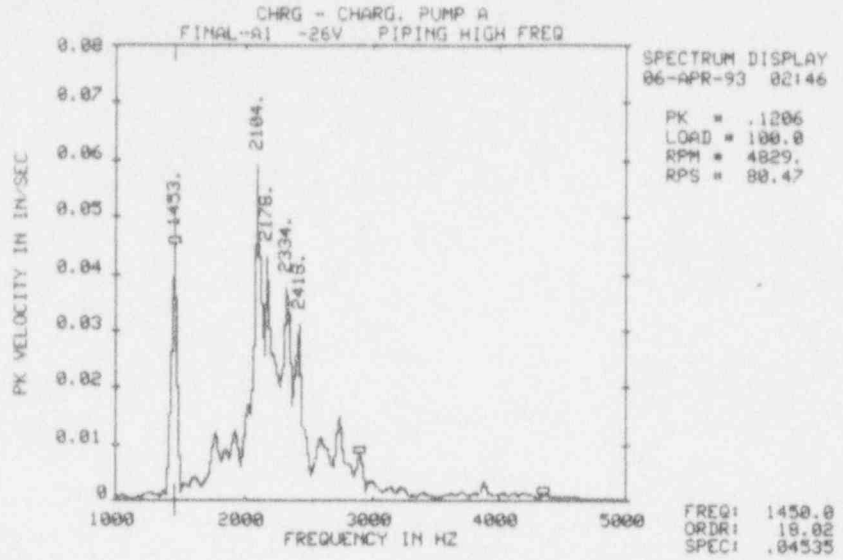

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP A
Meas. Point: Final-A1 -26V --> PIPING HIGH FREQ
Date/Time: 06-APR-93 02:46:32 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1379.29	.0017	17.14	13	2589.50	.0127	32.18
2	1452.58	.0456	18.05	14	2637.96	.0108	32.78
3	1535.71	.0036	19.08	15	2739.46	.0169	34.04
4	1611.97	.0048	20.03	16	2813.33	.0076	34.96
5	1768.99	.0126	21.98	17	2905.43	.0088	36.10
6	1857.31	.0098	23.08	18	2988.63	.0039	37.14
7	1918.24	.0132	23.84	19	3140.45	.0026	39.02
8	2035.62	.0190	25.30	20	3232.79	.0026	40.17
9	2104.22	.0599	26.15	21	3709.85	.0019	46.10
10	2178.20	.0435	27.07	22	3874.72	.0035	48.15
11	2334.24	.0410	29.01	23	4034.56	.0015	50.13
12	2417.75	.0327	30.04	24	4114.94	.0016	51.13

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1206	Undefined / 0%	Undefined / 0%	Undefined / 0%

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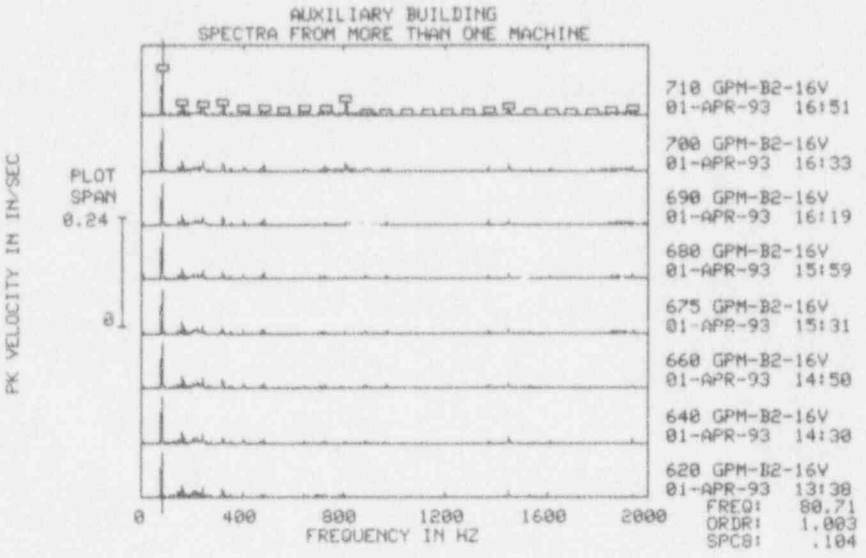

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-16V --> PUMP INBD VERTICAL
Date/Time: 01-APR-93 16:51:32 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.1044	1.00	13	471.52	.0044	5.86
2	146.78	.0080	1.82	14	484.12	.0113	6.02
3	161.42	.0231	2.01	15	645.56	.0066	8.02
4	176.91	.0073	2.20	16	706.88	.0044	8.78
5	206.10	.0070	2.56	17	726.13	.0112	9.02
6	223.71	.0071	2.78	18	761.12	.0042	9.46
7	226.53	.0076	2.81	19	806.94	.0298	10.03
8	235.89	.0057	2.93	20	1371.82	.0056	17.05
9	242.01	.0180	3.01	21	1452.57	.0135	18.05
10	322.89	.0194	4.01	22	1921.20	.0040	23.87
11	354.16	.0046	4.40	23	1923.93	.0041	23.91
12	403.55	.0088	5.01	24	1936.93	.0090	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1233	.0035 / 0%	.1158 / 88%	.0422 / 12%

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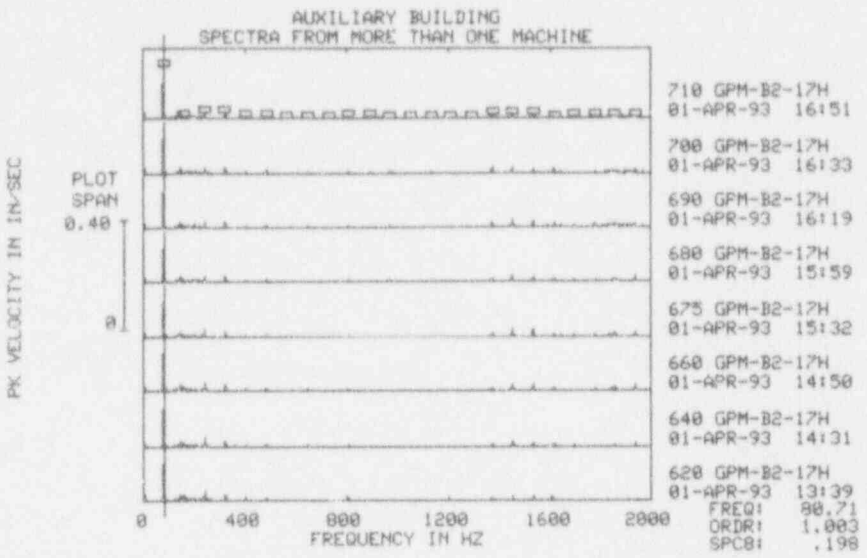

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-17H --> PUMP INBD HORIZONTAL
Date/Time: 01-APR-93 16:51:46 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.1983	1.00	13	484.09	.0109	6.02
2	139.00	.0083	1.73	14	806.73	.0058	10.03
3	146.69	.0224	1.82	15	1372.02	.0167	17.05
4	161.56	.0087	2.01	16	1452.64	.0128	18.05
5	176.18	.0061	2.19	17	1533.48	.0145	19.06
6	188.89	.0085	2.35	18	1775.94	.0059	22.07
7	198.96	.0059	2.47	19	1829.01	.0052	22.73
8	205.99	.0078	2.56	20	1845.56	.0078	22.94
9	219.71	.0050	2.73	21	1853.89	.0085	23.04
10	242.27	.0184	3.01	22	1865.86	.0069	23.19
11	322.86	.0240	4.01	23	1913.22	.0057	23.78
12	403.54	.0087	5.01	24	1936.14	.0073	24.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.2108	.0181 / 1%	.2021 / 92%	.0573 / 7%

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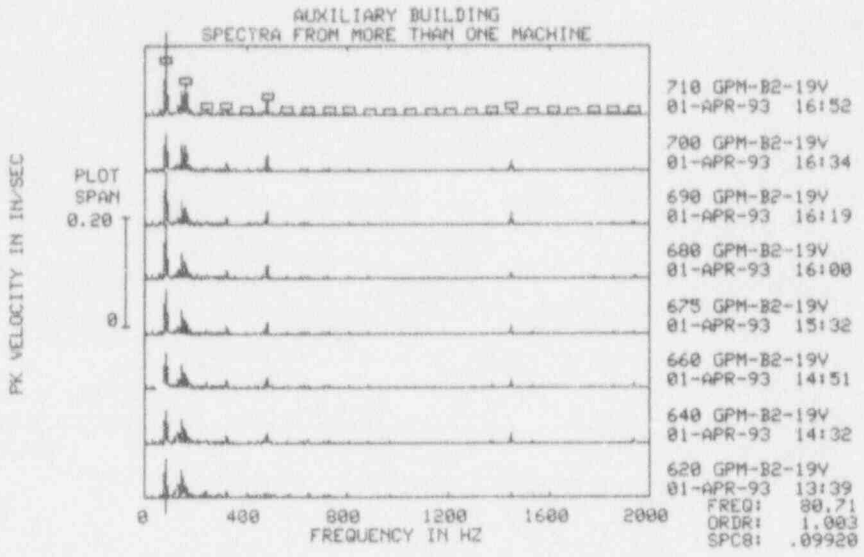

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-19V --> PUMP OUTBD VERTICAL
Date/Time: 01-APR-93 16:52:06 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0066	.37	13	236.08	.0033	2.93
2	58.99	.0101	.73	14	241.95	.0109	3.01
3	66.05	.0056	.82	15	278.98	.0033	3.47
4	80.71	.0992	1.00	16	293.33	.0051	3.65
5	88.33	.0379	1.10	17	308.13	.0041	3.83
6	98.54	.0038	1.22	18	323.01	.0122	4.01
7	116.50	.0057	1.45	19	471.64	.0069	5.86
8	131.82	.0190	1.64	20	484.20	.0305	6.02
9	146.87	.0452	1.83	21	616.55	.0041	7.66
10	161.55	.0603	2.01	22	631.10	.0034	7.84
11	176.72	.0103	2.20	23	645.86	.0048	8.03
12	205.87	.0044	2.56	24	1452.69	.0110	18.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1418	.0144 / 1%	.1206 / 72%	.0733 / 27%

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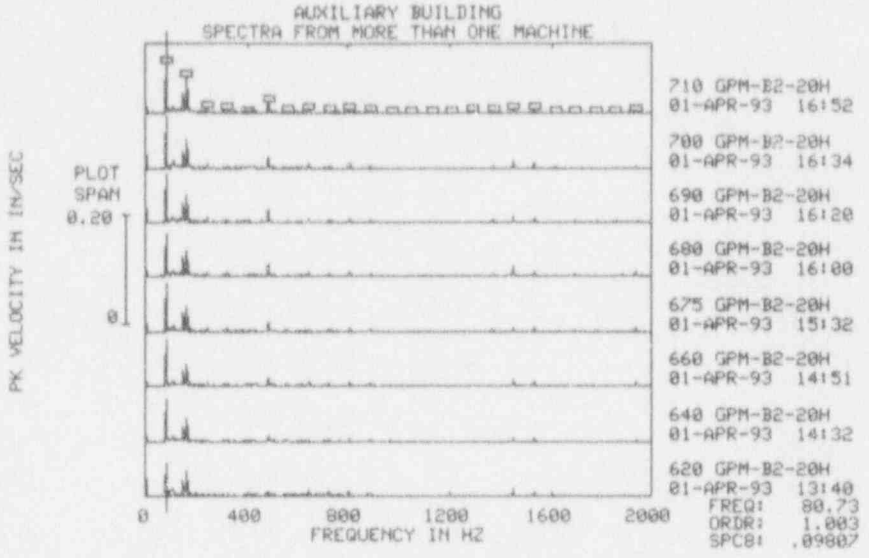

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 01-APR-93 16:52:20 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0981	1.00	13	428.25	.0037	5.32
2	103.66	.0065	1.29	14	484.20	.0219	6.02
3	111.39	.0115	1.38	15	513.37	.0033	6.38
4	131.69	.0069	1.64	16	571.19	.0033	7.10
5	146.73	.0377	1.82	17	618.03	.0047	7.68
6	161.42	.0751	2.01	18	645.49	.0059	8.02
7	176.58	.0067	2.19	19	726.20	.0039	9.02
8	205.70	.0037	2.56	20	796.28	.0038	9.90
9	219.52	.0036	2.73	21	806.84	.0075	10.03
10	242.14	.0113	3.01	22	1452.59	.0082	18.05
11	322.93	.0056	4.01	23	1533.27	.0081	19.05
12	423.28	.0034	5.26	24	1936.75	.0036	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1378	.0104 / 1%	.1259 / 84%	.0549 / 16%

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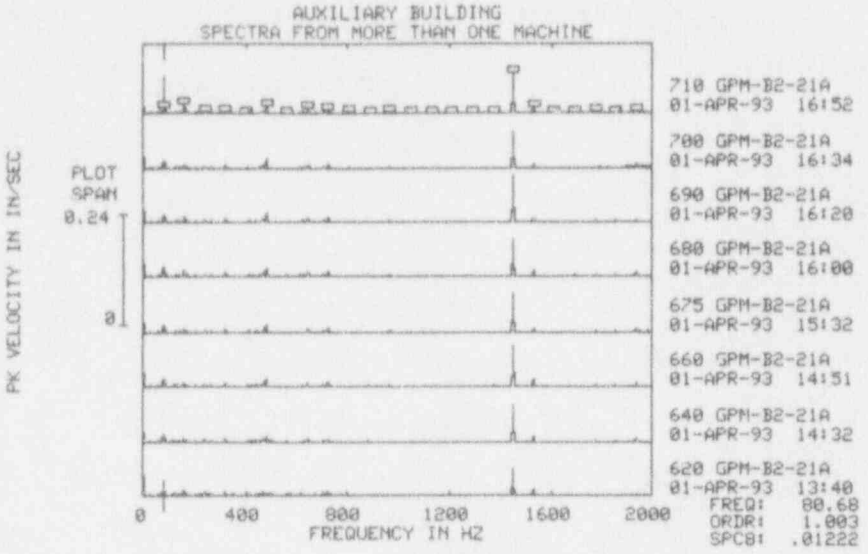

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-21A --> PUMP OUTBOARD AXIAL
Date/Time: 01-APR-93 16:52:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.68	.0122	1.00	13	645.49	.0123	8.02
2	88.52	.0082	1.10	14	707.07	.0050	8.79
3	146.67	.0059	1.82	15	726.23	.0075	9.03
4	161.32	.0222	2.00	16	806.65	.0028	10.02
5	177.07	.0039	2.20	17	968.40	.0030	12.03
6	206.35	.0045	2.56	18	1452.51	.0871	18.05
7	242.18	.0053	3.01	19	1533.23	.0120	19.05
8	322.93	.0059	4.01	20	1779.31	.0028	22.11
9	412.63	.0042	5.13	21	1868.92	.0031	23.23
10	471.53	.0068	5.86	22	1876.31	.0032	23.32
11	484.10	.0198	6.02	23	1923.65	.0027	23.91
12	618.62	.0029	7.69	24	1936.37	.0061	24.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1003	.0125 / 2%	.0512 / 26%	.0853 / 72%

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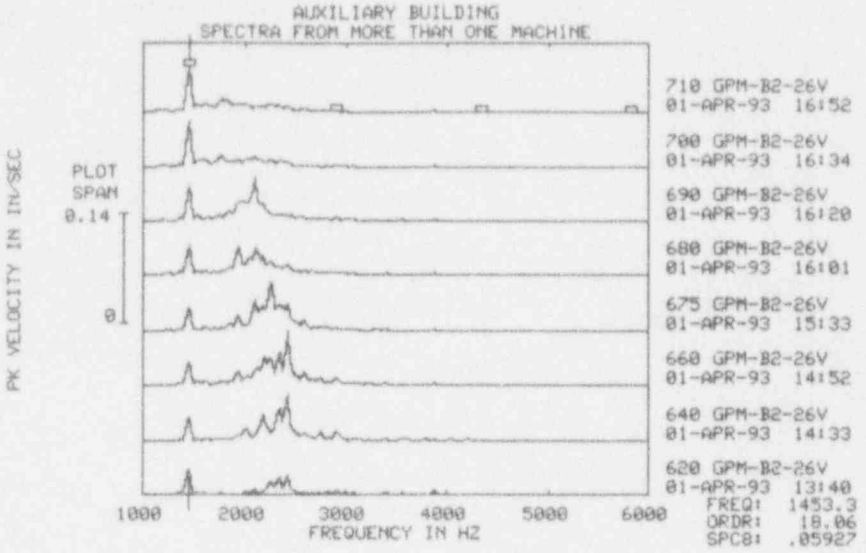

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: 710 GPM-B2-26V --> PIPING HIGH FREQ
Date/Time: 01-APR-93 16:52:54 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1061.76	.0013	13.19	13	2138.03	.0094	26.57
2	1135.90	.0016	14.12	14	2260.92	.0112	28.10
3	1207.65	.0019	15.01	15	2335.82	.0106	29.03
4	1238.27	.0016	15.39	16	2418.10	.0088	30.05
5	1385.65	.0038	17.22	17	2488.86	.0033	30.93
6	1453.32	.0593	18.06	18	2566.97	.0055	31.90
7	1534.63	.0107	19.07	19	2711.38	.0040	33.70
8	1610.49	.0114	20.01	20	2832.97	.0027	35.21
9	1782.97	.0182	22.16	21	2903.68	.0031	36.09
10	1814.04	.0165	22.54	22	2985.83	.0021	37.11
11	1912.28	.0115	23.76	23	3873.65	.0024	48.14
12	1986.68	.0122	24.69	24	4235.60	.0011	52.64

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0764	Undefined / 0%	Undefined / 0%	Undefined / 0%

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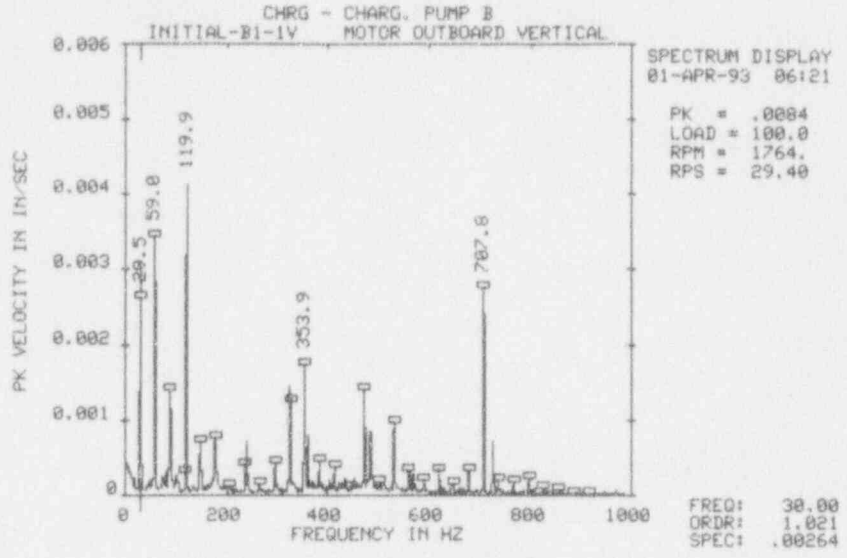

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-1V --> MOTOR OUTBOARD VERTICAL
Date/Time: 01-APR-93 06:21:56 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	8.22	3.71E-04	.28	13	353.91	.0018	12.04
2	29.50	.0029	1.00	14	359.85	.0008	12.24
3	58.97	.0035	2.01	15	383.22	.0005	13.04
4	80.81	3.23E-04	2.75	16	412.96	4.31E-04	14.05
5	88.41	.0015	3.01	17	471.93	.0016	16.05
6	119.94	.0042	4.08	18	484.36	.0010	16.48
7	148.02	.0008	5.04	19	530.86	.0010	18.06
8	177.98	.0008	6.05	20	560.51	3.68E-04	19.07
9	235.93	4.26E-04	8.03	21	619.36	4.08E-04	21.07
10	239.84	.0007	8.16	22	678.34	3.50E-04	23.08
11	294.89	4.42E-04	10.03	23	707.85	.0029	24.08
12	324.22	.0016	11.03	24	726.49	.0007	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0084	.0008 / 1%	.0061 / 53%	.0057 / 47%

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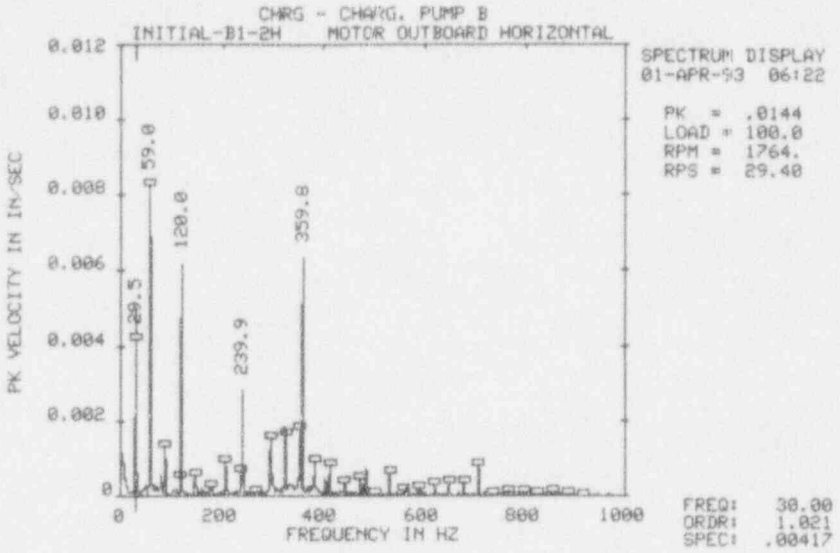

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-2H --> MOTOR OUTBOARD HORIZONTAL
Date/Time: 01-APR-93 06:22:43 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	8.15	.0006	.28	13	324.27	.0020	11.03
2	29.50	.0046	1.00	14	331.83	3.79E-04	11.29
3	58.99	.0085	2.01	15	353.98	.0018	12.04
4	80.67	.0006	2.74	16	359.84	.0064	12.24
5	88.49	.0014	3.01	17	383.36	.0010	13.04
6	119.96	.0062	4.08	18	403.47	4.71E-04	13.73
7	147.91	.0006	5.03	19	412.89	.0008	14.05
8	206.47	.0009	7.02	20	471.88	.0005	16.05
9	235.98	.0007	8.03	21	484.28	.0008	16.47
10	239.86	.0029	8.16	22	530.90	.0007	18.06
11	294.91	.0016	10.03	23	619.34	3.77E-04	21.07
12	299.53	.0006	10.19	24	707.83	.0009	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0144	.0013 / 1%	.0107 / 56%	.0095 / 43%

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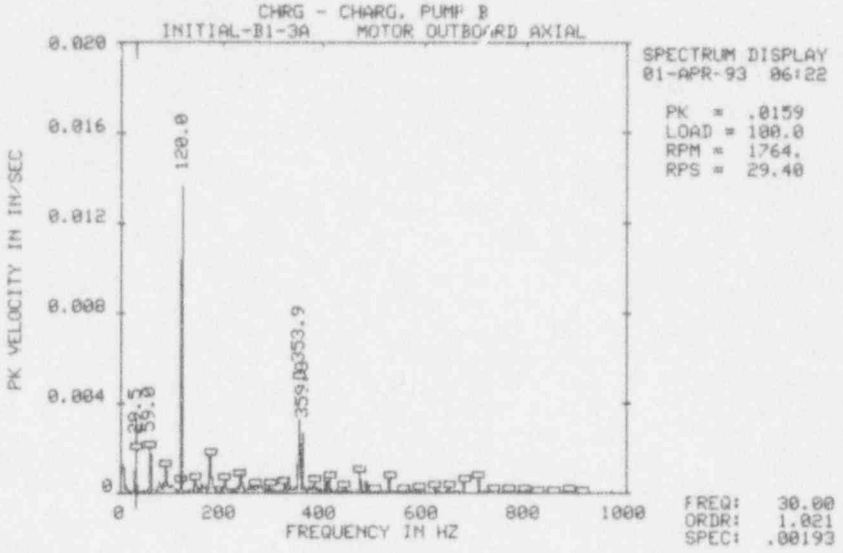

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-3A --> MOTOR OUTBOARD AXIAL
Date/Time: 01-APR-93 06:22:59 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0022	1.00	13	324.14	4.55E-04	11.03
2	58.99	.0021	2.01	14	330.39	.0007	11.24
3	76.77	.0006	2.61	15	353.92	.0051	12.04
4	85.31	4.53E-04	2.90	16	359.84	.0027	12.24
5	89.13	.0012	3.03	17	383.22	.0005	13.04
6	119.95	.0136	4.08	18	403.52	.0007	13.73
7	148.15	.0007	5.04	19	412.86	.0007	14.04
8	161.72	4.25E-04	5.50	20	471.89	.0011	16.05
9	176.96	.0020	6.02	21	484.27	.0006	16.47
10	206.55	.0006	7.03	22	530.83	.0008	18.06
11	235.98	.0008	8.03	23	678.32	.0006	23.08
12	239.85	.0009	8.16	24	707.81	.0007	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0159	.0014 / 1%	.0086 / 29%	.0133 / 70%

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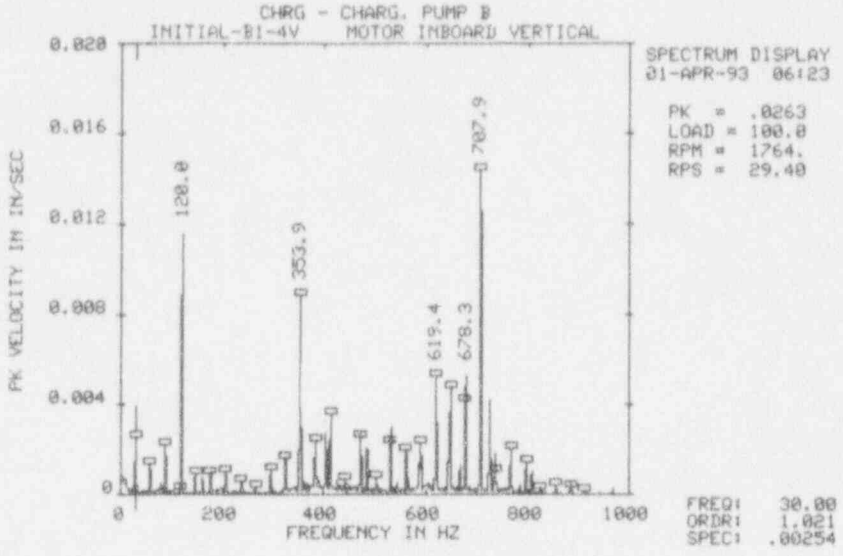

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-4V --> MOTOR INBOARD VERTICAL
Date/Time: 01-APR-93 06:23:27 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0029	1.00	13	560.39	.0021	19.06
2	58.94	.0014	2.01	14	586.73	.0015	19.96
3	88.45	.0023	3.01	15	589.90	.0023	20.07
4	119.95	.0116	4.08	16	619.37	.0062	21.07
5	324.41	.0019	11.04	17	646.74	.0031	22.00
6	353.92	.0089	12.04	18	648.86	.0048	22.07
7	383.30	.0026	13.04	19	678.35	.0057	23.08
8	403.55	.0028	13.73	20	707.86	.0151	24.08
9	412.90	.0038	14.05	21	726.49	.0043	24.71
10	471.93	.0031	16.05	22	737.36	.0018	25.08
11	484.35	.0023	16.48	23	766.85	.0024	26.09
12	530.89	.0032	18.06	24	796.33	.0014	27.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0263	.0014 / 0%	.0142 / 29%	.0221 / 71%

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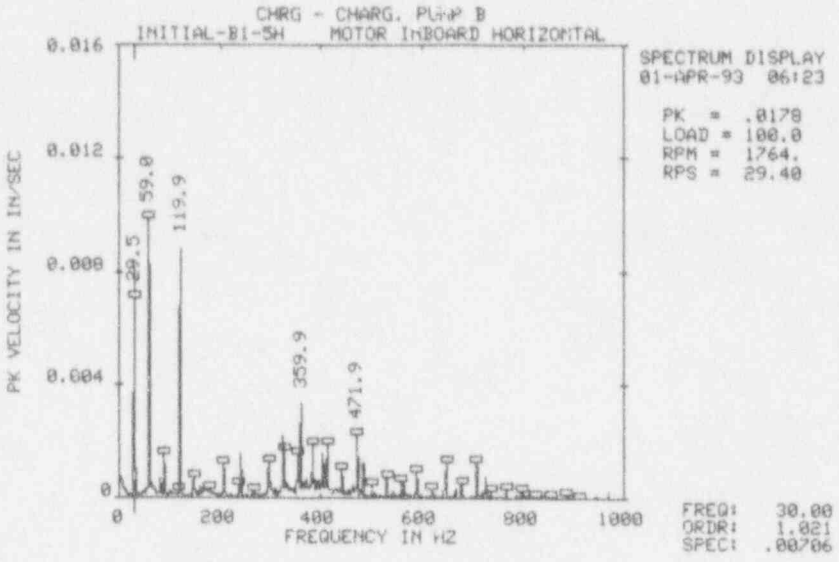

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-5H --> MOTOR INBOARD HORIZONTAL
Date/Time: 01-APR-93 06:23:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0078	1.00	13	383.46	.0020	13.04
2	58.99	.0101	2.01	14	389.29	.0008	13.24
3	80.71	.0008	2.75	15	403.49	.0016	13.73
4	88.47	.0016	3.01	16	412.96	.0021	14.05
5	119.94	.0088	4.08	17	442.62	.0010	15.06
6	147.32	.0008	5.01	18	471.93	.0026	16.05
7	206.54	.0013	7.03	19	484.35	.0014	16.48
8	240.34	.0016	8.18	20	530.91	.0008	18.06
9	294.89	.0013	10.03	21	589.88	.0010	20.07
10	323.08	.0025	10.99	22	648.86	.0013	22.07
11	353.88	.0016	12.04	23	707.87	.0013	24.08
12	359.85	.0034	12.24	24	726.50	.0008	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0178	.0010 / 0%	.0144 / 65%	.0105 / 35%

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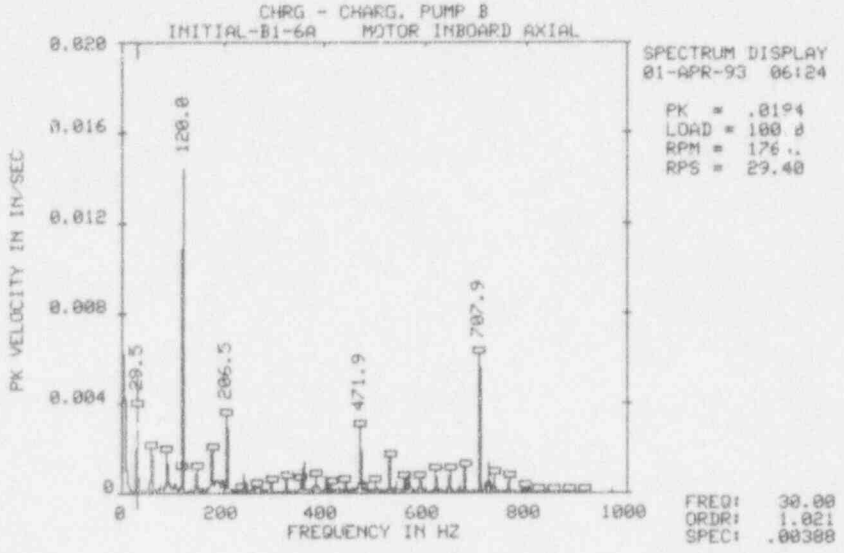

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-6A --> MOTOR INBOARD AXIAL
Date/Time: 01-APR-93 06:24:23 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	7.04	.0030	.24	13	403.53	.0008	13.73
2	29.50	.0043	1.00	14	471.91	.0035	16.05
3	58.94	.0021	2.00	15	530.92	.0017	18.06
4	88.47	.0020	3.01	16	560.38	.0007	19.06
5	119.98	.0144	4.08	17	565.07	.0008	19.22
6	147.42	.0011	5.02	18	619.38	.0012	21.07
7	176.92	.0023	6.02	19	648.82	.0010	22.07
8	206.46	.0036	7.02	20	678.36	.0012	23.08
9	240.31	.0009	8.17	21	707.88	.0066	24.08
10	324.41	.0008	11.04	22	726.48	.0014	24.71
11	359.81	.0014	12.24	23	737.36	.0008	25.08
12	383.49	.0008	13.05	24	766.88	.0008	26.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0194	.0060 / 10%	.0099 / 26%	.0156 / 64%

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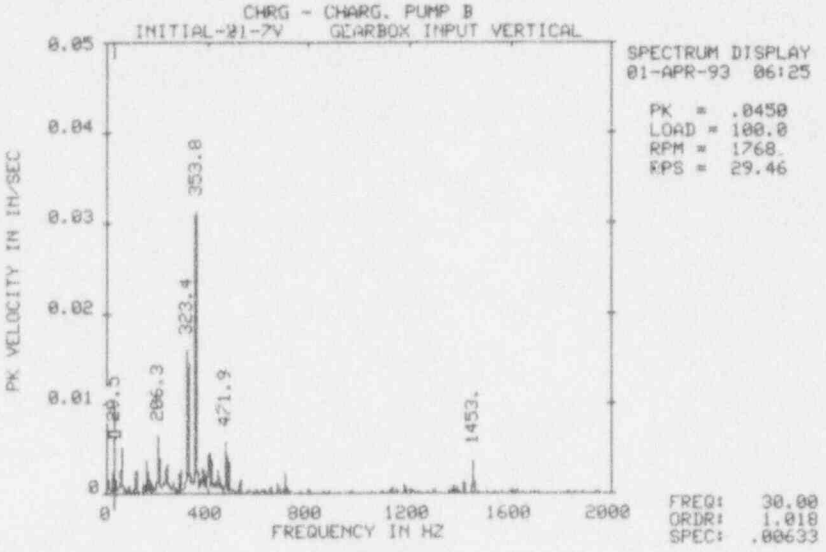

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-7V --> GEARBOX INPUT VERTICAL
Date/Time: 01-APR-93 06:25:01 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0065	1.00	13	353.81	.0362	12.01
2	59.07	.0056	2.00	14	376.53	.0018	12.78
3	119.25	.0028	4.05	15	383.29	.0030	13.01
4	161.44	.0040	5.48	16	391.38	.0015	13.28
5	176.76	.0016	6.00	17	403.45	.0047	13.69
6	206.34	.0074	7.00	18	412.91	.0044	14.01
7	228.61	.0015	7.76	19	441.65	.0028	14.99
8	235.88	.0030	8.01	20	471.85	.0060	16.02
9	242.39	.0031	8.23	21	484.28	.0035	16.44
10	294.53	.0027	10.00	22	530.91	.0015	18.02
11	323.35	.0172	10.98	23	707.81	.0021	24.02
12	346.19	.0016	11.75	24	1452.86	.0036	49.31

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0450	.0015 / 0%	.0427 / 90%	.0141 / 10%

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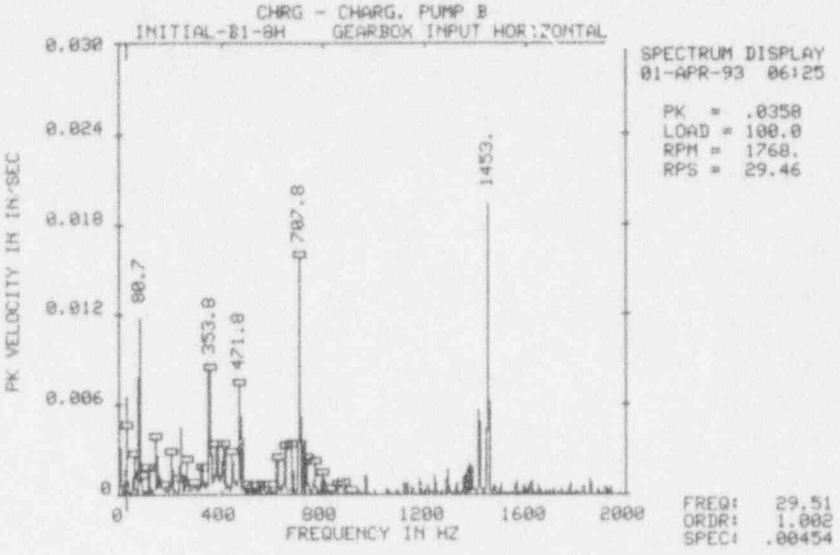

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-8H --> GEARBOX INPUT HORIZONTAL
Date/Time: 01-APR-93 06:25:18 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.51	.0045	1.00	13	413.22	.0034	14.03
2	58.99	.0028	2.00	14	442.23	.0027	15.01
3	80.72	.0124	2.74	15	471.84	.0076	16.02
4	146.97	.0038	4.99	16	484.30	.0039	16.44
5	206.45	.0030	7.01	17	619.19	.0025	21.02
6	242.08	.0045	8.22	18	649.75	.0031	22.05
7	265.40	.0022	9.01	19	678.30	.0034	23.02
8	323.44	.0022	10.98	20	707.82	.0161	24.02
9	353.80	.0097	12.01	21	726.44	.0040	24.66
10	359.21	.0039	12.19	22	737.36	.0022	25.03
11	383.64	.0037	13.02	23	1415.63	.0059	48.05
12	403.55	.0027	13.70	24	1452.83	.0196	49.31

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0358	.0028 / 1%	.0247 / 48%	.0257 / 52%

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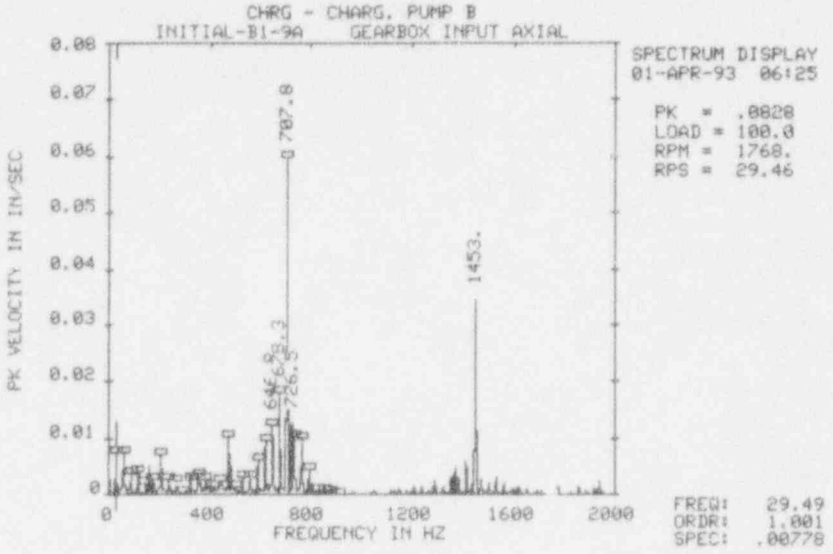

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-9A --> GEARBOX INPUT AXIAL
Date/Time: 01-APR-93 06:25:43 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0078	1.00	13	646.83	.0130	21.95
2	58.90	.0086	2.00	14	678.27	.0194	23.02
3	88.40	.0040	3.00	15	707.81	.0607	24.02
4	118.24	.0044	4.01	16	726.45	.0142	24.66
5	161.43	.0057	5.48	17	737.19	.0102	25.02
6	206.43	.0079	7.01	18	766.70	.0105	26.02
7	323.15	.0039	10.97	19	796.25	.0052	27.03
8	353.85	.0038	12.01	20	1372.12	.0047	46.57
9	471.84	.0105	16.01	21	1386.15	.0033	47.05
10	484.24	.0049	16.44	22	1415.55	.0058	48.05
11	589.74	.0061	20.02	23	1452.84	.0350	49.31
12	619.35	.0099	21.02	24	1533.57	.0036	52.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0828	.0024 / 0%	.0720 / 76%	.0408 / 24%

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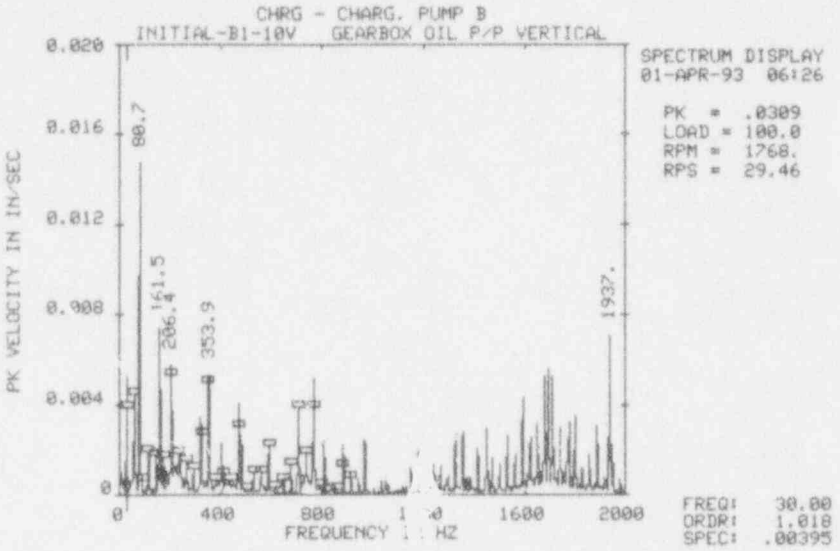

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-10V --> GEARBOX OIL P/P VERTICAL
Date/Time: 01-APR-93 06:26:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.45	.0041	1.00	13	1452.80	.0030	49.31
2	59.01	.0050	2.00	14	1533.47	.0029	52.05
3	80.71	.0155	2.74	15	1592.39	.0044	54.05
4	161.45	.0083	5.48	16	1651.34	.0036	56.05
5	206.41	.0066	7.01	17	1680.84	.0057	57.05
6	323.26	.0037	10.97	18	1694.95	.0056	57.53
7	353.88	.0061	12.01	19	1710.41	.0054	58.05
8	471.75	.0043	16.01	20	1739.74	.0030	59.05
9	707.74	.0039	24.02	21	1775.69	.0034	60.27
10	766.75	.0055	26.02	22	1798.93	.0040	61.06
11	1327.11	.0028	45.04	23	1887.23	.0031	64.06
12	1356.52	.0031	46.04	24	1937.04	.0072	65.75

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0309	.0014 / 0%	.0211 / 47%	.0225 / 53%

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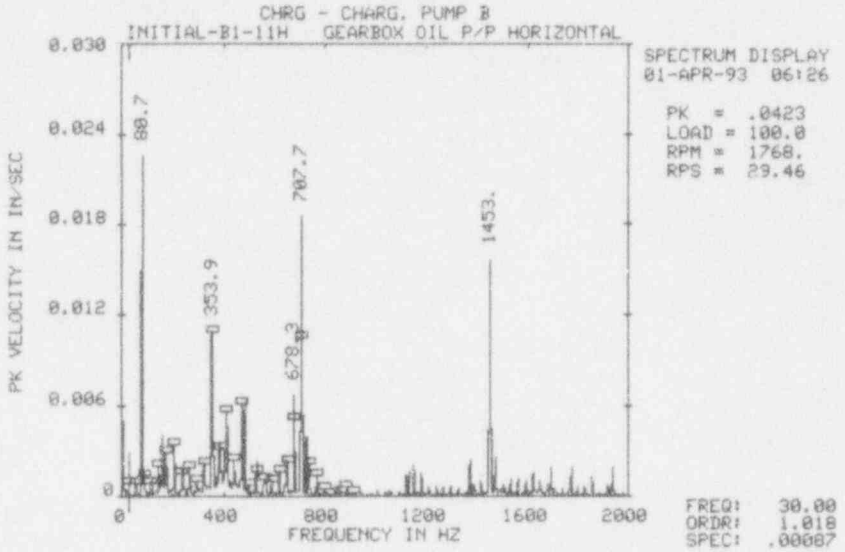

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-11H --> GEARBOX OIL P/P HORIZONTAL
Date/Time: 01-APR-93 06:26:24 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.0239	2.74	13	471.75	.0064	16.01
2	161.44	.0046	5.48	14	484.17	.0067	16.43
3	176.81	.0030	6.00	15	530.72	.0024	18.01
4	206.43	.0039	7.01	16	645.00	.0024	21.89
5	241.98	.0024	8.21	17	649.97	.0023	22.06
6	323.68	.0026	10.99	18	678.26	.0071	23.02
7	353.88	.0124	12.01	19	707.70	.0186	24.02
8	358.87	.0041	12.18	20	726.38	.0045	24.65
9	383.58	.0040	13.02	21	1371.95	.0025	46.57
10	403.62	.0037	13.70	22	1445.00	.0029	49.05
11	412.81	.0057	14.01	23	1452.67	.0156	49.31
12	442.03	.0025	15.00	24	1474.28	.0027	50.04

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0423	.0046 / 1%	.0277 / 43%	.0316 / 56%

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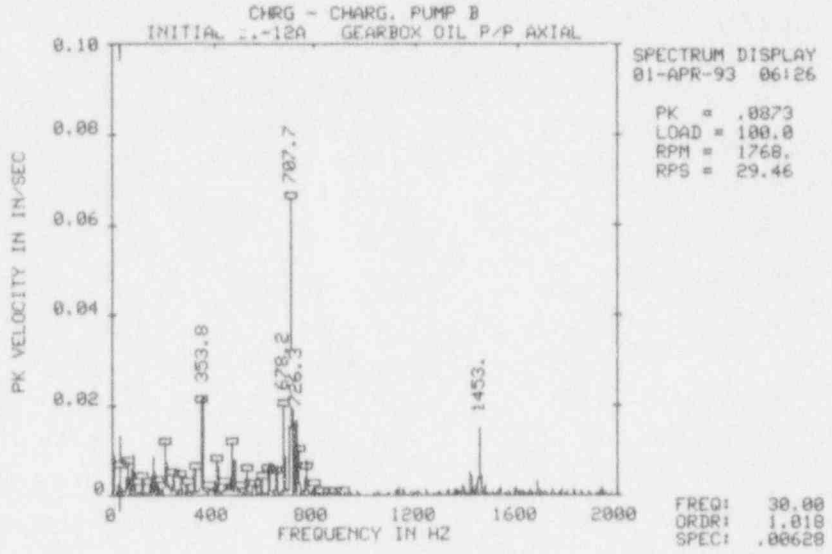

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-12A --> GEARBOX OIL P/P AXIAL
Date/Time: 01-APR-93 06:26:43 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0065	1.00	13	484.34	.0080	16.44
2	58.91	.0081	2.00	14	530.75	.0058	18.01
3	80.73	.0096	2.74	15	619.17	.0077	21.02
4	118.31	.0040	4.02	16	646.18	.0059	21.93
5	161.40	.0097	5.48	17	649.13	.0065	22.03
6	206.31	.0138	7.00	18	678.18	.0212	23.02
7	235.93	.0050	8.01	19	707.69	.0661	24.02
8	265.44	.0042	9.01	20	726.34	.0191	24.65
9	323.71	.0069	10.99	21	737.10	.0097	25.02
10	353.84	.0251	12.01	22	766.64	.0081	26.02
11	412.90	.0078	14.01	23	1415.44	.0053	48.04
12	471.83	.0122	16.01	24	1452.61	.0149	49.30

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0873	.0076 / 1%	.0807 / 85%	.0324 / 14%

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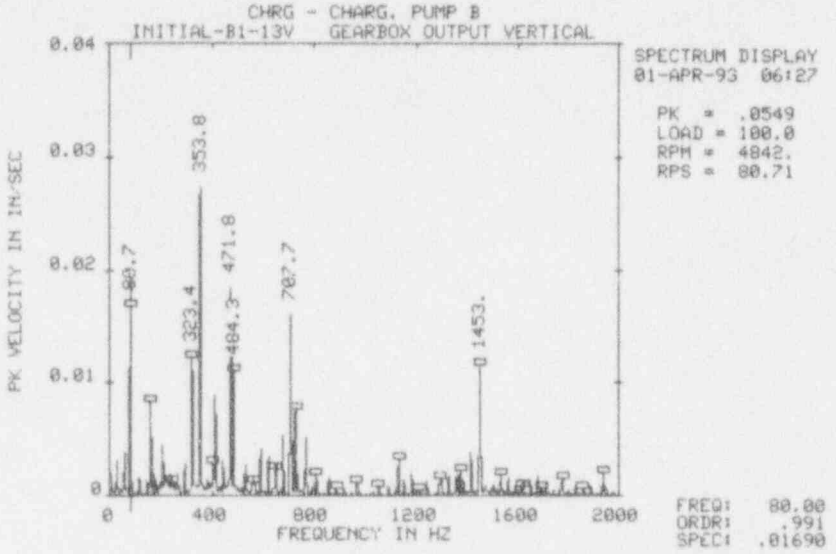

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-13V --> GEARBOX OUTPUT VERTICAL
Date/Time: 01-APR-93 06:27:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0031	.37	13	530.92	.0029	6.58
2	58.92	.0042	.73	14	589.85	.0041	7.31
3	80.71	.0178	1.00	15	619.24	.0035	7.67
4	161.40	.0095	2.00	16	648.72	.0034	8.04
5	206.44	.0050	2.56	17	678.23	.0055	8.40
6	323.35	.0131	4.01	18	707.67	.0161	8.77
7	353.84	.0313	4.38	19	726.39	.0086	9.00
8	403.68	.0033	5.00	20	766.74	.0054	9.50
9	412.82	.0090	5.12	21	1129.85	.0032	14.00
10	442.37	.0031	5.48	22	1415.42	.0038	17.54
11	471.80	.0194	5.85	23	1445.04	.0031	17.90
12	484.33	.0117	6.00	24	1452.71	.0116	18.00

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0549	.0057 / 1%	.0315 / 33%	.0446 / 66%

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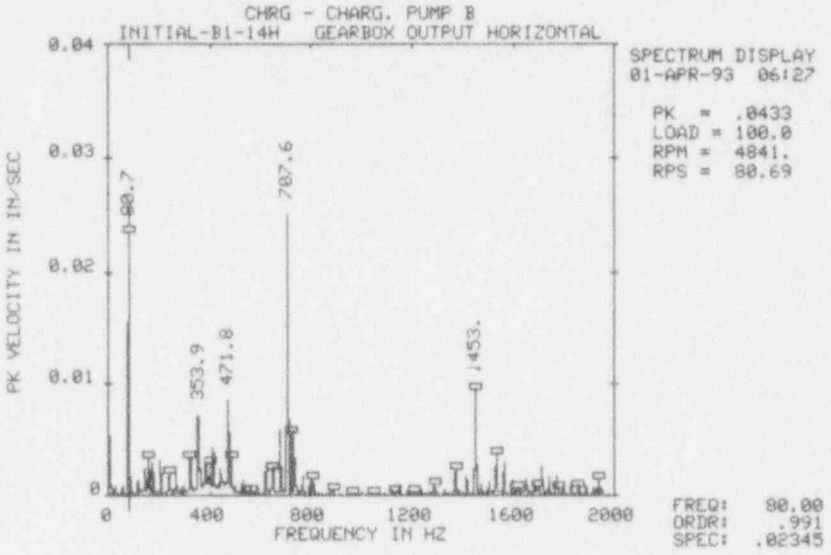

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-14H --> GEARBOX OUTPUT HORIZONTAL
Date/Time: 01-APR-93 06:27:41 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.0246	1.00	13	484.12	.0037	6.00
2	146.71	.0025	1.82	14	619.08	.0025	7.67
3	161.44	.0038	2.00	15	648.82	.0030	8.04
4	176.87	.0030	2.19	16	678.17	.0061	8.40
5	206.40	.0035	2.56	17	707.62	.0251	8.77
6	323.52	.0037	4.01	18	726.28	.0067	9.00
7	353.91	.0081	4.39	19	737.04	.0033	9.13
8	359.29	.0032	4.45	20	1371.85	.0024	17.00
9	383.36	.0031	4.75	21	1452.59	.0095	18.00
10	403.62	.0033	5.00	22	1533.33	.0040	19.00
11	413.11	.0045	5.12	23	1562.75	.0029	19.37
12	471.85	.0090	5.85	24	1710.18	.0026	21.19

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0433	.0048 / 1%	.0289 / 45%	.0319 / 54%

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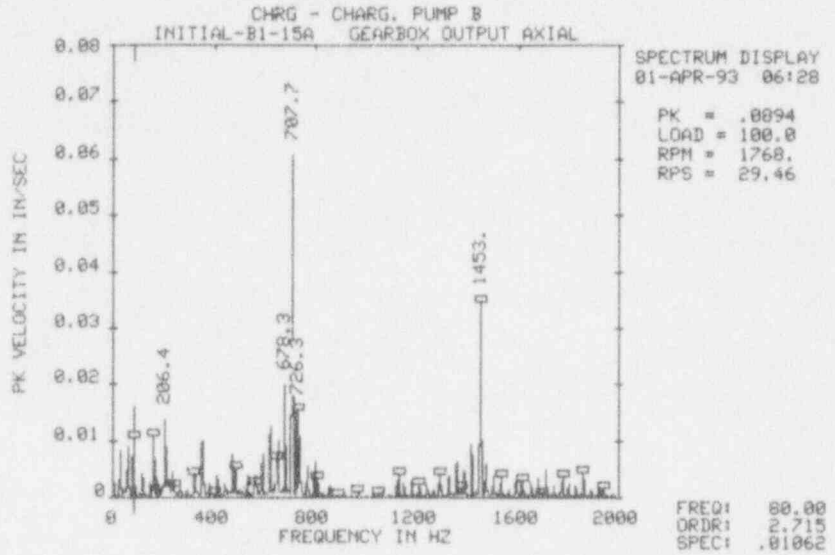

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-15A --> GEARBOX OUTPUT AXIAL
Date/Time: 01-APR-93 06:28:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0084	1.00	13	678.27	.0211	23.02
2	58.99	.0098	2.00	14	707.69	.0609	24.02
3	80.69	.0112	2.74	15	726.26	.0179	24.65
4	161.38	.0124	5.48	16	737.18	.0106	25.02
5	206.42	.0154	7.01	17	766.62	.0061	26.02
6	353.79	.0115	12.01	18	796.10	.0069	27.02
7	471.67	.0080	16.01	19	1356.42	.0068	46.04
8	484.12	.0054	16.43	20	1415.29	.0091	48.04
9	589.87	.0074	20.02	21	1444.93	.0059	49.04
10	619.18	.0131	21.02	22	1452.63	.0349	49.30
11	645.98	.0075	21.93	23	1474.19	.0061	50.04
12	649.71	.0100	22.05	24	1856.32	.0053	63.01

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0894	.0023 / 0%	.0766 / 73%	.0461 / 27%

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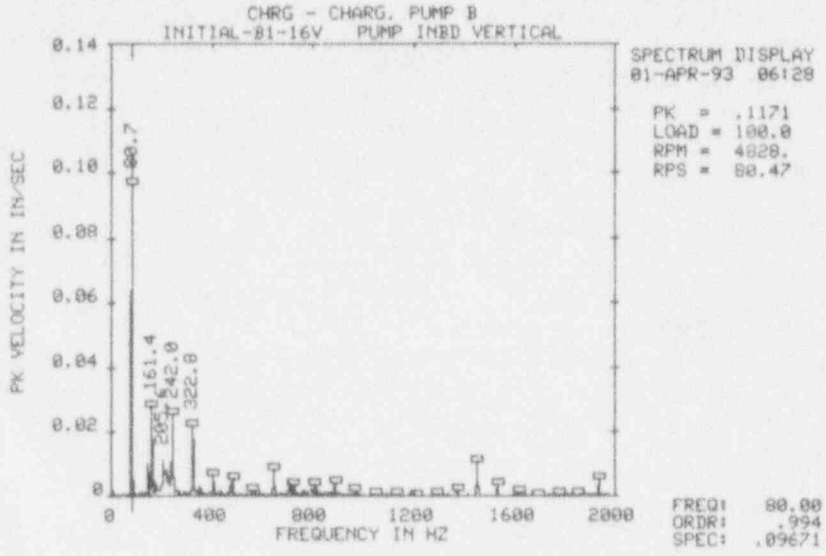

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-16V --> PUMP INBD VERTICAL
Date/Time: 01-APR-93 06:28:29 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.1017	1.00	13	403.63	.0073	5.02
2	146.67	.0107	1.82	14	471.86	.0036	5.86
3	161.38	.0317	2.01	15	484.20	.0054	6.02
4	176.67	.0051	2.20	16	645.41	.0084	8.02
5	184.18	.0026	2.29	17	708.25	.0042	8.80
6	205.63	.0116	2.56	18	726.18	.0044	9.02
7	218.66	.0097	2.72	19	790.83	.0025	9.83
8	227.74	.0061	2.83	20	807.00	.0035	10.03
9	235.74	.0054	2.93	21	887.19	.0039	11.03
10	242.05	.0261	3.01	22	1452.50	.0106	18.05
11	322.81	.0221	4.01	23	1533.19	.0038	19.05
12	353.74	.0036	4.40	24	1936.55	.0059	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1171	.0025 / 0%	.1125 / 92%	.0327 / 8%

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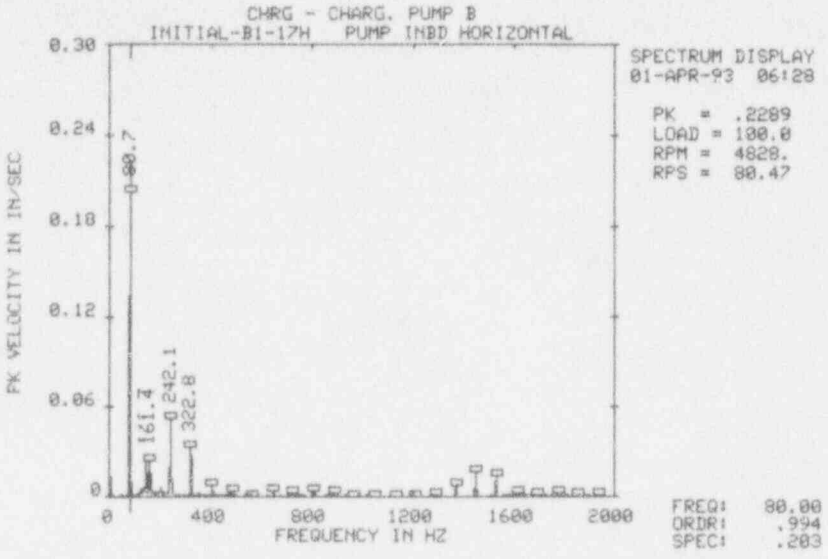

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-17H --> PUMP INBD HORIZONTAL
Date/Time: 01-APR-93 06:28:59 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.2134	1.00	13	220.88	.0032	2.75
2	116.19	.0029	1.44	14	226.38	.0031	2.81
3	123.36	.0049	1.53	15	242.06	.0538	3.01
4	132.90	.0058	1.65	16	258.23	.0033	3.21
5	140.76	.0061	1.75	17	322.78	.0338	4.01
6	146.65	.0256	1.82	18	403.43	.0084	5.01
7	161.39	.0275	2.01	19	484.21	.0043	6.02
8	176.38	.0044	2.19	20	645.82	.0035	8.03
9	185.86	.0036	2.31	21	806.71	.0046	10.03
10	196.34	.0049	2.44	22	1371.63	.0089	17.05
11	206.13	.0077	2.56	23	1452.30	.0165	18.05
12	213.26	.0039	2.65	24	1532.99	.0145	19.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.2289	.0109 / 0%	.2247 / 96%	.0422 / 3%

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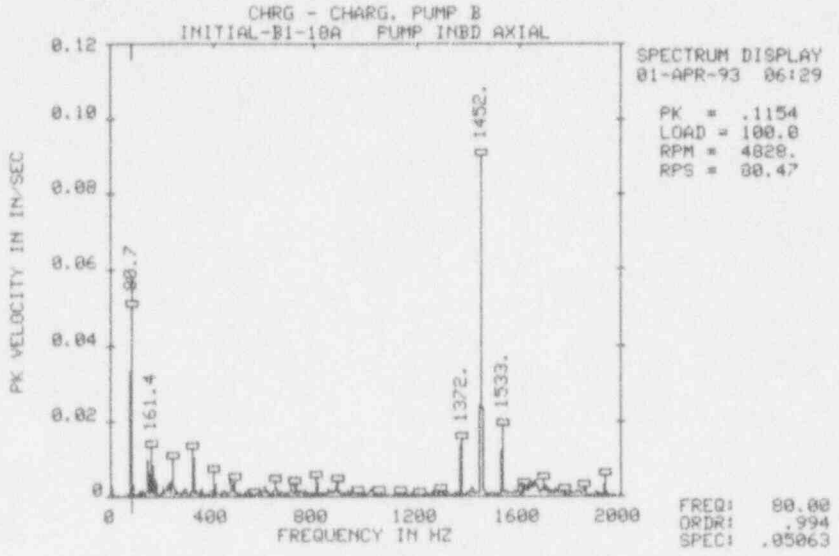

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-18A --> PUMP INBD AXIAL
Date/Time: 01-APR-93 06:29:42 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.0532	1.00	13	806.87	.0054	10.03
2	146.64	.0103	1.82	14	888.47	.0043	11.04
3	161.41	.0152	2.01	15	1371.71	.0164	17.05
4	176.86	.0050	2.20	16	1452.46	.0906	18.05
5	226.64	.0038	2.82	17	1533.23	.0200	19.05
6	241.99	.0103	3.01	18	1613.48	.0040	20.05
7	322.82	.0132	4.01	19	1643.50	.0040	20.42
8	403.50	.0071	5.01	20	1651.70	.0040	20.53
9	471.49	.0045	5.86	21	1661.08	.0046	20.64
10	483.91	.0054	6.01	22	1666.27	.0045	20.71
11	645.56	.0044	8.02	23	1695.70	.0050	21.07
12	726.13	.0041	9.02	24	1936.50	.0063	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1154	.0027 / 0%	.0729 / 40%	.0894 / 60%

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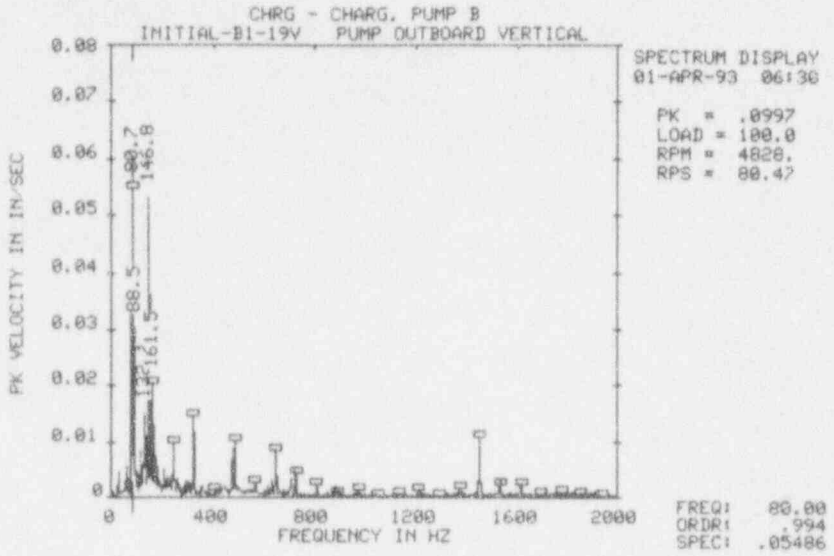

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-19V --> PUMP OUTBOARD VERTICAL
Date/Time: 01-APR-93 06:30:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.37	.0044	.37	13	205.70	.0053	2.56
2	58.94	.0061	.73	14	220.44	.0040	2.74
3	66.01	.0037	.82	15	228.62	.0036	2.84
4	80.73	.0580	1.00	16	242.15	.0102	3.01
5	88.48	.0334	1.10	17	256.54	.0037	3.19
6	102.89	.0048	1.28	18	322.78	.0146	4.01
7	117.28	.0087	1.46	19	471.64	.0075	5.86
8	132.15	.0153	1.64	20	484.43	.0105	6.02
9	146.77	.0562	1.82	21	645.62	.0088	8.02
10	161.50	.0228	2.01	22	707.08	.0035	8.79
11	176.45	.0082	2.19	23	726.16	.0053	9.02
12	190.93	.0033	2.37	24	1452.48	.0108	18.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0997	.0089 / 1%	.0665 / 44%	.0737 / 55%

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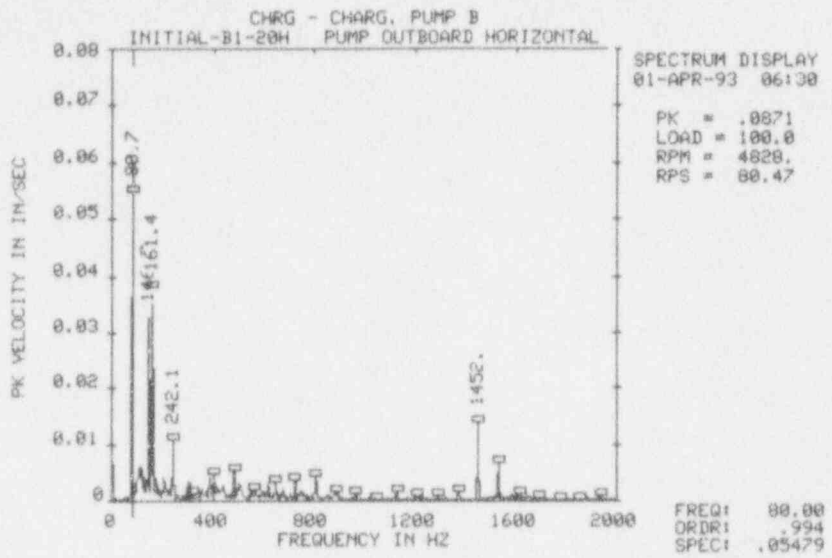

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 01-APR-93 06:30:21 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.0576	1.00	13	388.57	.0046	4.83
2	96.71	.0031	1.20	14	403.69	.0056	5.02
3	108.49	.0065	1.35	15	439.16	.0031	5.46
4	118.33	.0067	1.47	16	484.09	.0059	6.02
5	131.50	.0047	1.63	17	501.44	.0034	6.23
6	146.74	.0348	1.82	18	506.37	.0030	6.29
7	161.36	.0435	2.01	19	616.47	.0033	7.66
8	177.09	.0043	2.20	20	645.58	.0035	8.02
9	205.69	.0041	2.56	21	726.25	.0045	9.03
10	212.84	.0034	2.65	22	806.82	.0046	10.03
11	242.06	.0111	3.01	23	1452.37	.0138	18.05
12	308.14	.0034	3.83	24	1533.13	.0070	19.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0871	.0059 / 0%	.0741 / 72%	.0453 / 27%

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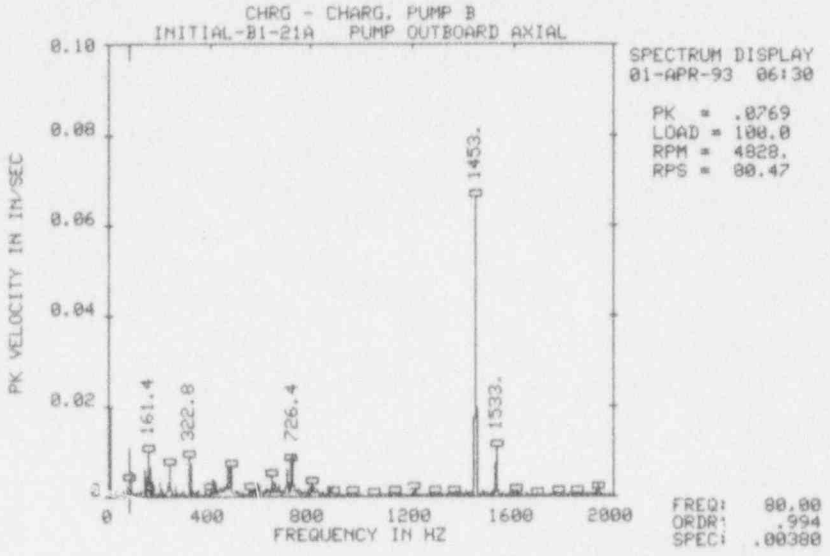

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-21A --> PUMP OUTBOARD AXIAL
Date/Time: 01-APR-93 06:30:38 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.65	.0040	1.00	13	483.93	.0079	6.01
2	88.48	.0060	1.10	14	593.96	.0034	7.38
3	146.81	.0063	1.82	15	645.94	.0053	8.03
4	161.37	.0118	2.01	16	660.61	.0031	8.21
5	176.76	.0036	2.20	17	676.17	.0028	8.40
6	206.25	.0036	2.56	18	707.93	.0062	8.80
7	242.06	.0074	3.01	19	726.44	.0100	9.03
8	322.78	.0088	4.01	20	794.06	.0021	9.87
9	413.00	.0041	5.13	21	806.94	.0029	10.03
10	443.28	.0022	5.51	22	1452.62	.0667	18.05
11	460.91	.0028	5.73	23	1533.35	.0117	19.06
12	471.58	.0071	5.86	24	1936.83	.0027	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0769	.0163 / 5%	.0356 / 21%	.0662 / 74%

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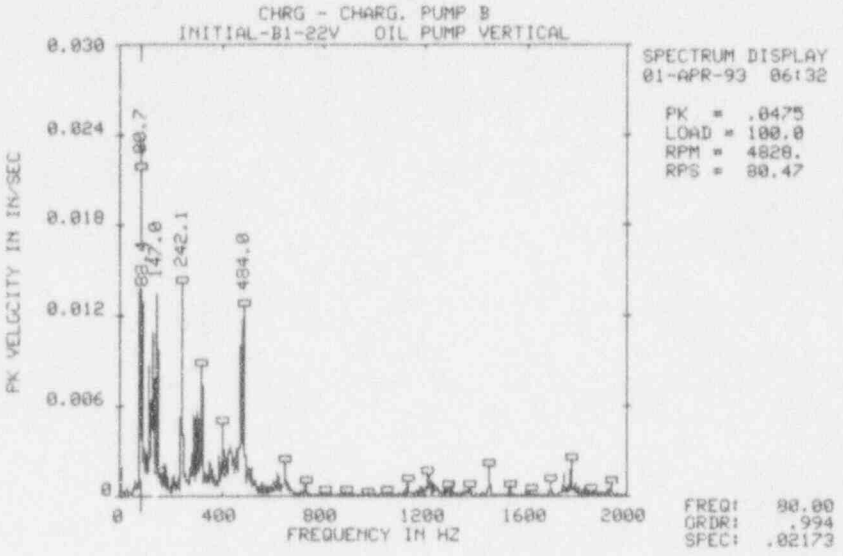

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-22V --> OIL PUMP VERTICAL
Date/Time: 01-APR-93 06:32:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0230	1.00	13	308.32	.0061	3.83
2	88.39	.0140	1.10	14	322.99	.0089	4.01
3	93.80	.0028	1.17	15	389.34	.0029	4.84
4	102.50	.0032	1.27	16	403.50	.0054	5.01
5	109.41	.0030	1.36	17	411.97	.0032	5.12
6	116.93	.0089	1.45	18	431.15	.0037	5.36
7	131.69	.0116	1.64	19	433.95	.0038	5.39
8	138.85	.0028	1.73	20	439.01	.0033	5.46
9	147.00	.0137	1.83	21	448.75	.0030	5.58
10	242.11	.0144	3.01	22	454.33	.0034	5.65
11	278.81	.0032	3.46	23	471.92	.0103	5.86
12	293.56	.0060	3.65	24	484.04	.0140	6.02

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0475	.0027 / 0%	.0327 / 47%	.0344 / 52%

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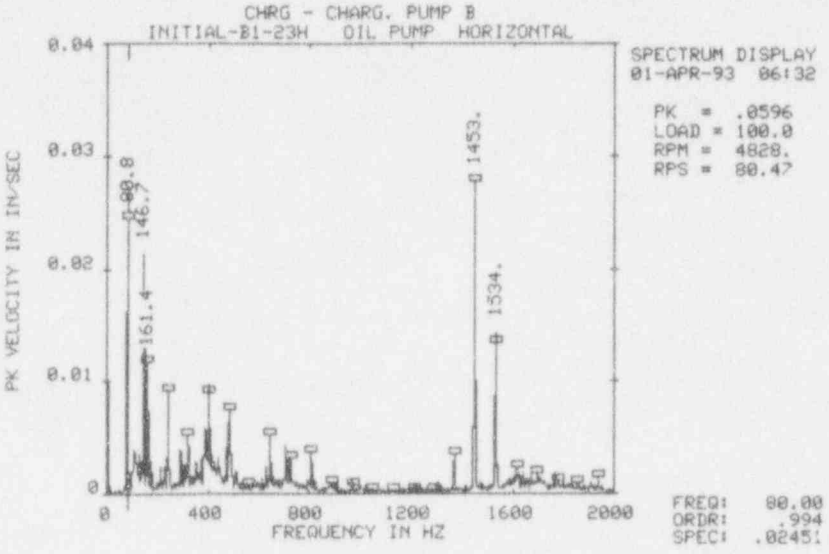

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-23H --> OIL PUMP HORIZONTAL
Date/Time: 01-APR-93 06:32:27 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.76	.0260	1.00	13	403.62	.0110	5.02
2	110.98	.0043	1.38	14	413.86	.0040	5.14
3	116.55	.0035	1.45	15	441.10	.0036	5.48
4	131.96	.0036	1.64	16	471.74	.0044	5.86
5	146.73	.0226	1.82	17	484.45	.0077	6.02
6	161.38	.0135	2.01	18	645.84	.0057	8.03
7	242.13	.0093	3.01	19	708.40	.0046	8.80
8	293.64	.0046	3.65	20	726.28	.0038	9.03
9	322.17	.0053	4.00	21	806.92	.0039	10.03
10	353.58	.0032	4.39	22	1372.16	.0035	17.05
11	373.73	.0035	4.64	23	1452.99	.0285	18.06
12	391.08	.0065	4.86	24	1533.65	.0163	19.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0596	.0082 / 2%	.0378 / 40%	.0452 / 58%

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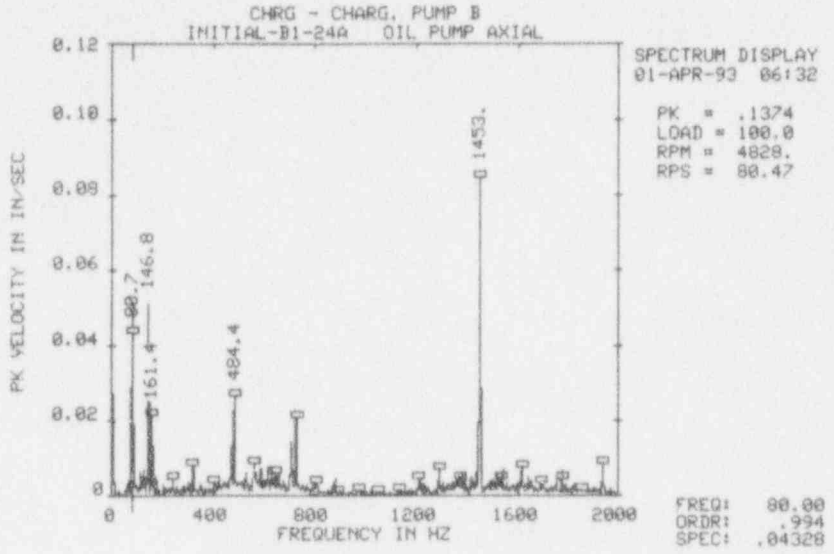

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-24A --> OIL PUMP AXIAL
Date/Time: 01-APR-93 06:32:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.74	.0458	1.00	13	615.78	.0083	7.65
2	88.43	.0210	1.10	14	630.89	.0082	7.84
3	117.06	.0067	1.45	15	646.33	.0072	8.03
4	131.70	.0078	1.64	16	707.95	.0148	8.80
5	146.76	.0543	1.82	17	726.40	.0238	9.03
6	161.40	.0246	2.01	18	1291.50	.0081	16.05
7	323.31	.0088	4.02	19	1452.88	.0859	18.06
8	472.14	.0137	5.87	20	1518.89	.0065	18.88
9	484.44	.0275	6.02	21	1540.94	.0077	19.15
10	531.15	.0071	6.60	22	1614.44	.0077	20.06
11	564.26	.0092	7.01	23	1775.55	.0068	22.07
12	588.69	.0084	7.32	24	1937.11	.0091	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1374	.0240 / 3%	.0723 / 28%	.1144 / 69%

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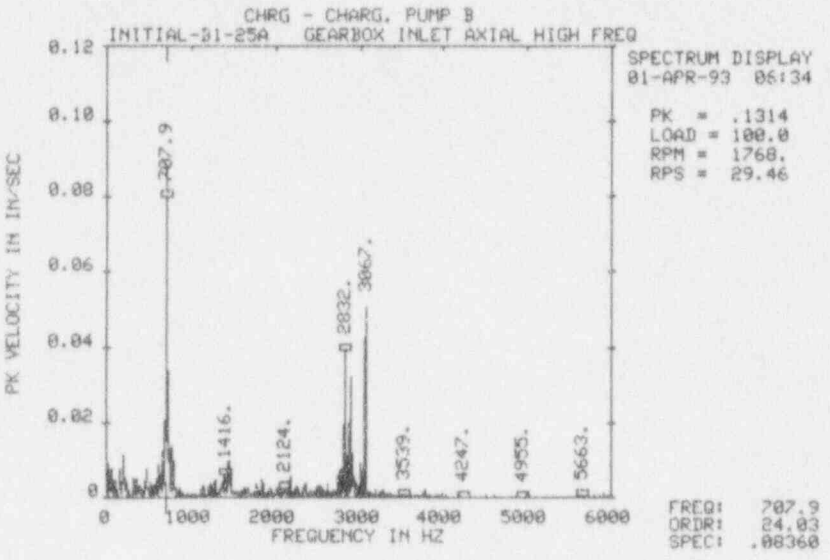

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-25A --> GEARBOX INLET AXIAL HIGH FREQ
Date/Time: 01-APR-93 06:34:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.70	.0097	1.01	13	1415.81	.0070	48.05
2	59.78	.0086	2.03	14	1453.13	.0204	49.32
3	161.27	.0079	5.47	15	1473.62	.0066	50.02
4	207.16	.0115	7.03	16	2772.47	.0088	94.10
5	471.48	.0087	16.00	17	2802.03	.0209	95.10
6	620.21	.0089	21.05	18	2831.54	.0394	96.11
7	646.88	.0070	21.96	19	2861.05	.0081	97.11
8	678.20	.0239	23.02	20	2890.49	.0373	98.11
9	707.88	.0836	24.03	21	2919.97	.0119	99.11
10	726.56	.0252	24.66	22	3008.47	.0102	102.11
11	766.51	.0149	26.02	23	3037.78	.0069	103.11
12	796.16	.0104	27.02	24	3067.44	.0518	104.11

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1314	Undefined / 0%	.1269 / 93%	.0242 / 3%

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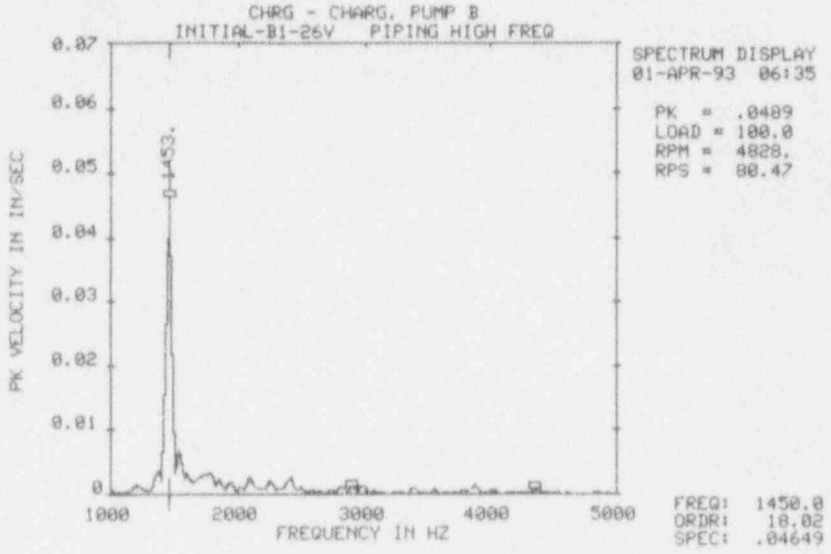

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Initial-B1-26V --> PIPING HIGH FREQ
Date/Time: 01-APR-93 06:35:02 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1208.60	.0015	15.02	13	2260.81	.0024	28.10
2	1369.27	.0038	17.02	14	2338.38	.0011	29.06
3	1453.09	.0470	18.06	15	2418.56	.0029	30.06
4	1532.47	.0074	19.04	16	2502.59	.0013	31.10
5	1594.94	.0035	19.82	17	2820.52	.0012	35.05
6	1737.23	.0036	21.59	18	2906.71	.0013	36.12
7	1763.85	.0038	21.92	19	2986.17	.0013	37.11
8	1849.18	.0023	22.98	20	3391.39	.0011	42.15
9	1937.50	.0020	24.08	21	3551.87	.0008	44.14
10	2013.96	.0012	25.03	22	3790.90	.0007	47.11
11	2094.46	.0028	26.03	23	3875.75	.0015	48.17
12	2163.16	.0011	26.88	24	4360.27	.0009	54.19

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0489	Undefined / 0%	Undefined / 0%	Undefined / 0%

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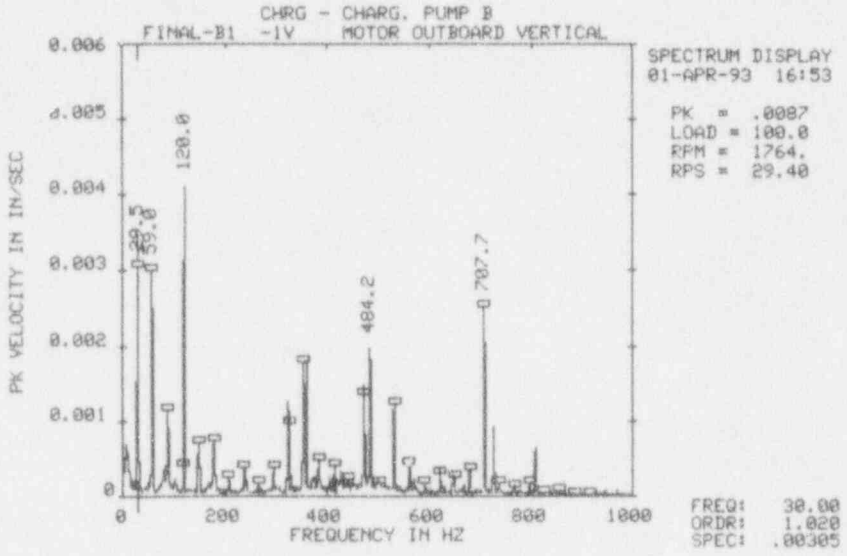

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -1V --> MOTOR OUTBOARD VERTICAL
Date/Time: 01-APR-93 16:53:32 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	6.60	.0007	.22	13	359.81	.0018	12.24
2	10.55	.0007	.36	14	383.17	.0006	13.03
3	29.50	.0034	1.00	15	412.79	4.33E-04	14.04
4	58.98	.0031	2.01	16	471.79	.0017	16.05
5	80.64	4.14E-04	2.74	17	484.20	.0021	16.47
6	85.38	4.26E-04	2.90	18	530.77	.0014	18.05
7	88.44	.0012	3.01	19	560.37	4.56E-04	19.06
8	119.97	.0041	4.08	20	619.24	3.99E-04	21.06
9	147.94	.0008	5.03	21	678.21	3.98E-04	23.07
10	177.00	.0008	6.02	22	707.67	.0026	24.07
11	323.25	.0014	11.00	23	726.32	.0009	24.71
12	353.86	.0018	12.04	24	807.05	.0007	27.45

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0087	.0012 / 2%	.0061 / 48%	.0062 / 50%

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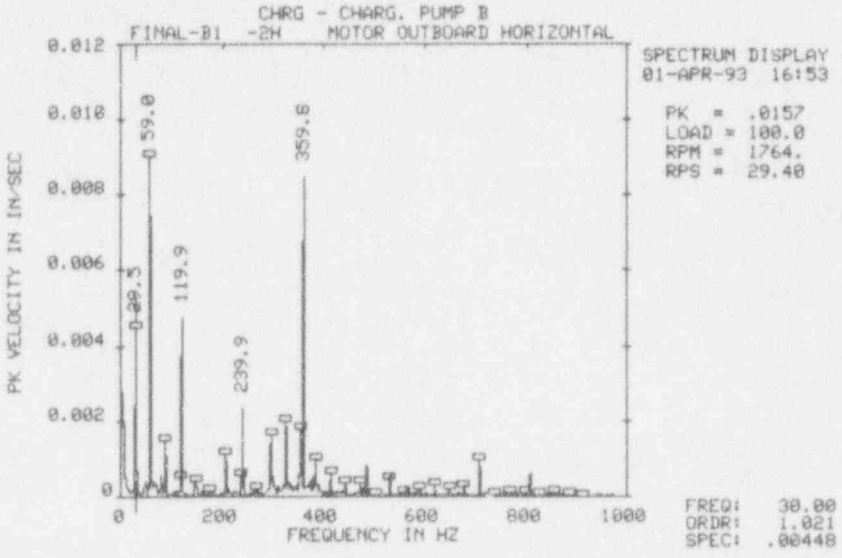

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -2H --> MOTOR OUTBOARD HORIZONTAL
Date/Time: 01-APR-93 16:53:56 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	10.67	.0006	.36	13	294.74	.0017	10.03
2	29.48	.0050	1.00	14	300.31	.0005	10.22
3	50.78	4.33E-04	1.73	15	324.20	.0022	11.03
4	58.97	.0092	2.01	16	353.81	.0018	12.04
5	65.67	4.90E-04	2.23	17	359.84	.0086	12.24
6	80.73	.0006	2.75	18	374.62	4.86E-04	12.74
7	88.45	.0015	3.01	19	383.33	.0010	13.04
8	119.89	.0048	4.08	20	412.82	.0006	14.04
9	148.14	4.88E-04	5.04	21	484.19	.0009	16.47
10	206.48	.0011	7.02	22	530.76	.0006	18.06
11	235.90	.0006	8.02	23	707.66	.0010	24.07
12	239.87	.0024	8.16	24	806.94	.0007	27.45

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0157	.0026 / 3%	.0115 / 54%	.0104 / 44%

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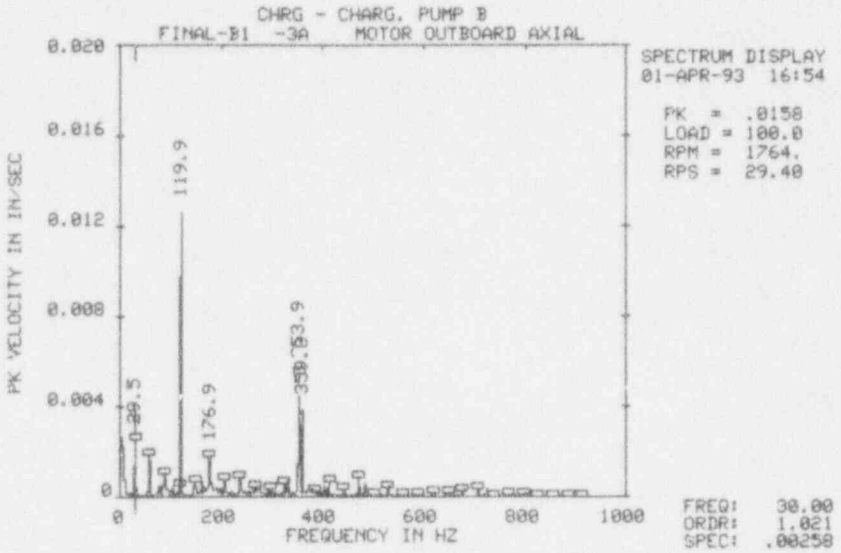

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -3A --> MOTOR OUTBOARD AXIAL
Date/Time: 01-APR-93 16:54:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0029	1.00	13	206.54	.0008	7.03
2	59.03	.0020	2.01	14	235.90	.0009	8.02
3	77.86	.0005	2.65	15	239.77	.0008	8.16
4	88.22	.0011	3.00	16	324.40	.0007	11.04
5	90.66	.0007	3.08	17	330.47	.0008	11.24
6	104.25	4.85E-04	3.55	18	353.86	.0054	12.04
7	119.94	.0126	4.08	19	359.84	.0039	12.24
8	148.16	.0008	5.04	20	403.53	.0005	13.73
9	161.47	.0008	5.49	21	412.82	.0007	14.04
10	167.03	4.49E-04	5.68	22	471.79	.0009	16.05
11	176.90	.0021	6.02	23	484.22	.0007	16.47
12	181.93	.0005	6.19	24	530.79	.0006	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0158	.0029 / 3%	.0088 / 31%	.0128 / 66%

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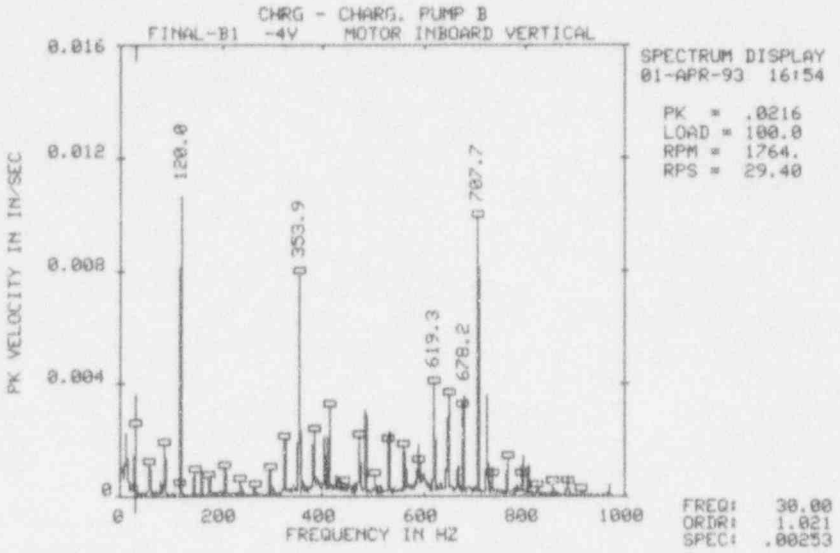

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -4V --> MOTOR INBOARD VERTICAL
Date/Time: 01-APR-93 16:54:38 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	11.58	.0023	.39	13	530.78	.0025	18.06
2	29.46	.0029	1.00	14	560.32	.0018	19.06
3	58.95	.0012	2.01	15	589.74	.0019	20.06
4	88.46	.0019	3.01	16	619.26	.0045	21.07
5	119.97	.0106	4.08	17	648.70	.0036	22.07
6	324.25	.0023	11.03	18	667.28	.0011	22.70
7	353.86	.0079	12.04	19	678.22	.0040	23.07
8	383.08	.0027	13.03	20	707.72	.0101	24.08
9	403.48	.0022	13.73	21	726.37	.0036	24.71
10	412.83	.0034	14.04	22	766.72	.0015	26.08
11	471.79	.0024	16.05	23	796.18	.0014	27.08
12	484.23	.0034	16.47	24	807.04	.0012	27.45

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0216	.0033 / 2%	.0124 / 33%	.0174 / 65%

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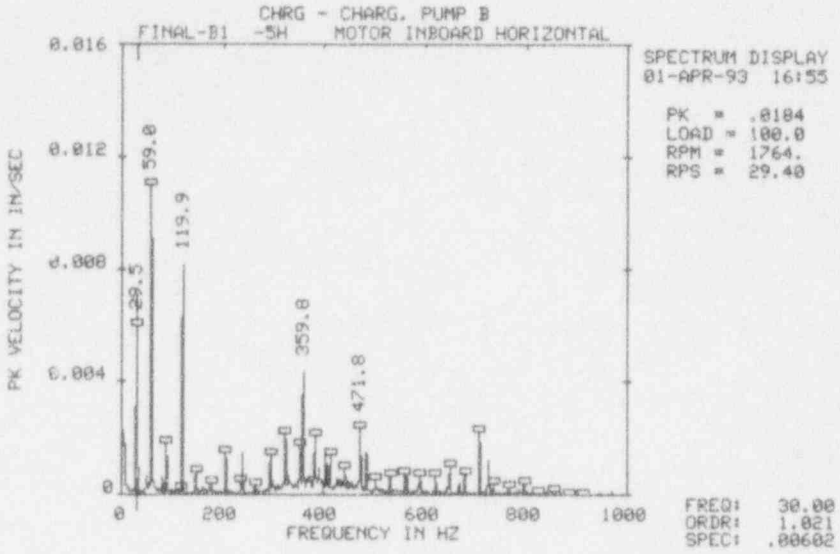

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -5H --> MOTOR INBOARD HORIZONTAL
Date/Time: 01-APR-93 16:55:02 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0067	1.00	13	391.53	.0010	13.32
2	58.97	.0112	2.01	14	403.43	.0014	13.72
3	88.47	.0019	3.01	15	412.82	.0015	14.04
4	119.94	.0081	4.08	16	442.38	.0010	15.05
5	147.67	.0008	5.02	17	471.84	.0028	16.05
6	206.51	.0016	7.03	18	484.28	.0017	16.47
7	239.90	.0015	8.16	19	560.31	.0008	19.06
8	294.89	.0015	10.03	20	619.28	.0008	21.07
9	324.16	.0024	11.03	21	648.76	.0010	22.07
10	353.83	.0018	12.04	22	678.22	.0008	23.07
11	359.82	.0044	12.24	23	707.74	.0023	24.08
12	383.23	.0024	13.04	24	726.36	.0013	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0184	.0022 / 2%	.0147 / 64%	.0107 / 34%

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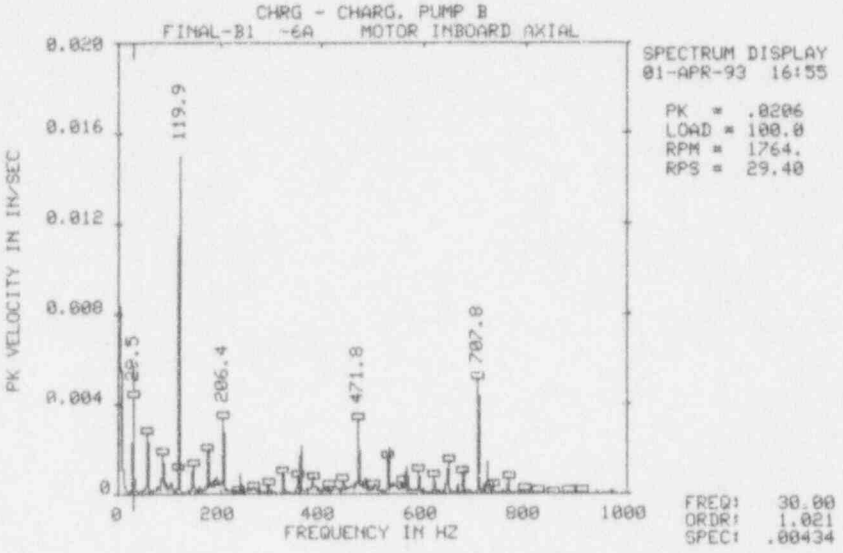

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -6A --> MOTOR INBOARD AXIAL
Date/Time: 01-APR-93 16:55:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0049	1.00	13	359.82	.0021	12.24
2	59.00	.0028	2.01	14	383.23	.0008	13.04
3	85.54	.0007	2.91	15	471.84	.0038	16.05
4	88.48	.0018	3.01	16	484.30	.0008	16.48
5	119.93	.0150	4.08	17	530.82	.0022	18.06
6	147.66	.0013	5.02	18	564.89	.0012	19.22
7	176.93	.0024	6.02	19	589.80	.0010	20.06
8	193.53	.0008	6.58	20	619.34	.0009	21.07
9	206.42	.0035	7.02	21	648.83	.0015	22.07
10	240.18	.0009	8.17	22	678.24	.0011	23.07
11	324.26	.0010	11.03	23	707.78	.0053	24.08
12	353.88	.0007	12.04	24	726.39	.0015	24.71

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0206	.0074 / 13%	.0108 / 28%	.0159 / 59%

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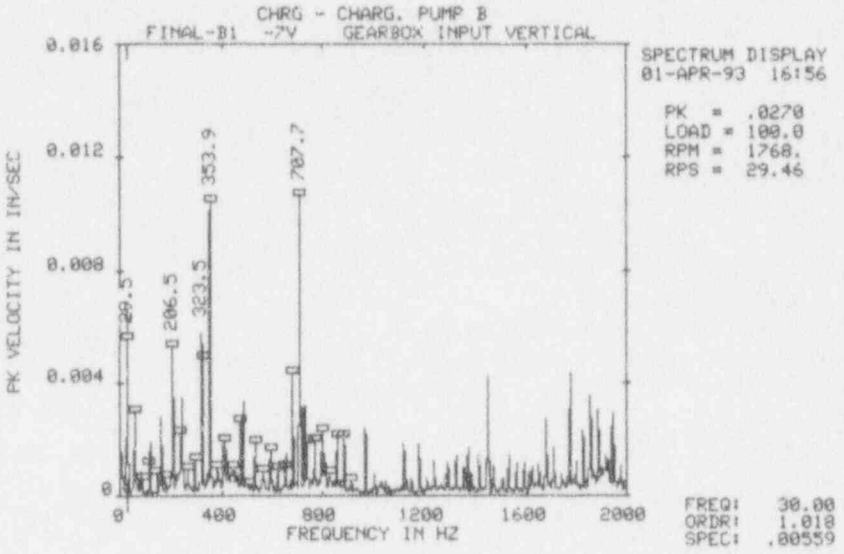

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -7V --> GEARBOX INPUT VERTICAL
Date/Time: 01-APR-93 16:56:02 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0057	1.00	13	726.30	.0037	24.65
2	58.94	.0034	2.00	14	796.02	.0026	27.02
3	161.33	.0032	5.48	15	855.44	.0021	29.03
4	206.47	.0060	7.01	16	968.45	.0026	32.87
5	235.81	.0024	8.00	17	1452.58	.0043	49.30
6	242.08	.0035	8.22	18	1680.86	.0030	57.05
7	323.46	.0063	10.98	19	1775.37	.0044	60.25
8	353.87	.0119	12.01	20	1828.22	.0025	62.05
9	471.71	.0028	16.01	21	1856.56	.0039	63.01
10	484.38	.0035	16.44	22	1887.39	.0031	64.06
11	678.31	.0046	23.02	23	1936.66	.0026	65.73
12	707.69	.0106	24.02	24	1946.22	.0034	66.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0270	.0018 / 0%	.0235 / 76%	.0132 / 24%

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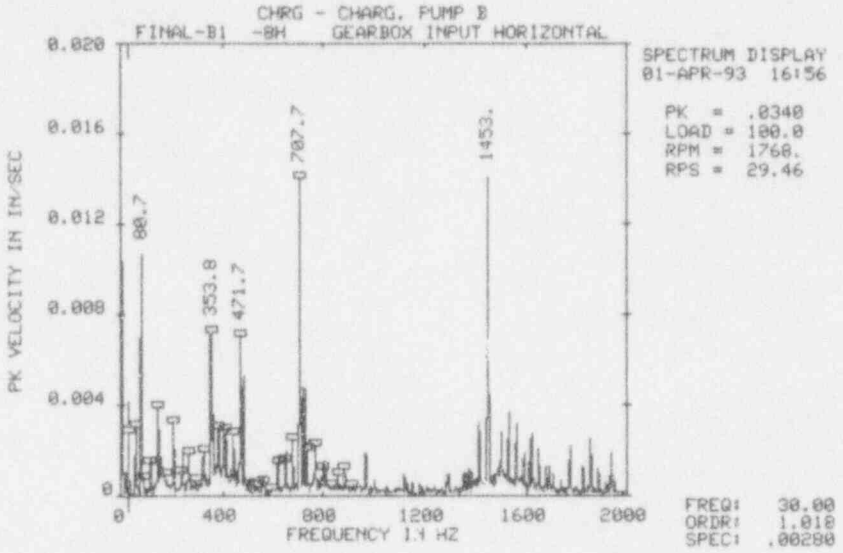

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -8H --> GEARBOX INPUT HORIZONTAL
Date/Time: 01-APR-93 16:56:18 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0029	1.00	13	484.34	.0055	16.44
2	58.87	.0035	2.00	14	678.35	.0026	23.02
3	80.72	.0112	2.74	15	707.71	.0141	24.02
4	146.99	.0040	4.99	16	726.21	.0056	24.65
5	206.45	.0037	7.01	17	1415.58	.0034	48.04
6	353.79	.0084	12.01	18	1452.74	.0142	49.30
7	360.16	.0046	12.22	19	1504.26	.0029	51.05
8	383.47	.0033	13.01	20	1533.34	.0039	52.04
9	403.33	.0029	13.69	21	1563.23	.0034	53.05
10	413.00	.0030	14.02	22	1621.72	.0029	55.04
11	441.93	.0028	15.00	23	1651.27	.0024	56.04
12	471.73	.0075	16.01	24	1856.45	.0028	63.01

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0340	.0089 / 7%	.0234 / 47%	.0230 / 46%

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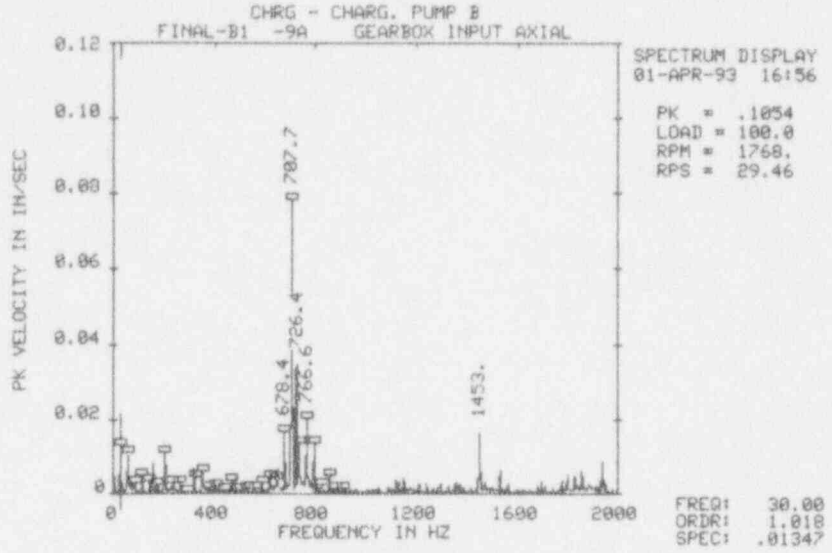

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -9A --> GEARBOX INPUT AXIAL
Date/Time: 01-APR-93 16:56:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0138	1.00	13	726.39	.0395	24.65
2	58.94	.0124	2.00	14	737.11	.0142	25.02
3	118.11	.0051	4.01	15	766.59	.0223	26.02
4	161.40	.0093	5.48	16	796.23	.0163	27.02
5	206.38	.0131	7.00	17	855.14	.0053	29.02
6	242.02	.0046	8.21	18	1149.84	.0043	39.02
7	323.16	.0067	10.97	19	1452.81	.0166	49.31
8	353.80	.0068	12.01	20	1533.30	.0065	52.04
9	619.17	.0048	21.01	21	1798.90	.0058	61.05
10	649.52	.0067	22.04	22	1828.64	.0055	62.06
11	678.39	.0182	23.02	23	1856.60	.0069	63.01
12	707.69	.0790	24.02	24	1936.94	.0090	65.74

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1054	.0040 / 0%	.0927 / 77%	.0500 / 22%

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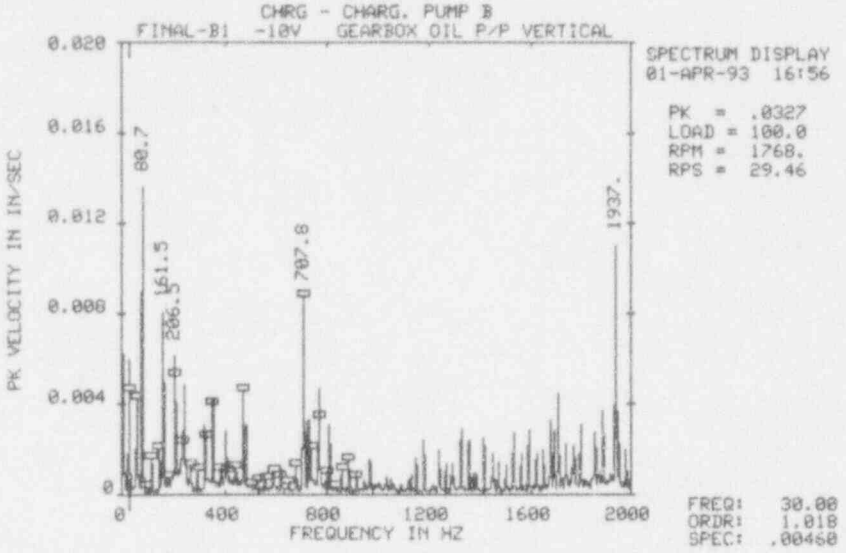

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -10V --> GEARBOX OIL P/P VERTICAL
Date/Time: 01-APR-93 16:56:56 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.46	.0047	1.00	13	726.37	.0038	24.65
2	59.11	.0046	2.01	14	766.83	.0049	26.03
3	80.71	.0143	2.74	15	807.09	.0031	27.39
4	161.49	.0089	5.48	16	1327.05	.0029	45.04
5	206.51	.0067	7.01	17	1533.50	.0031	52.05
6	241.99	.0050	8.21	18	1680.99	.0036	57.05
7	323.41	.0034	10.98	19	1710.44	.0045	58.05
8	353.87	.0049	12.01	20	1798.87	.0035	61.05
9	403.60	.0032	13.70	21	1856.57	.0030	63.01
10	471.90	.0048	16.02	22	1886.97	.0037	64.04
11	484.17	.0033	16.43	23	1937.07	.0112	65.74
12	707.77	.0088	24.02	24	1946.25	.0043	66.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0327	.0058 / 3%	.0216 / 44%	.0238 / 53%

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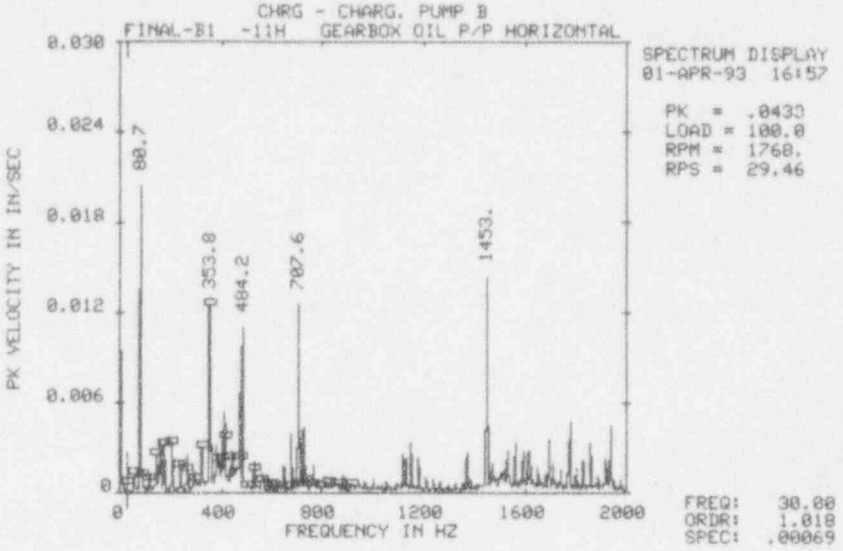

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -11H --> GEARBOX OIL P/P HORIZONTAL
Date/Time: 01-APR-93 16:57:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.0215	2.74	13	678.13	.0042	23.02
2	161.27	.0040	5.47	14	707.61	.0126	24.02
3	176.63	.0034	5.99	15	726.34	.0051	24.65
4	206.34	.0038	7.00	16	1149.98	.0033	39.03
5	323.98	.0035	11.00	17	1452.72	.0144	49.30
6	353.82	.0145	12.01	18	1533.61	.0033	52.05
7	359.48	.0043	12.20	19	1562.86	.0033	53.04
8	383.04	.0033	13.00	20	1613.78	.0032	54.77
9	403.47	.0038	13.69	21	1694.75	.0036	57.52
10	413.05	.0056	14.02	22	1775.53	.0049	60.26
11	471.80	.0069	16.01	23	1856.54	.0037	63.01
12	484.23	.0116	16.43	24	1936.71	.0047	65.73

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0433	.0084 / 4%	.0266 / 38%	.0331 / 58%

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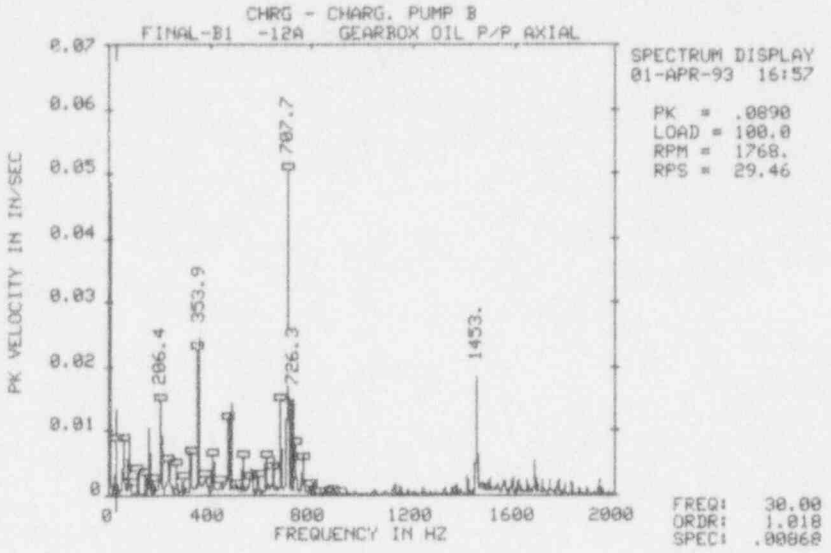

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -12A --> GEARBOX OIL P/P AXIAL
Date/Time: 01-APR-93 16:57:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0089	1.00	13	484.27	.0152	16.44
2	59.13	.0093	2.01	14	530.69	.0064	18.01
3	80.72	.0088	2.74	15	564.69	.0043	19.17
4	161.40	.0120	5.48	16	619.52	.0060	21.03
5	206.35	.0169	7.00	17	649.39	.0062	22.04
6	235.79	.0058	8.00	18	678.31	.0158	23.02
7	242.35	.0053	8.22	19	707.74	.0510	24.02
8	265.38	.0047	9.01	20	726.33	.0173	24.65
9	323.61	.0079	10.98	21	737.24	.0080	25.02
10	353.86	.0279	12.01	22	766.50	.0071	26.01
11	412.70	.0064	14.01	23	1452.84	.0188	49.31
12	471.71	.0127	16.01	24	1680.93	.0060	57.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0890	.0400 / 20%	.0697 / 61%	.0384 / 19%

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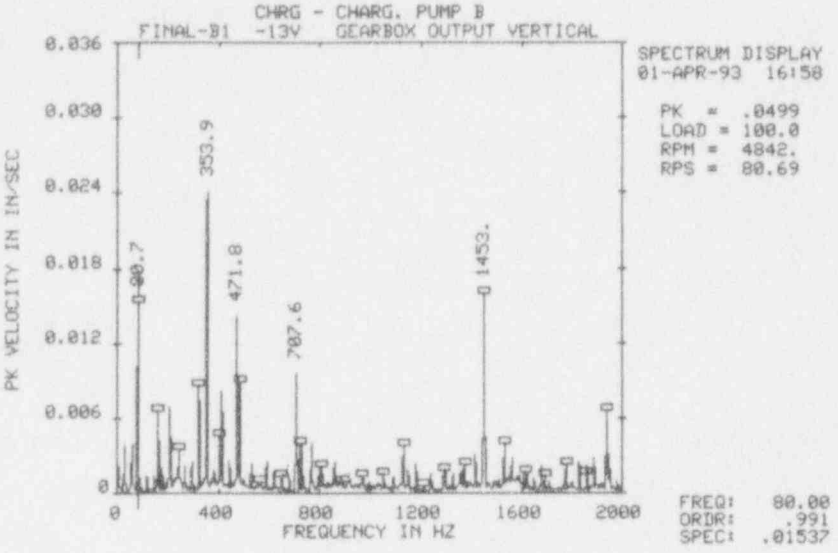

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -13V --> GEARBOX OUTPUT VERTICAL
Date/Time: 01-APR-93 16:58:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0039	.37	13	484.28	.0093	6.00
2	58.79	.0046	.73	14	707.61	.0095	8.77
3	80.69	.0162	1.00	15	726.25	.0048	9.00
4	161.45	.0075	2.00	16	766.73	.0042	9.50
5	206.36	.0079	2.56	17	1129.96	.0038	14.00
6	241.78	.0037	3.00	18	1415.29	.0030	17.54
7	323.13	.0090	4.00	19	1452.60	.0160	18.00
8	353.86	.0276	4.39	20	1533.33	.0043	19.00
9	403.67	.0054	5.00	21	1563.08	.0029	19.37
10	412.76	.0082	5.12	22	1886.83	.0029	23.38
11	442.20	.0026	5.48	23	1936.71	.0070	24.00
12	471.78	.0148	5.85	24	1946.10	.0036	24.12

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0499	.0065 / 2%	.0305 / 37%	.0390 / 61%

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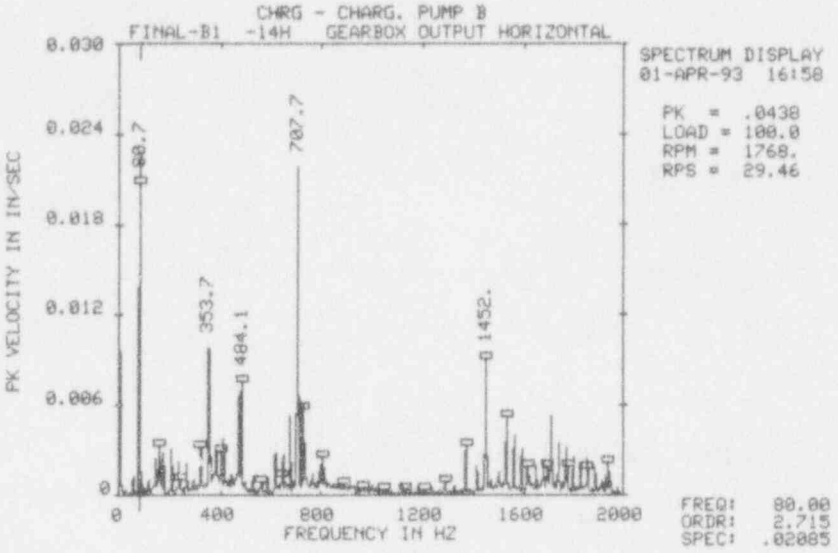

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -14H --> GEARBOX OUTPUT HORIZONTAL
Date/Time: 01-APR-93 16:58:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.70	.0219	2.74	13	678.06	.0054	23.01
2	161.32	.0039	5.48	14	707.67	.0220	24.02
3	206.41	.0035	7.01	15	726.11	.0070	24.64
4	323.80	.0038	10.99	16	736.83	.0036	25.01
5	353.73	.0114	12.01	17	1371.71	.0035	46.55
6	359.61	.0035	12.20	18	1452.47	.0090	49.30
7	383.35	.0033	13.01	19	1533.14	.0054	52.03
8	403.56	.0032	13.70	20	1562.50	.0040	53.03
9	412.82	.0038	14.01	21	1592.10	.0031	54.03
10	471.63	.0071	16.01	22	1710.03	.0053	58.04
11	484.13	.0081	16.43	23	1739.47	.0035	59.04
12	619.03	.0030	21.01	24	1769.02	.0036	60.04

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0438	.0085 / 4%	.0314 / 52%	.0293 / 45%

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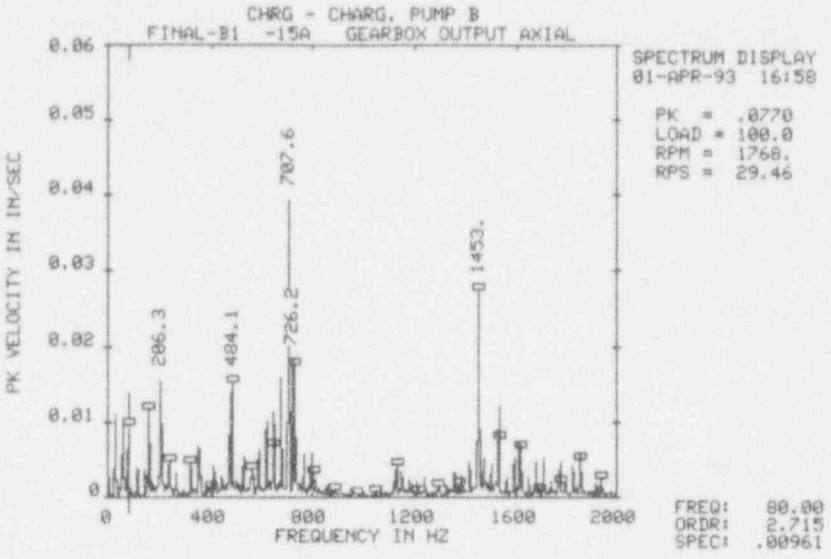

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -15A --> GEARBOX OUTPUT AXIAL
Date/Time: 01-APR-93 16:58:56 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.51	.0111	1.00	13	678.05	.0163	23.01
2	58.98	.0112	2.00	14	707.62	.0395	24.02
3	80.75	.0102	2.74	15	726.19	.0210	24.65
4	161.35	.0135	5.48	16	737.00	.0081	25.01
5	206.31	.0176	7.00	17	766.58	.0063	26.02
6	353.71	.0076	12.00	18	796.01	.0065	27.02
7	471.60	.0089	16.01	19	1452.66	.0277	49.30
8	484.10	.0167	16.43	20	1473.81	.0060	50.02
9	530.41	.0054	18.00	21	1532.97	.0122	52.03
10	589.56	.0063	20.01	22	1592.06	.0052	54.03
11	619.18	.0108	21.01	23	1613.60	.0081	54.76
12	648.09	.0117	22.00	24	1855.99	.0066	62.99

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0770	.0023 / 0%	.0605 / 62%	.0476 / 38%

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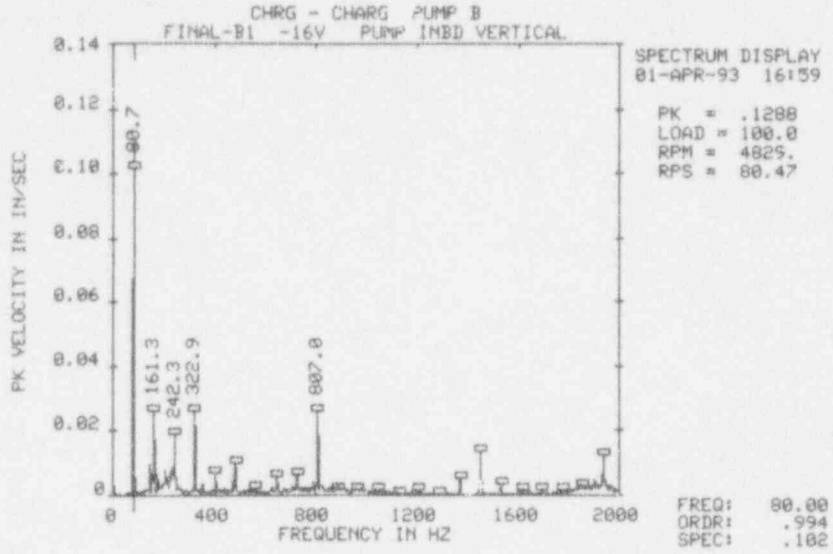

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -16V --> PUMP INBD VERTICAL
Date/Time: 01-APR-93 16:59:14 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.1073	1.00	13	484.33	.0106	6.02
2	146.89	.0097	1.83	14	645.70	.0062	8.02
3	161.34	.0305	2.00	15	726.37	.0076	9.03
4	176.70	.0070	2.20	16	789.19	.0043	9.81
5	205.94	.0082	2.56	17	806.98	.0272	10.03
6	213.55	.0051	2.65	18	1371.82	.0058	17.05
7	223.36	.0067	2.78	19	1452.57	.0134	18.05
8	231.00	.0088	2.87	20	1533.37	.0041	19.05
9	242.33	.0191	3.01	21	1900.85	.0050	23.62
10	322.92	.0266	4.01	22	1908.53	.0046	23.72
11	403.54	.0083	5.01	23	1929.03	.0048	23.97
12	471.53	.0055	5.86	24	1936.74	.0133	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1288	.0036 / 0%	.1208 / 88%	.0447 / 12%

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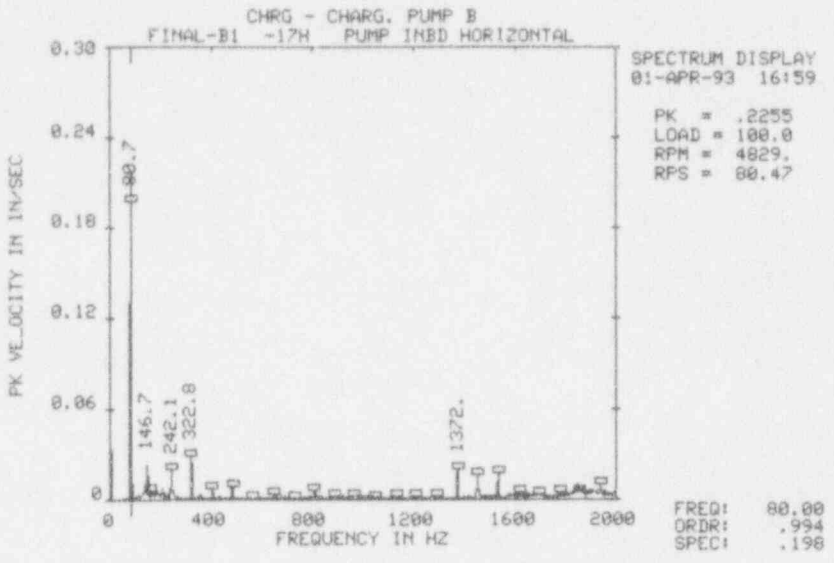

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -17H --> PUMP INBD HORIZONTAL
Date/Time: 01-APR-93 16:59:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.2088	1.00	13	1371.91	.0208	17.05
2	136.13	.0069	1.69	14	1452.54	.0168	18.05
3	146.74	.0242	1.82	15	1533.23	.0185	19.05
4	161.19	.0072	2.00	16	1843.87	.0110	22.91
5	176.73	.0064	2.20	17	1853.13	.0085	23.03
6	188.52	.0060	2.34	18	1861.50	.0069	23.13
7	206.15	.0089	2.56	19	1869.25	.0083	23.23
8	242.06	.0207	3.01	20	1896.33	.0070	23.56
9	322.84	.0292	4.01	21	1905.86	.0067	23.68
10	403.61	.0092	5.02	22	1913.65	.0064	23.78
11	484.11	.0103	6.02	23	1936.59	.0116	24.06
12	807.15	.0061	10.03	24	1956.04	.0068	24.31

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.2255	.0281 / 2%	.2138 / 90%	.0661 / 9%

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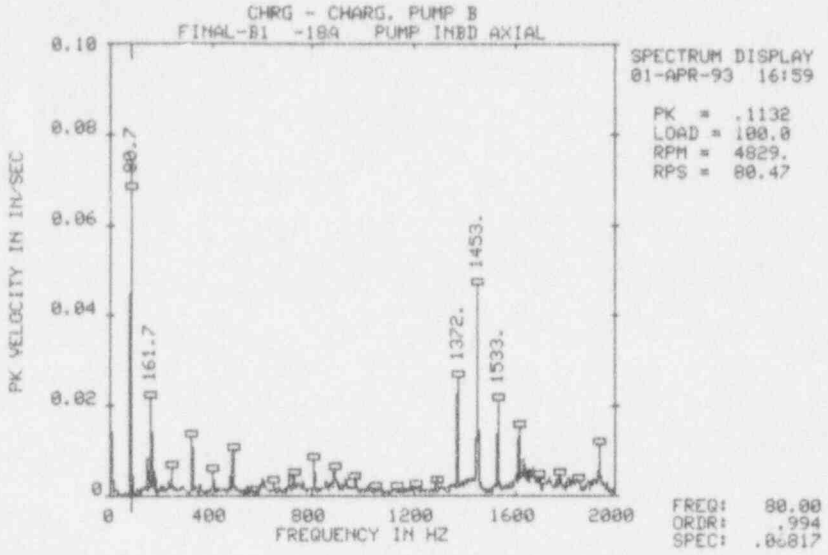

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -18A --> PUMP INBD AXIAL
Date/Time: 01-APR-93 16:59:48 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.71	.0719	1.00	13	1452.69	.0469	18.05
2	146.75	.0088	1.82	14	1533.31	.0227	19.05
3	161.69	.0233	2.01	15	1604.10	.0051	19.93
4	176.90	.0058	2.20	16	1614.57	.0156	20.06
5	242.21	.0063	3.01	17	1628.54	.0056	20.24
6	322.79	.0134	4.01	18	1636.14	.0094	20.33
7	403.73	.0063	5.02	19	1654.20	.0063	20.56
8	484.13	.0112	6.02	20	1663.30	.0060	20.67
9	726.63	.0051	9.03	21	1671.44	.0072	20.77
10	806.65	.0086	10.02	22	1738.75	.0051	21.61
11	886.62	.0066	11.02	23	1776.04	.0053	22.07
12	1371.92	.0275	17.05	24	1936.90	.0118	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1132	.0140 / 2%	.0855 / 57%	.0729 / 41%

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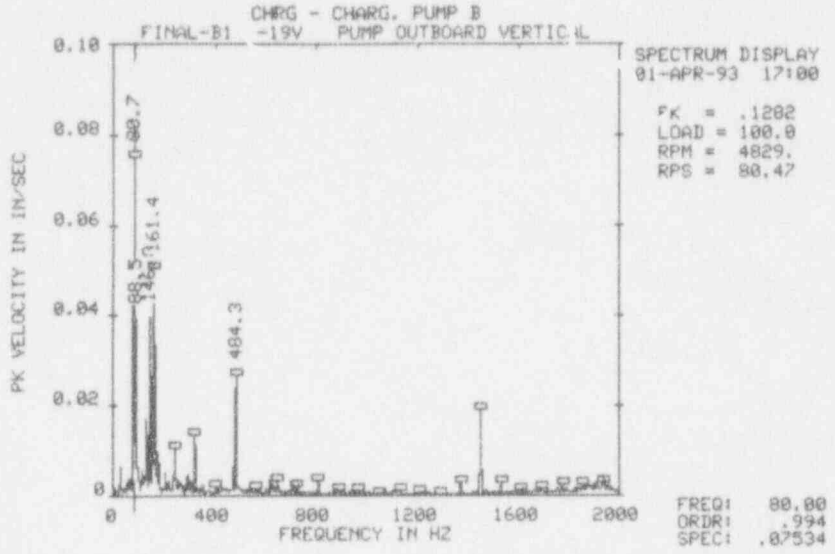

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -19V --> PUMP OUTBOARD VERTICAL
Date/Time: 01-APR-93 17:00:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.55	.0067	.37	13	220.25	.0036	2.74
2	59.01	.0045	.73	14	242.13	.0108	3.01
3	65.91	.0042	.82	15	294.05	.0049	3.65
4	80.67	.0790	1.00	16	308.26	.0037	3.83
5	88.49	.0434	1.10	17	322.92	.0138	4.01
6	116.94	.0055	1.45	18	471.67	.0067	5.86
7	126.17	.0048	1.57	19	484.26	.0286	6.02
8	131.95	.0174	1.64	20	616.65	.0038	7.66
9	146.76	.0421	1.82	21	646.19	.0038	8.03
10	161.36	.0577	2.01	22	806.80	.0035	10.03
11	176.83	.0101	2.20	23	1452.60	.0193	18.05
12	205.85	.0056	2.56	24	1938.42	.0042	24.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1282	.0102 / 1%	.1034 / 65%	.0750 / 34%

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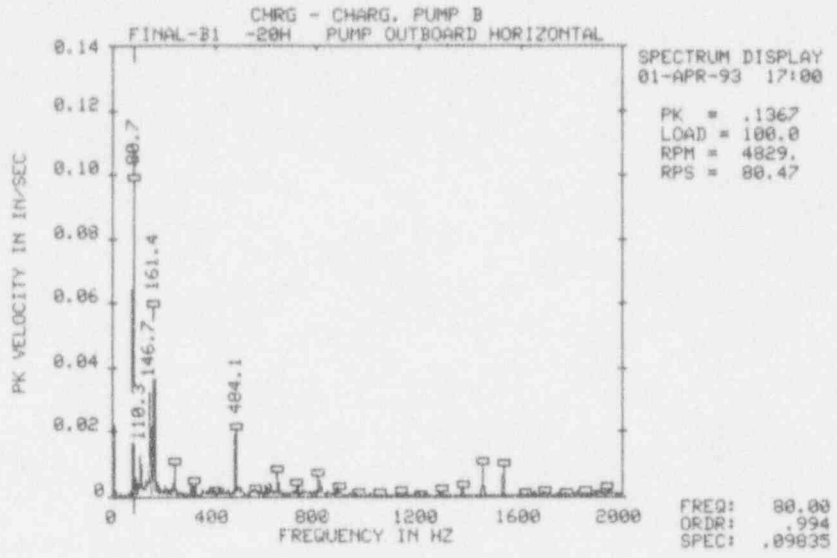

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 01-APR-93 17:00:22 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.1034	1.00	13	322.77	.0042	4.01
2	100.94	.0045	1.25	14	388.29	.0030	4.82
3	110.33	.0129	1.37	15	484.09	.0228	6.02
4	123.98	.0035	1.54	16	498.64	.0033	6.20
5	131.80	.0056	1.64	17	558.66	.0030	6.94
6	138.64	.0048	1.72	18	601.79	.0037	7.48
7	146.68	.0345	1.82	19	616.51	.0045	7.66
8	161.40	.0667	2.01	20	645.72	.0081	8.02
9	176.52	.0056	2.19	21	726.40	.0044	9.03
10	205.55	.0035	2.55	22	807.04	.0068	10.03
11	242.04	.0105	3.01	23	1452.52	.0102	18.05
12	307.97	.0034	3.83	24	1533.29	.0104	19.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1367	.0185 / 2%	.1258 / 85%	.0503 / 14%

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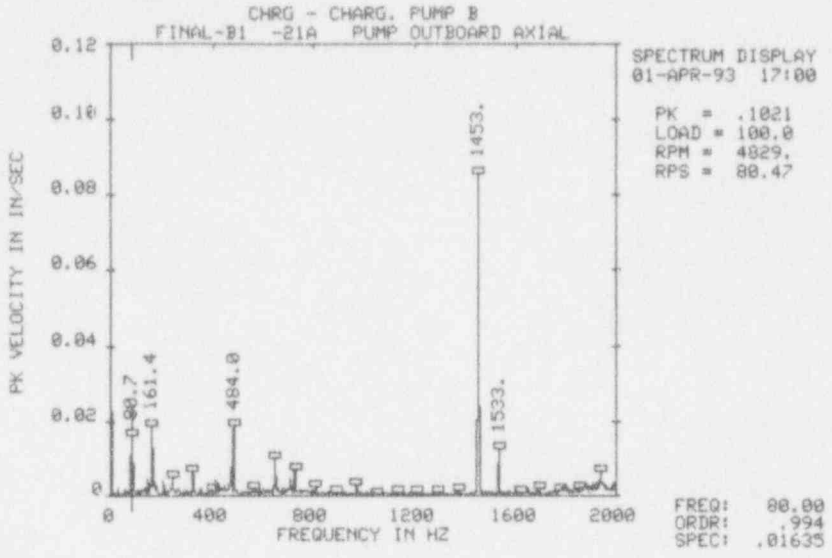

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -21A --> PUMP OUTBOARD AXIAL
Date/Time: 01-APR-93 17:00:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.72	.0173	1.00	13	484.04	.0208	6.01
2	88.44	.0097	1.10	14	645.69	.0109	8.02
3	146.71	.0048	1.82	15	707.97	.0046	8.80
4	161.42	.0213	2.01	16	726.27	.0084	9.02
5	168.88	.0033	2.10	17	1452.64	.0858	18.05
6	176.97	.0037	2.20	18	1533.29	.0135	19.05
7	206.21	.0050	2.56	19	1886.13	.0038	23.44
8	236.13	.0032	2.93	20	1909.51	.0038	23.73
9	242.16	.0051	3.01	21	1928.43	.0044	23.96
10	322.98	.0067	4.01	22	1936.79	.0070	24.07
11	412.94	.0039	5.13	23	1946.32	.0040	24.19
12	471.56	.0085	5.86	24	1987.18	.0034	24.69

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1021	.0190 / 3%	.0516 / 26%	.0860 / 71%

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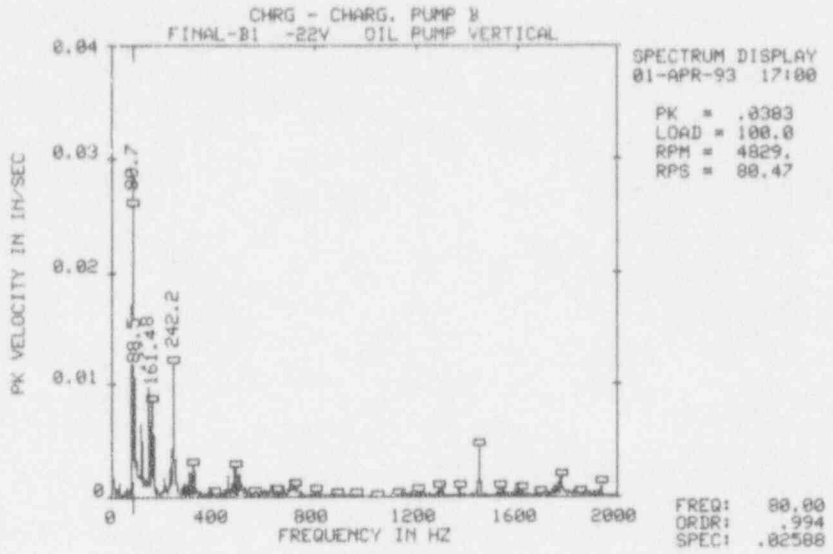

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -22V --> OIL PUMP VERTICAL
Date/Time: 01-APR-93 17:00:54 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.69	.0272	1.00	13	242.17	.0121	3.01
2	88.46	.0117	1.10	14	249.40	.0030	3.10
3	93.97	.0035	1.17	15	256.21	.0014	3.18
4	111.14	.0021	1.38	16	278.69	.0014	3.46
5	117.15	.0065	1.46	17	308.33	.0023	3.83
6	125.70	.0016	1.56	18	322.83	.0029	4.01
7	133.42	.0019	1.66	19	454.69	.0019	5.65
8	146.76	.0104	1.82	20	483.95	.0031	6.01
9	161.39	.0096	2.01	21	498.93	.0022	6.20
10	205.51	.0018	2.55	22	1452.57	.0046	18.05
11	227.40	.0025	2.83	23	1761.17	.0015	21.88
12	234.33	.0017	2.91	24	1774.39	.0020	22.05

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0383	.0028 / 1%	.0316 / 68%	.0213 / 31%

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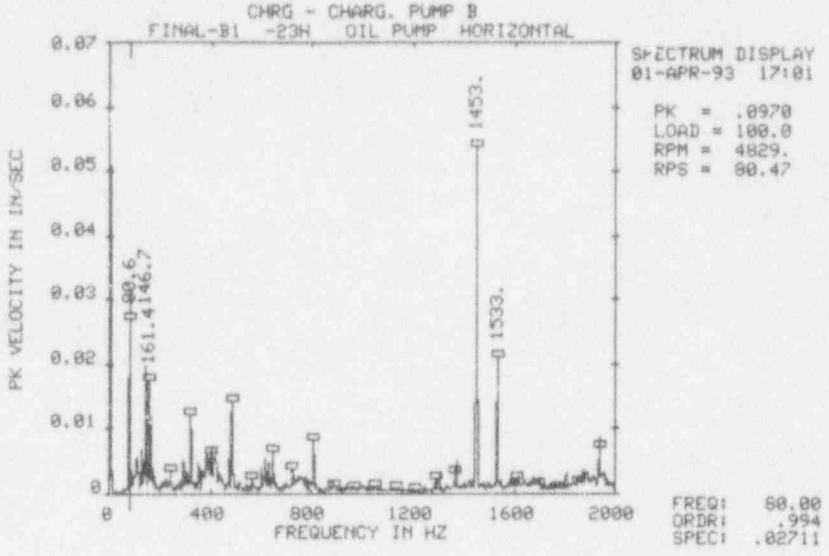

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -23H --> OIL PUMP HORIZONTAL
Date/Time: 01-APR-93 17:01:20 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.64	.0283	1.00	13	403.96	.0078	5.02
2	111.53	.0063	1.39	14	416.32	.0066	5.17
3	116.48	.0050	1.45	15	471.54	.0061	5.86
4	131.78	.0071	1.64	16	484.32	.0151	6.02
5	146.68	.0289	1.82	17	615.97	.0060	7.65
6	161.44	.0198	2.01	18	630.83	.0051	7.84
7	176.35	.0045	2.19	19	645.56	.0069	8.02
8	293.49	.0055	3.65	20	806.95	.0085	10.03
9	322.83	.0122	4.01	21	1371.96	.0051	17.05
10	353.03	.0049	4.39	22	1452.54	.0538	18.05
11	383.07	.0059	4.76	23	1533.26	.0225	19.05
12	390.82	.0064	4.86	24	1936.58	.0094	24.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0970	.0421 / 19%	.0514 / 28%	.0707 / 53%

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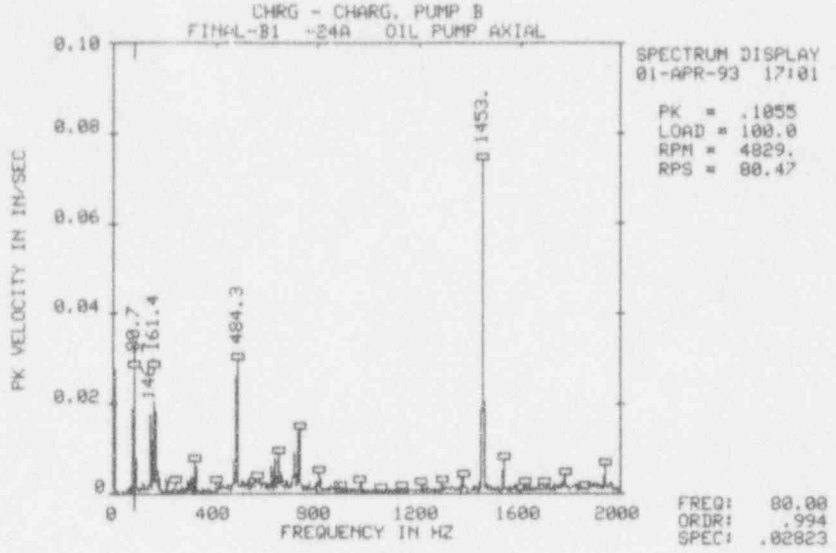

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -24A --> OIL PUMP AXIAL
Date/Time: 01-APR-93 17:01:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.70	.0297	1.00	13	630.83	.0080	7.84
2	88.50	.0083	1.10	14	645.74	.0096	8.02
3	146.71	.0185	1.82	15	659.55	.0041	8.20
4	161.41	.0316	2.01	16	678.77	.0035	8.43
5	176.44	.0056	2.19	17	707.57	.0087	8.79
6	206.25	.0040	2.56	18	726.47	.0159	9.03
7	308.15	.0040	3.83	19	807.17	.0049	10.03
8	322.94	.0075	4.01	20	1371.87	.0039	17.05
9	471.57	.0080	5.86	21	1452.59	.0740	18.05
10	484.30	.0313	6.02	22	1533.31	.0082	19.05
11	568.71	.0041	7.07	23	1774.78	.0042	22.05
12	616.45	.0065	7.66	24	1936.66	.0067	24.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1055	.0228 / 5%	.0648 / 38%	.0800 / 58%

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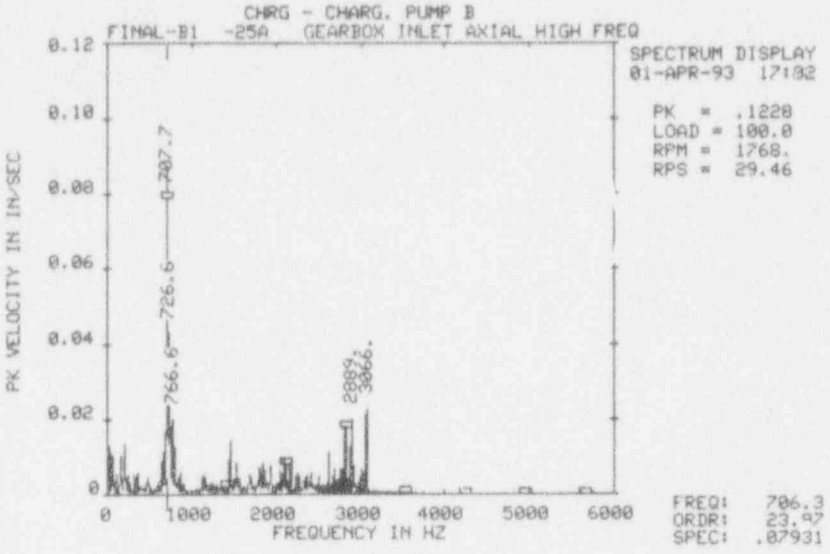

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -25A --> GEARBOX INLET AXIAL HIGH FREQ
Date/Time: 01-APR-93 17:02:06 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.54	.0134	1.00	13	1855.83	.0084	62.99
2	59.24	.0125	2.01	14	1936.67	.0078	65.73
3	161.10	.0106	5.47	15	2096.09	.0104	71.14
4	206.25	.0133	7.00	16	2123.23	.0085	72.06
5	646.75	.0099	21.95	17	2180.49	.0094	74.00
6	678.13	.0200	23.01	18	2624.12	.0112	89.06
7	707.68	.0821	24.02	19	2771.60	.0079	94.07
8	726.58	.0449	24.66	20	2800.96	.0178	95.06
9	766.57	.0213	26.02	21	2830.56	.0179	96.07
10	796.40	.0146	27.03	22	2889.46	.0210	98.07
11	1452.64	.0160	49.30	23	2919.09	.0075	99.07
12	1532.96	.0084	52.03	24	3066.40	.0247	104.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1228	Undefined / 0%	.1144 / 87%	.0384 / 10%

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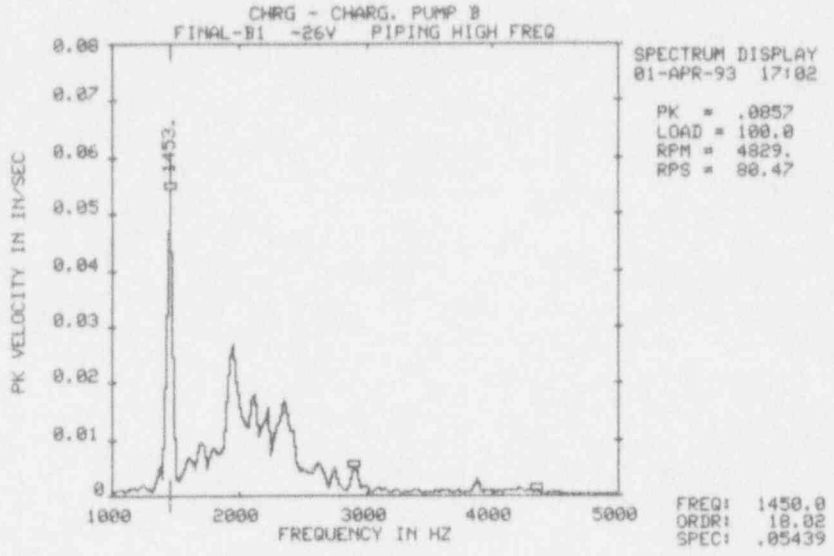

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP B
Meas. Point: Final-B1 -26V --> PIPING HIGH FREQ
Date/Time: 01-APR-93 17:02.38 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1062.96	.0012	13.21	13	2488.15	.0053	30.92
2	1160.19	.0015	14.42	14	2613.39	.0066	32.47
3	1242.45	.0021	15.44	15	2742.72	.0053	34.08
4	1377.41	.0053	17.12	16	2907.85	.0054	36.13
5	1452.61	.0548	18.05	17	2988.24	.0020	37.13
6	1611.01	.0079	20.02	18	3088.79	.0016	38.38
7	1710.99	.0109	21.26	19	3139.77	.0014	39.02
8	1810.04	.0096	22.49	20	3387.50	.0012	42.09
9	1939.70	.0302	24.10	21	3871.91	.0030	48.11
10	2114.36	.0202	26.27	22	4134.01	.0013	51.37
11	2216.17	.0170	27.54	23	4214.05	.0015	52.36
12	2360.51	.0190	29.33	24	4356.87	.0012	54.14

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0857	Undefined / 0%	Undefined / 0%	Undefined / 0%

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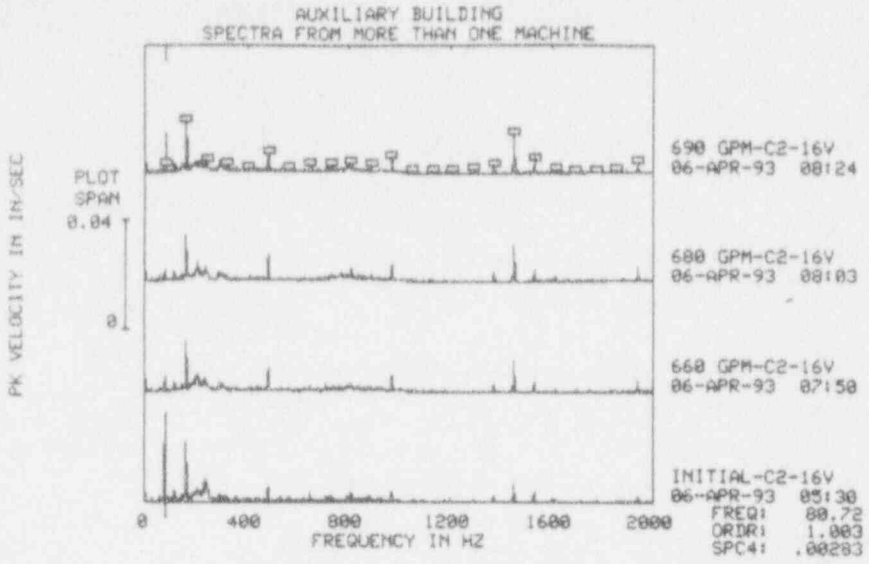

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-16V --> PUMP INBD VERTICAL
Date/Time: 06-APR-93 08:24:30 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.72	.0028	1.00	13	311.57	.0033	3.87
2	118.18	.0039	1.47	14	484.43	.0070	6.02
3	148.15	.0039	1.84	15	646.30	.0030	8.03
4	161.43	.0207	2.01	16	726.48	.0031	9.03
5	188.73	.0037	2.35	17	789.03	.0032	9.81
6	199.16	.0047	2.48	18	807.89	.0032	10.04
7	214.03	.0046	2.66	19	886.67	.0033	11.02
8	221.30	.0032	2.75	20	968.70	.0067	12.04
9	231.48	.0055	2.88	21	1372.27	.0031	17.05
10	241.41	.0050	3.00	22	1453.11	.0149	18.06
11	286.10	.0032	3.56	23	1533.88	.0062	19.06
12	293.51	.0051	3.65	24	1937.74	.0043	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0382	.0041 / 1%	.0248 / 42%	.0288 / 57%

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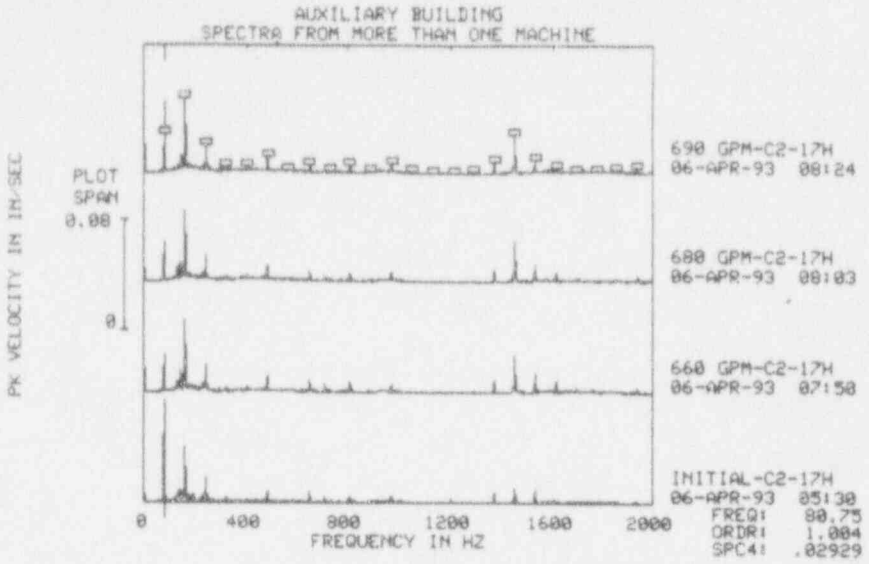

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-17H --> PUMP INBD HORIZONTAL
Date/Time: 06-APR-93 08:24:44 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.75	.0293	1.00	13	323.26	.0043	4.02
2	126.25	.0039	1.57	14	403.75	.0042	5.02
3	136.11	.0058	1.69	15	484.25	.0122	6.02
4	146.84	.0132	1.82	16	645.96	.0068	8.03
5	161.47	.0594	2.01	17	708.03	.0038	8.80
6	168.90	.0048	2.10	18	807.26	.0052	10.03
7	176.54	.0069	2.19	19	968.75	.0085	12.04
8	183.77	.0066	2.28	20	1372.59	.0080	17.06
9	206.35	.0045	2.56	21	1453.18	.0299	18.06
10	228.15	.0046	2.84	22	1533.98	.0112	19.06
11	233.54	.0050	2.90	23	1614.69	.0043	20.07
12	242.25	.0198	3.01	24	1937.72	.0037	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0871	.0178 / 4%	.0713 / 67%	.0468 / 29%

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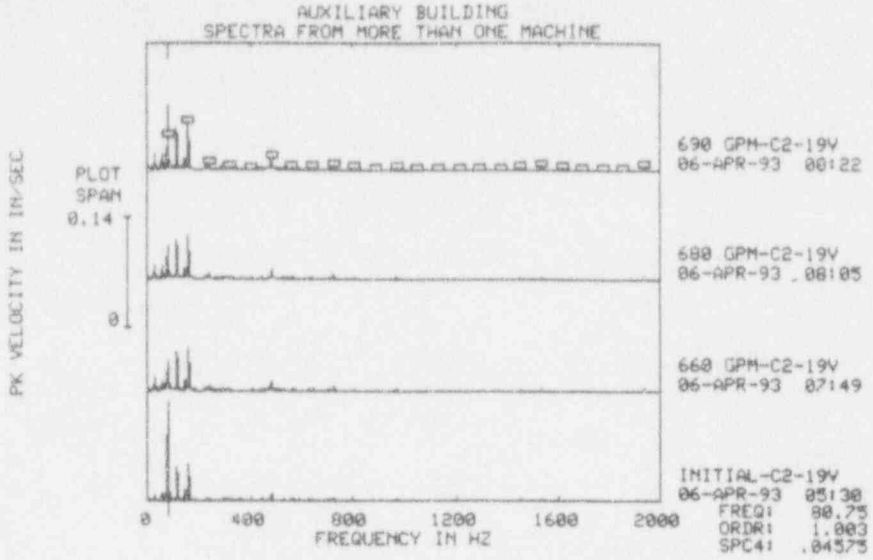

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-19V --> PUMP OUTBD VERTICAL
Date/Time: 06-APR-93 08:22:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0206	.37	13	176.55	.0036	2.19
2	58.90	.0229	.73	14	227.94	.0053	2.83
3	66.00	.0075	.82	15	231.45	.0042	2.88
4	80.75	.0458	1.00	16	242.04	.0082	3.01
5	88.37	.0123	1.10	17	293.60	.0051	3.65
6	103.55	.0031	1.29	18	310.91	.0030	3.86
7	111.09	.0044	1.38	19	484.51	.0153	6.02
8	118.01	.0528	1.47	20	531.11	.0033	6.60
9	128.82	.0042	1.60	21	726.72	.0050	9.03
10	138.58	.0043	1.72	22	1453.45	.0038	18.06
11	147.83	.0147	1.84	23	1534.16	.0041	19.06
12	161.52	.0645	2.01	24	1938.05	.0050	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1064	.0321 / 9%	.0802 / 57%	.0621 / 34%

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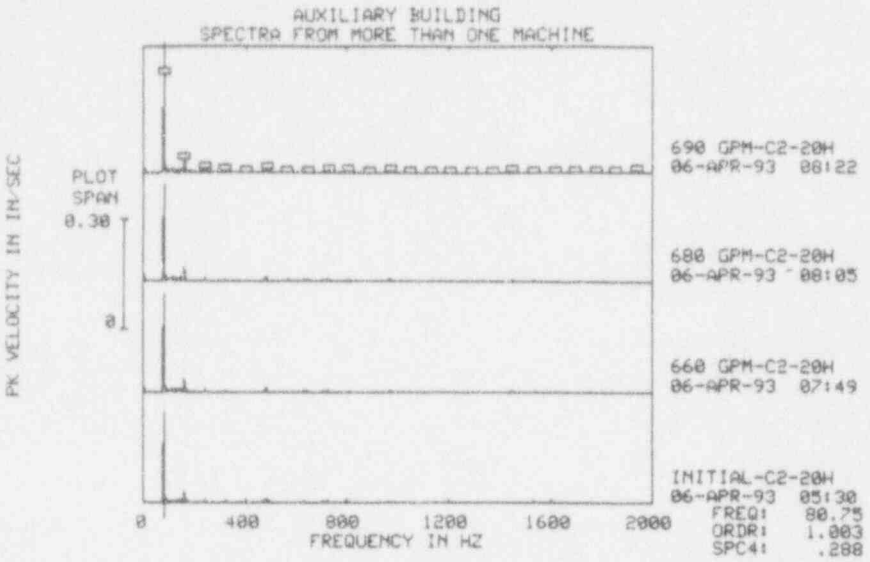

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 08:22:51 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.75	.2876	1.00	13	461.30	.0027	5.73
2	98.74	.0049	1.23	14	471.38	.0051	5.86
3	104.34	.0077	1.30	15	483.84	.0137	6.01
4	118.15	.0119	1.47	16	631.29	.0035	7.85
5	133.99	.0085	1.67	17	646.20	.0026	8.03
6	147.14	.0111	1.83	18	708.33	.0046	8.80
7	161.54	.0406	2.01	19	726.69	.0081	9.03
8	182.96	.0029	2.27	20	807.29	.0030	10.03
9	190.34	.0030	2.37	21	968.88	.0035	12.04
10	242.22	.0097	3.01	22	1453.37	.0034	18.06
11	323.11	.0038	4.02	23	1534.13	.0026	19.07
12	403.44	.0029	5.01	24	1937.82	.0034	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.2930	.0121 / 0%	.2904 / 98%	.0369 / 2%

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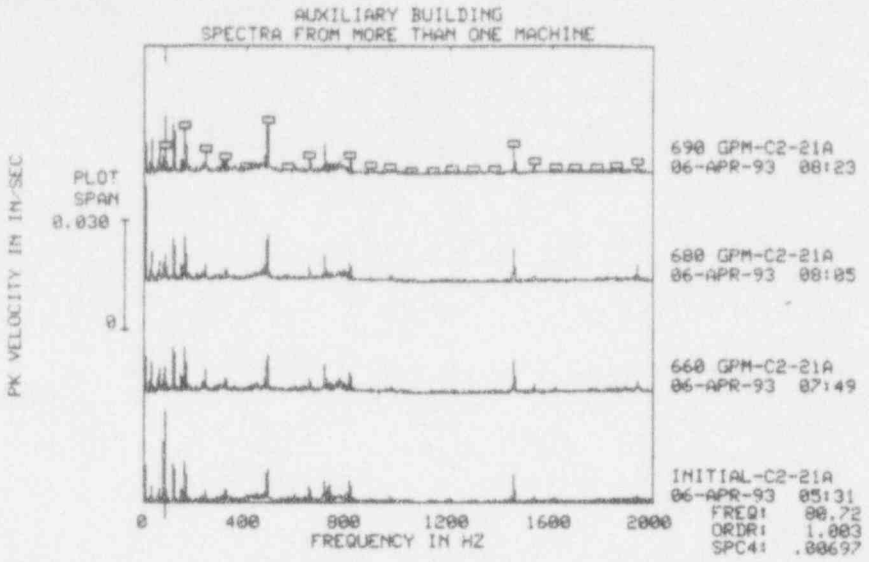

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-21A --> PUMP OUTBOARD AXIAL
Date/Time: 06-APR-93 08:23:04 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0092	.37	13	441.80	.0028	5.49
2	58.98	.0080	.73	14	458.81	.0029	5.70
3	80.72	.0070	1.00	15	471.54	.0050	5.86
4	88.55	.0034	1.10	16	484.21	.0149	6.02
5	117.99	.0138	1.47	17	646.42	.0050	8.03
6	147.12	.0036	1.83	18	707.98	.0081	8.80
7	161.47	.0136	2.01	19	736.80	.0030	9.16
8	242.13	.0058	3.01	20	768.27	.0039	9.55
9	308.99	.0032	3.84	21	807.29	.0042	10.03
10	323.01	.0038	4.01	22	1453.28	.0079	18.06
11	426.59	.0027	5.30	23	1534.00	.0031	19.06
12	433.17	.0026	5.38	24	1937.74	.0026	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0392	.0142 / 13%	.0233 / 35%	.0282 / 52%

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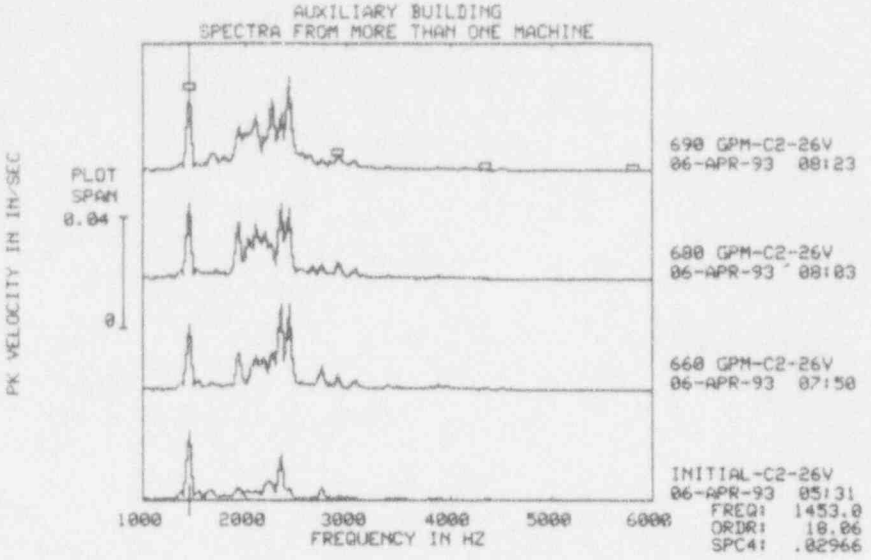

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: 690 GPM-C2-26V --> PIPING HIGH FREQ
Date/Time: 06-APR-93 08:23:28 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1372.09	.0031	17.05	13	2417.32	.0357	30.04
2	1452.98	.0297	18.06	14	2541.02	.0071	31.58
3	1532.95	.0027	19.05	15	2612.73	.0062	32.47
4	1608.45	.0029	19.99	16	2662.66	.0045	33.09
5	1688.66	.0076	20.99	17	2743.14	.0044	34.09
6	1809.01	.0059	22.48	18	2833.01	.0035	35.21
7	1939.58	.0182	24.10	19	2909.10	.0061	36.15
8	2011.01	.0156	24.99	20	2964.85	.0034	36.85
9	2091.99	.0218	26.00	21	3062.69	.0038	38.06
10	2185.47	.0144	27.16	22	3218.99	.0018	40.00
11	2259.18	.0283	28.08	23	3385.68	.0014	42.08
12	2342.55	.0224	29.11	24	3879.91	.0016	48.22

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0765	Undefined / 0%	Undefined / 0%	Undefined / 0%

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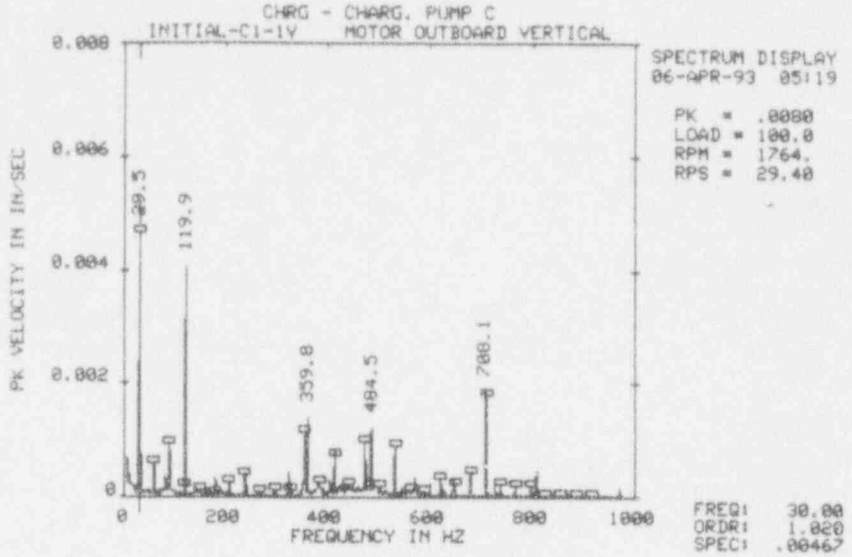

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-1V --> MOTOR OUTBOARD VERTICAL
Date/Time: 06-APR-93 05:19:10 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	5.64	.0008	.19	13	359.77	.0014	12.24
2	10.77	4.66E-04	.37	14	413.05	.0009	14.05
3	29.51	.0052	1.00	15	472.05	.0011	16.06
4	59.05	.0006	2.01	16	480.14	3.47E-04	16.33
5	80.75	4.19E-04	2.75	17	484.50	.0014	16.48
6	89.03	.0010	3.03	18	531.06	.0009	18.06
7	119.93	.0041	4.08	19	569.77	3.61E-04	19.38
8	180.12	3.51E-04	6.13	20	619.58	3.56E-04	21.08
9	236.01	4.09E-04	8.03	21	645.92	3.27E-04	21.97
10	239.78	3.99E-04	8.16	22	678.57	4.47E-04	23.08
11	323.04	4.88E-04	10.99	23	708.09	.0022	24.09
12	354.04	.0012	12.04	24	807.40	4.94E-04	27.46

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0080	.0011 / 2%	.0059 / 54%	.0053 / 44%

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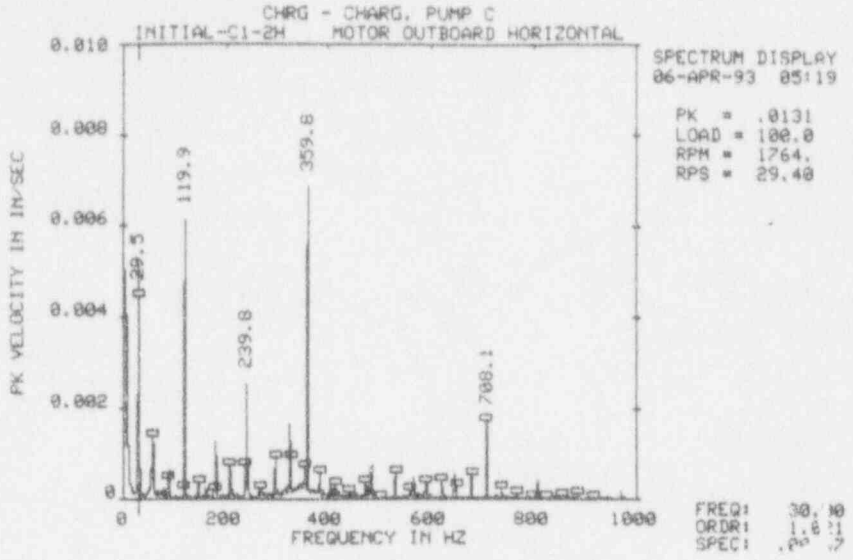

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-2H --> MOTOR OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 05:19:33 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0050	1.00	13	359.80	.0070	12.24
2	58.28	.0016	1.98	14	383.48	.0006	13.05
3	90.41	.0007	3.08	15	472.06	3.92E-04	16.06
4	119.92	.0061	4.08	16	484.51	.0008	16.48
5	179.91	.0013	6.12	17	531.11	.0006	18.07
6	206.56	.0008	7.03	18	565.29	4.99E-04	19.23
7	236.09	.0008	8.03	19	590.16	4.04E-04	20.08
8	239.84	.0026	8.16	20	619.58	4.63E-04	21.08
9	295.10	.0010	10.04	21	646.00	.0006	21.98
10	323.11	.0019	10.99	22	678.62	.0006	23.09
11	344.36	4.18E-04	11.71	23	708.13	.0021	24.09
12	354.10	.0007	12.05	24	807.56	4.18E-04	27.47

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0131	.0054 / 17%	.0066 / 25%	.0100 / 58%

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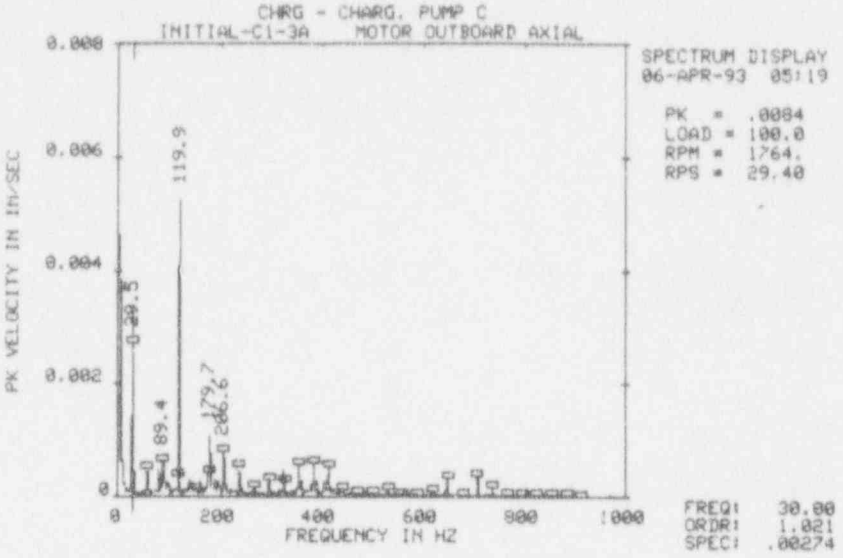

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-3A --> MOTOR OUTBOARD AXIAL
Date/Time: 06-APR-93 05:19:47 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.50	.0030	1.00	13	236.09	.0005	8.03
2	59.07	.0005	2.01	14	239.73	3.02E-04	8.16
3	80.82	.0005	2.75	15	295.13	3.03E-04	10.04
4	89.35	.0007	3.04	16	323.01	.0005	10.99
5	98.10	3.28E-04	3.34	17	353.99	.0006	12.04
6	119.93	.0052	4.08	18	359.78	2.95E-04	12.24
7	139.62	3.15E-04	4.75	19	383.49	.0006	13.05
8	161 58	2.91E-04	5.50	20	389.30	3.24E-04	13.24
9	179.73	.0011	6.11	21	403.49	2.86E-04	13.73
10	190.87	3.27E-04	6.49	22	413.11	.0006	14.05
11	197.04	2.96E-04	6.70	23	649.11	3.49E-04	22.08
12	206.61	.0009	7.03	24	708.11	4.34E-04	24.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0084	.0048 / 34%	.0043 / 27%	.0053 / 40%

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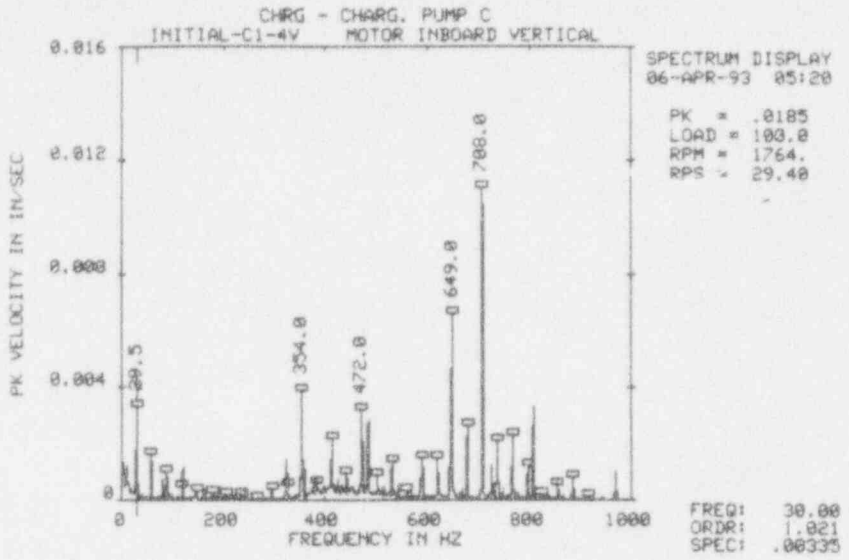

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-4V --> MOTOR INBOARD VERTICAL
Date/Time: 06-APR-93 05:20:16 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	10.78	.0014	.37	13	589.93	.0015	20.07
2	29.50	.0037	1.00	14	619.53	.0017	21.08
3	58.99	.0016	2.01	15	646.81	.0032	22.00
4	88.46	.0011	3.01	16	649.02	.0068	22.08
5	119.66	.0012	4.07	17	678.50	.0027	23.08
6	323.06	.0016	10.99	18	708.01	.0123	24.09
7	354.00	.0040	12.04	19	726.64	.0013	24.72
8	359.74	.0011	12.24	20	737.50	.0021	25.09
9	413.04	.0025	14.05	21	767.01	.0025	26.09
10	472.00	.0036	16.06	22	796.51	.0013	27.10
11	484.40	.0032	16.48	23	807.36	.0033	27.47
12	530.99	.0014	18.06	24	968.85	.0010	32.96

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0185	.0023 / 2%	.0084 / 20%	.0163 / 78%

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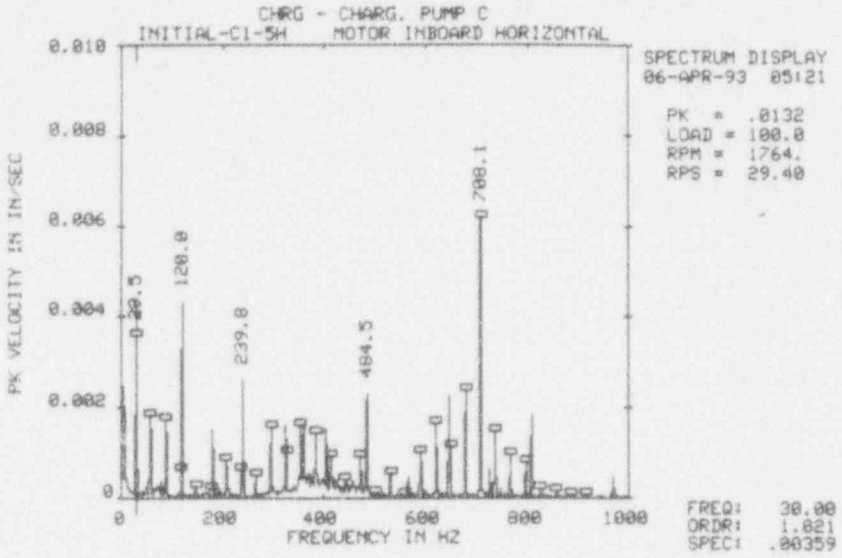

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-5H --> MOTOR INBOARD HORIZONTAL
Date/Time: 06-APR-93 05:21:17 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.51	.0040	1.00	13	413.11	.0011	14.05
2	59.02	.0019	2.01	14	472.11	.0010	16.06
3	88.96	.0018	3.03	15	484.51	.0025	16.48
4	119.97	.0043	4.08	16	590.14	.0010	20.08
5	179.93	.0015	6.12	17	619.61	.0017	21.08
6	239.84	.0026	8.16	18	646.03	.0023	21.98
7	295.07	.0016	10.04	19	648.31	.0012	22.05
8	323.15	.0019	10.99	20	678.66	.0024	23.09
9	354.12	.0017	12.05	21	708.14	.0073	24.09
10	359.80	.0017	12.24	22	737.64	.0015	25.09
11	383.49	.0015	13.05	23	767.16	.0010	26.10
12	403.82	.0015	13.74	24	807.55	.0018	27.47

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0132	.0025 / 3%	.0070 / 28%	.0109 / 68%

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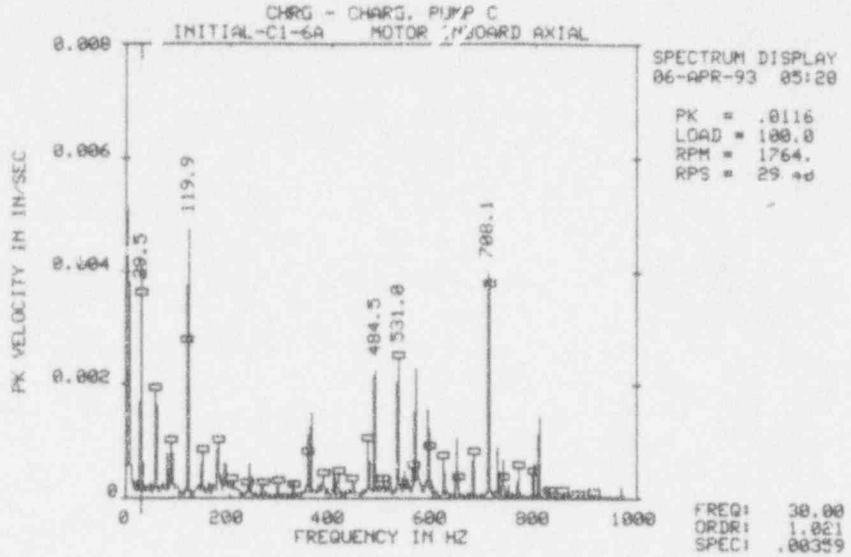

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-6A --> MOTOR INBOARD AXIAL
Date/Time: 06-APR-93 05:20:44 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0039	1.00	13	484.48	.0025	16.48
2	59.03	.0020	2.01	14	531.04	.0025	18.07
3	80.85	.0008	2.75	15	565.25	.0023	19.23
4	88.39	.0011	3.01	16	590.10	.0016	20.07
5	119.87	.0048	4.08	17	619.56	.0008	21.08
6	147.66	.0008	5.02	18	645.92	.0011	21.97
7	177.17	.0010	6.03	19	678.60	.0008	23.08
8	191.73	.0007	6.52	20	708.07	.0046	24.09
9	240.33	.0006	8.18	21	726.72	.0010	24.72
10	354.04	.0012	12.04	22	737.55	.0007	25.09
11	359.77	.0015	12.24	23	796.58	.0007	27.10
12	472.07	.0011	16.06	24	807.43	.0014	27.47

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0116	.0048 / 18%	.0059 / 26%	.0087 / 57%

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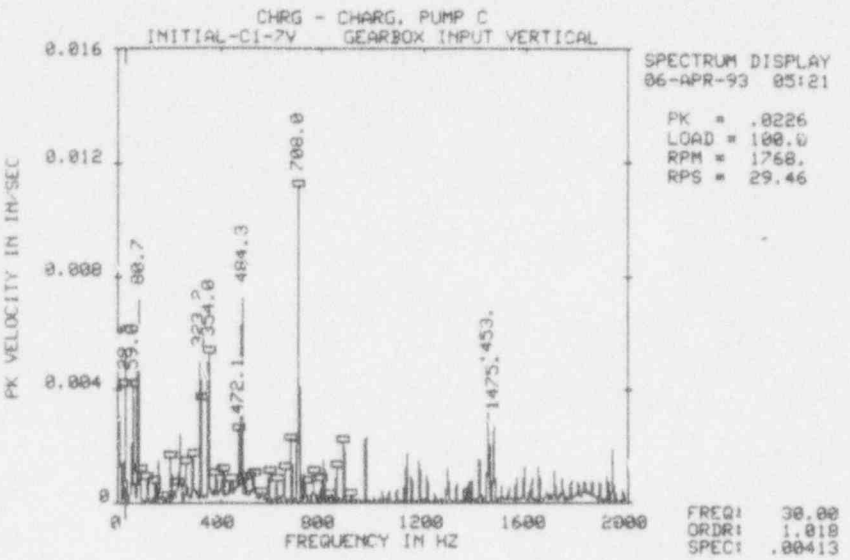

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-7V --> GEARBOX INPUT VERTICAL
Date/Time: 06-APR-93 05:21:41 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	8.77	.0020	.30	13	484.33	.0076	16.44
2	29.52	.0042	1.00	14	678.68	.0027	23.03
3	58.96	.0046	2.00	15	708.03	.0115	24.03
4	80.74	.0075	2.74	16	807.38	.0015	27.40
5	161.44	.0017	5.48	17	885.92	.0024	30.07
6	206.60	.0018	7.01	18	968.88	.0026	32.88
7	242.10	.0025	8.22	19	1130.38	.0018	38.36
8	265.54	.0014	9.01	20	1180.10	.0015	40.05
9	295.15	.0017	10.02	21	1416.14	.0018	48.06
10	323.18	.0052	10.97	22	1453.35	.0047	49.33
11	354.03	.0058	12.02	23	1475.17	.0027	50.07
12	472.05	.0027	16.02	24	1937.81	.0019	65.77

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0226	.0033 / 2%	.0176 / 61%	.0137 / 37%

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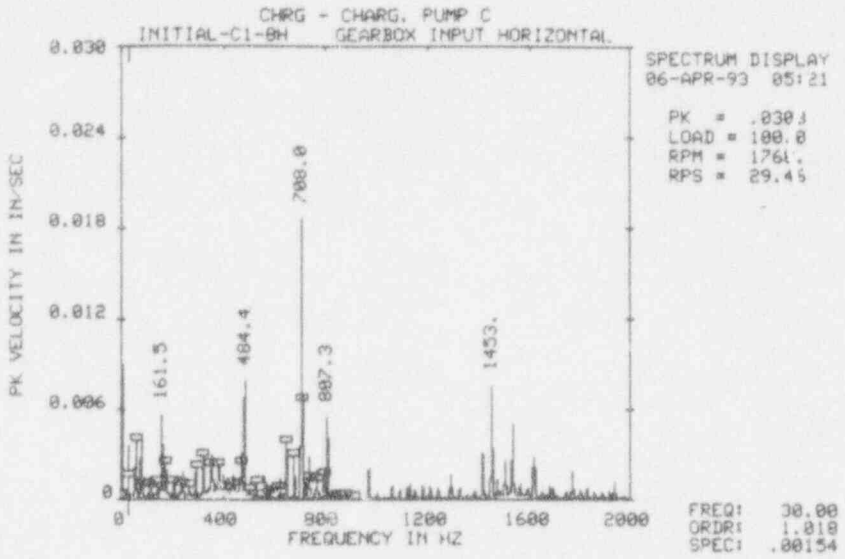

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-8H --> GEARBOX INPUT HORIZONTAL
Date/Time: 06-APR-93 05:21:55 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	58.91	.0045	2.00	13	708.01	.0192	24.03
2	80.75	.0043	2.74	14	737.43	.0028	25.03
3	161.51	.0063	5.48	15	767.14	.0020	26.04
4	176.97	.0025	6.01	16	796.51	.0022	27.03
5	294.69	.0022	10.00	17	807.35	.0055	27.40
6	323.27	.0031	10.97	18	968.87	.0024	32.88
7	354.22	.0032	12.02	19	1416.04	.0034	48.06
8	383.66	.0026	13.02	20	1453.28	.0081	49.32
9	471.73	.0033	16.01	21	1504.63	.0026	51.07
10	484.38	.0082	16.44	22	1534.04	.0054	52.06
11	648.22	.0040	22.00	23	1614.83	.0028	54.81
12	678.55	.0033	23.03	24	1622.38	.0021	55.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0303	.0076 / 6%	.0240 / 62%	.0170 / 31%

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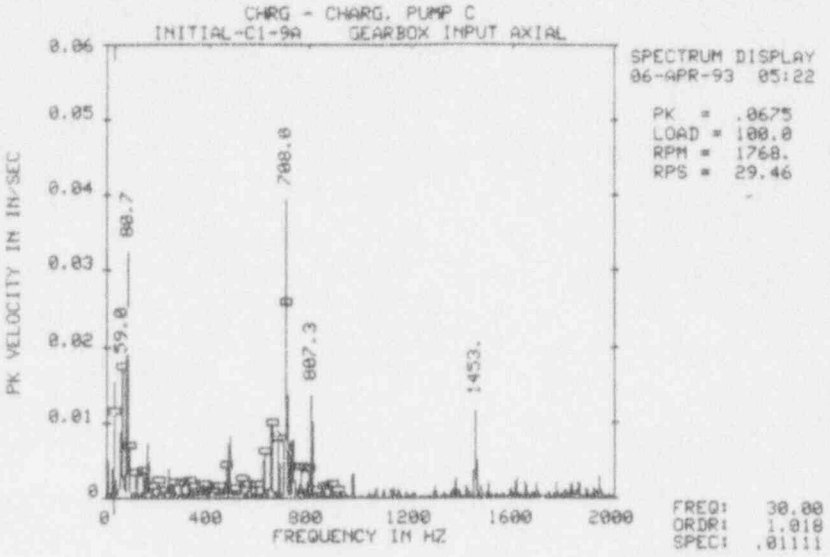

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-9A --> GEARBOX INPUT AXIAL
Date/Time: 06-APR-93 05:22:08 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.56	.0113	1.00	13	619.54	.0060	21.03
2	59.00	.0190	2.00	14	648.79	.0112	22.02
3	80.74	.0343	2.74	15	678.47	.0099	23.03
4	88.54	.0073	3.01	16	707.97	.0401	24.03
5	118.11	.0033	4.01	17	726.58	.0083	24.66
6	147.56	.0032	5.01	18	737.53	.0076	25.03
7	161.46	.0079	5.48	19	766.81	.0039	26.02
8	242.17	.0039	8.22	20	796.46	.0041	27.03
9	472.19	.0042	16.03	21	807.33	.0136	27.40
10	484.34	.0086	16.44	22	968.75	.0035	32.88
11	531.16	.0027	18.03	23	1445.29	.0036	49.05
12	564.82	.0027	19.17	24	1453.22	.0120	49.32

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0675	.0042 / 0%	.0517 / 59%	.0431 / 41%

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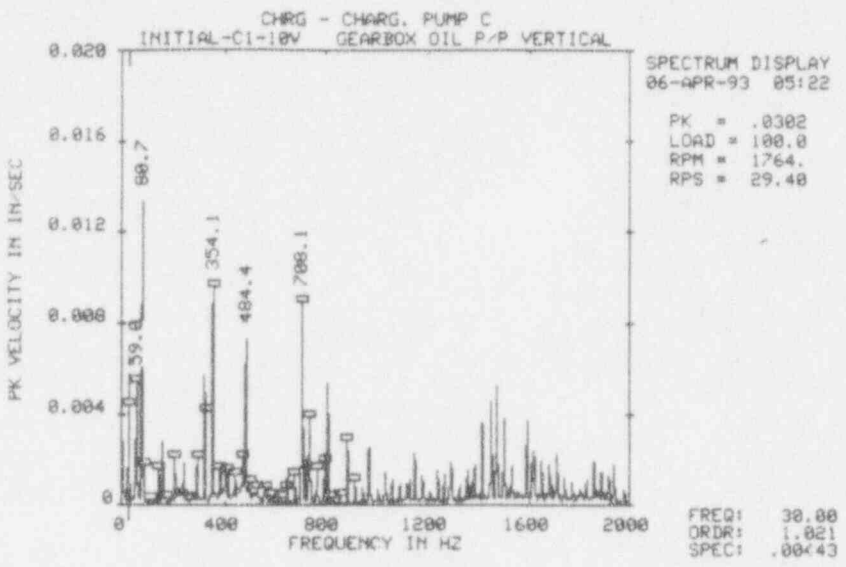

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-10V --> GEARBOX OIL P/P VERTICAL
Date/Time: 06-APR-93 05:22:26 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.48	.0046	1.00	13	796.60	.0025	27.10
2	59.00	.0061	2.01	14	807.45	.0053	27.47
3	80.75	.0142	2.75	15	885.36	.0029	30.12
4	161.48	.0031	5.49	16	968.93	.0029	32.96
5	206.63	.0023	7.03	17	1150.60	.0024	39.14
6	323.17	.0060	10.99	18	1416.14	.0042	48.17
7	354.09	.0105	12.05	19	1453.42	.0050	49.44
8	471.65	.0023	16.04	20	1475.25	.0053	50.19
9	484.44	.0075	16.48	21	1504.59	.0039	51.18
10	708.07	.0093	24.09	22	1593.10	.0039	54.19
11	726.77	.0023	24.72	23	1615.16	.0024	54.95
12	737.59	.0040	25.09	24	1711.18	.0026	58.21

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0302	.0027 / 1%	.0193 / 41%	.0231 / 58%

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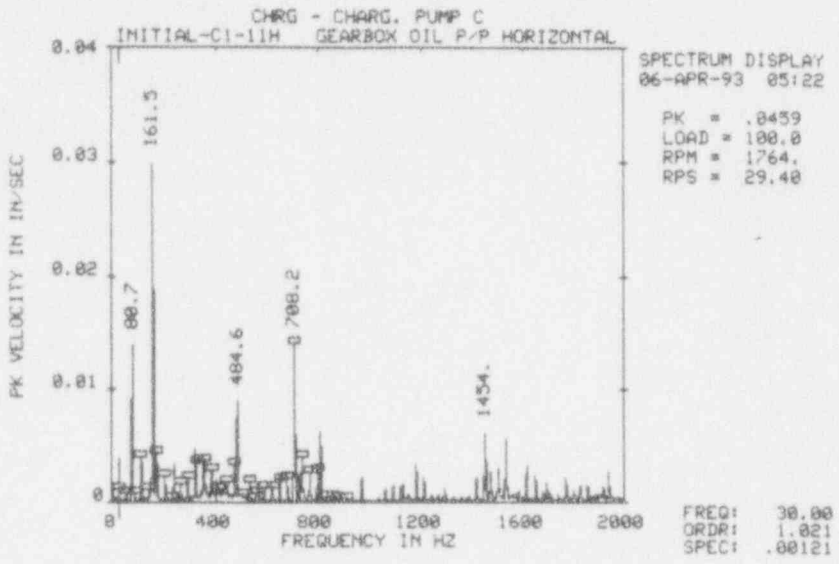

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-11H --> GEARBOX OIL P/P HORIZONTAL
Date/Time: 06-APR-93 05:22:41 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.73	.0147	2.75	13	726.93	.0028	24.73
2	118.15	.0042	4.02	14	737.71	.0041	25.10
3	161.52	.0329	5.49	15	767.17	.0028	26.10
4	177.06	.0046	6.02	16	796.73	.0030	27.10
5	242.19	.0035	8.24	17	807.64	.0063	27.47
6	323.22	.0049	11.00	18	1180.26	.0034	40.15
7	354.16	.0040	12.05	19	1453.73	.0073	49.45
8	383.73	.0033	13.05	20	1475.52	.0029	50.19
9	471.95	.0034	16.06	21	1504.82	.0031	51.19
10	484.58	.0092	16.48	22	1534.51	.0058	52.20
11	678.75	.0027	23.09	23	1615.05	.0033	54.94
12	708.24	.0149	24.09	24	1938.35	.0029	65.94

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0459	.0014 / 0%	.0188 / 17%	.0418 / 83%

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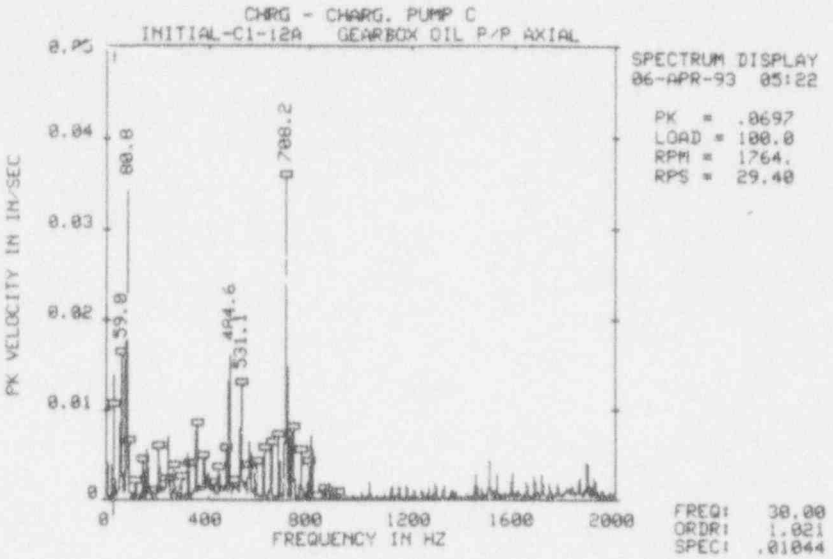

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-12A --> GEARBOX OIL P/P AXIAL
Date/Time: 06-APR-93 05:22:55 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0107	1.00	13	531.14	.0147	18.07
2	59.03	.0179	2.01	14	565.21	.0064	19.23
3	80.80	.0365	2.75	15	619.66	.0055	21.08
4	88.62	.0072	3.01	16	645.35	.0058	21.95
5	161.54	.0060	5.50	17	649.76	.0061	22.10
6	206.42	.0065	7.02	18	678.71	.0082	23.09
7	242.26	.0071	8.24	19	708.19	.0377	24.09
8	323.26	.0053	11.00	20	726.88	.0081	24.73
9	354.14	.0090	12.05	21	737.73	.0079	25.10
10	383.59	.0052	13.05	22	767.25	.0053	26.10
11	471.88	.0057	16.05	23	807.63	.0071	27.47
12	484.58	.0162	16.48	24	1888.58	.0045	64.25

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0697	.0037 / 0%	.0466 / 45%	.0517 / 55%

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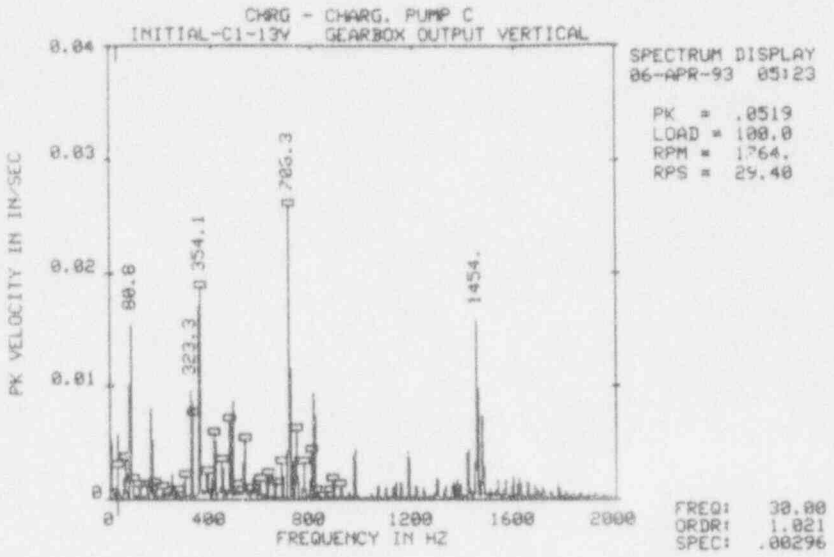

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-13V --> GEARBOX OUTPUT VERTICAL
Date/Time: 06-APR-93 05:23:22 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0030	1.00	13	708.32	.0278	24.10
2	59.01	.0039	2.01	14	727.01	.0039	24.73
3	80.77	.0163	2.75	15	737.82	.0062	25.10
4	161.53	.0089	5.49	16	767.42	.0033	26.11
5	323.32	.0102	11.00	17	796.88	.0044	27.11
6	354.13	.0203	12.05	18	807.74	.0093	27.48
7	413.16	.0061	14.06	19	969.24	.0047	32.97
8	442.76	.0034	15.06	20	1180.54	.0044	40.16
9	472.14	.0070	16.06	21	1416.61	.0048	48.19
10	484.55	.0089	16.48	22	1446.10	.0036	49.19
11	531.23	.0063	18.07	23	1453.88	.0179	49.46
12	678.85	.0037	23.09	24	1475.62	.0075	50.20

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0519	.0047 / 1%	.0357 / 47%	.0373 / 52%

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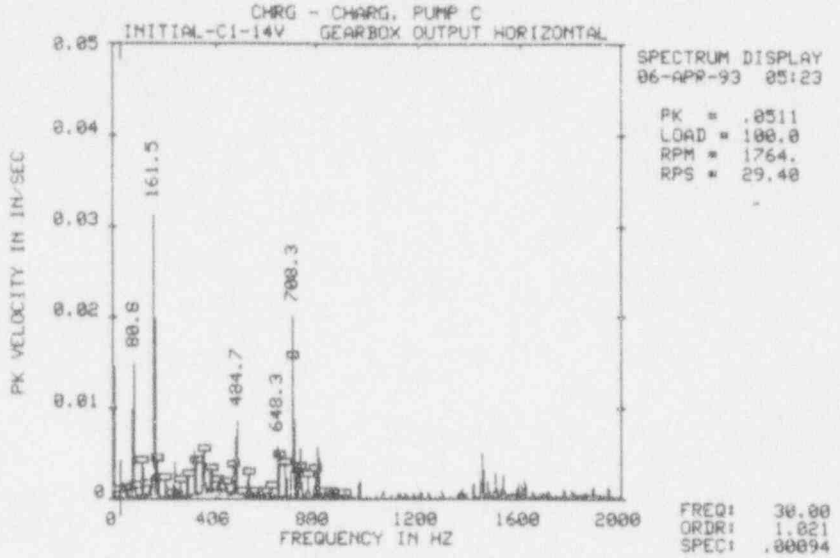

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-14V --> GEARBOX OUTPUT HORIZONTAL
Date/Time: 06-APR-93 05:23:34 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.78	.0159	2.75	13	531.21	.0032	18.07
2	118.01	.0042	4.01	14	648.31	.0063	22.05
3	161.54	.0344	5.50	15	678.68	.0047	23.09
4	176.86	.0045	6.02	16	708.30	.0213	24.10
5	206.58	.0023	7.03	17	726.89	.0040	24.73
6	242.28	.0040	8.24	18	737.79	.0056	25.10
7	295.02	.0025	10.04	19	767.44	.0026	26.11
8	323.26	.0056	11.00	20	796.74	.0034	27.10
9	354.07	.0059	12.05	21	807.71	.0057	27.48
10	383.54	.0039	13.05	22	1453.87	.0058	49.46
11	472.02	.0036	16.06	23	1505.32	.0027	51.21
12	484.66	.0086	16.49	24	1534.81	.0026	52.21

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0511	.0120 / 6%	.0239 / 22%	.0435 / 73%

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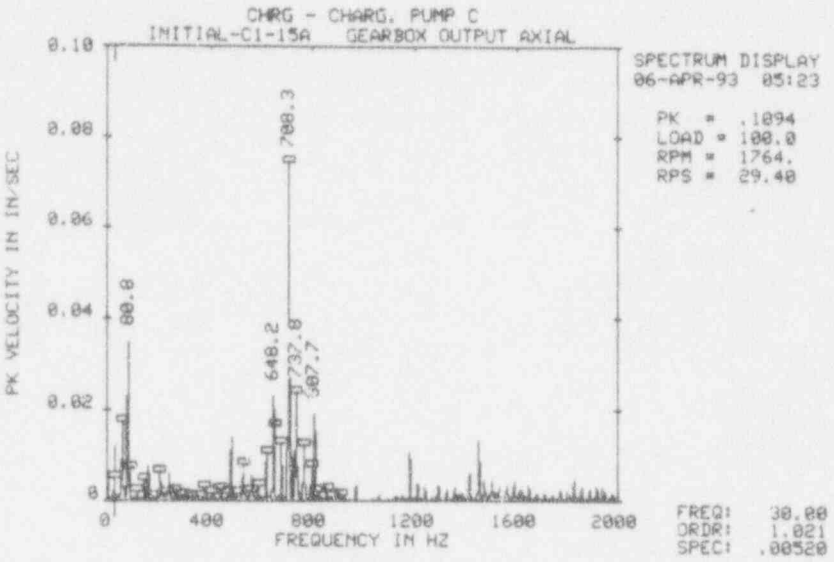

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-15A --> GEARBOX OUTPUT AXIAL
Date/Time: 06-APR-93 05:23:49 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.49	.0053	1.00	13	648.15	.0239	22.05
2	59.02	.0191	2.01	14	678.73	.0148	23.09
3	80.75	.0370	2.75	15	708.32	.0800	24.10
4	88.45	.0081	3.01	16	726.88	.0114	24.73
5	147.55	.0048	5.02	17	737.85	.0241	25.10
6	161.53	.0087	5.50	18	767.33	.0125	26.10
7	206.63	.0070	7.03	19	796.88	.0080	27.11
8	242.30	.0060	8.24	20	807.72	.0194	27.48
9	484.70	.0141	16.49	21	1180.48	.0108	40.16
10	531.18	.0095	18.07	22	1416.59	.0063	48.19
11	565.44	.0057	19.24	23	1453.90	.0148	49.46
12	619.76	.0109	21.08	24	1593.67	.0050	54.21

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1094	.0037 / 0%	.0792 / 52%	.0754 / 47%

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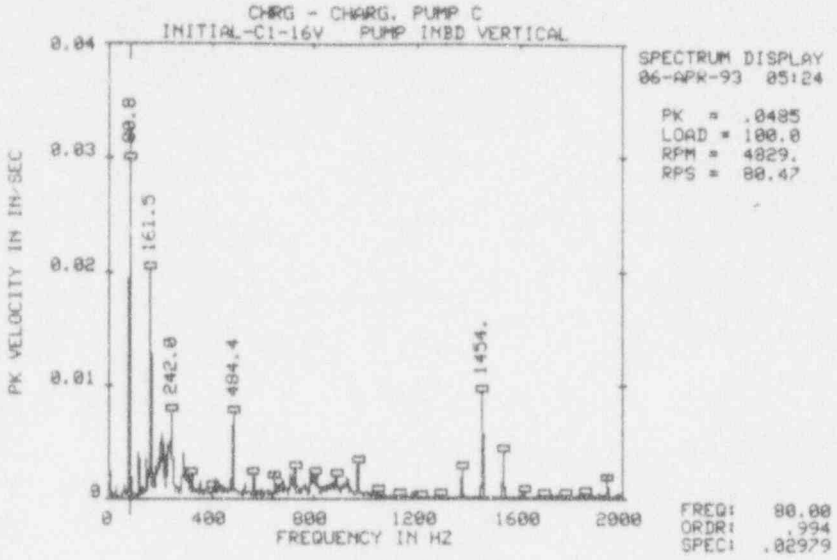

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-16V --> PUMP INBD VERTICAL
Date/Time: 06-APR-93 05:24:05 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.79	.0318	1.00	13	323.37	.0024	4.02
2	118.17	.0044	1.47	14	484.41	.0079	6.02
3	147.26	.0036	1.83	15	565.45	.0023	7.03
4	161.51	.0224	2.01	16	645.77	.0025	8.02
5	188.75	.0042	2.35	17	708.77	.0025	8.81
6	200.53	.0051	2.49	18	726.68	.0029	9.03
7	206.63	.0063	2.57	19	786.39	.0028	9.77
8	218.26	.0040	2.71	20	808.54	.0025	10.05
9	228.82	.0056	2.84	21	969.26	.0035	12.04
10	242.01	.0081	3.01	22	1373.04	.0028	17.06
11	288.55	.0045	3.59	23	1453.82	.0110	18.07
12	306.82	.0027	3.81	24	1534.56	.0044	19.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0485	.0028 / 0%	.0409 / 71%	.0259 / 29%

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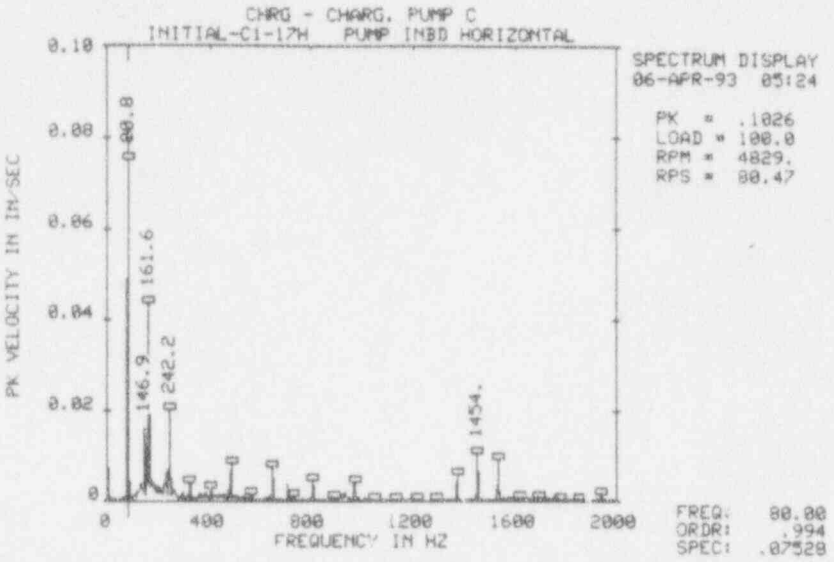

LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-17H --> PUMP INBD HORIZONTAL
Date/Time: 06-APR-93 05:24:17 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.77	.0800	1.00	13	256.20	.0029	3.18
2	131.06	.0044	1.63	14	323.05	.0046	4.01
3	138.99	.0042	1.73	15	403.59	.0036	5.02
4	146.95	.0165	1.83	16	471.73	.0028	5.86
5	161.55	.0482	2.01	17	484.67	.0084	6.02
6	176.56	.0054	2.19	18	646.29	.0090	8.03
7	183.75	.0038	2.28	19	708.37	.0041	8.80
8	188.93	.0036	2.35	20	807.56	.0045	10.03
9	198.48	.0039	2.47	21	969.08	.0044	12.04
10	204.19	.0031	2.54	22	1373.03	.0062	17.06
11	231.35	.0078	2.87	23	1453.75	.0124	18.06
12	242.23	.0096	3.01	24	1534.53	.0095	19.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1026	.0063 / 0%	.0963 / 88%	.0350 / 12%

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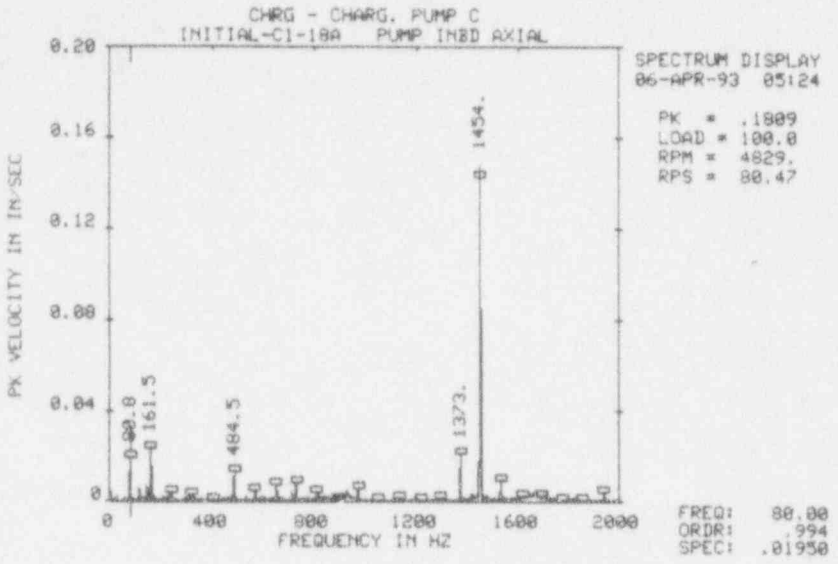

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-18A --> PUMP INBD AXIAL
Date/Time: 06-APR-93 05:24:33 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.78	.0208	1.00	13	925.98	.0056	11.51
2	118.03	.0061	1.47	14	931.46	.0041	11.57
3	147.23	.0065	1.83	15	969.11	.0063	12.04
4	161.50	.0262	2.01	16	1372.94	.0217	17.06
5	241.40	.0049	3.00	17	1416.16	.0037	17.60
6	323.29	.0037	4.02	18	1446.23	.0039	17.97
7	484.55	.0135	6.02	19	1453.69	.1716	18.06
8	565.58	.0056	7.03	20	1534.48	.0099	19.07
9	646.16	.0090	8.03	21	1646.40	.0038	20.46
10	708.48	.0045	8.80	22	1655.67	.0040	20.57
11	726.78	.0087	9.03	23	1665.94	.0047	20.70
12	806.99	.0045	10.03	24	1938.34	.0043	24.09

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1809	.0050 / 0%	.0483 / 7%	.1742 / 93%

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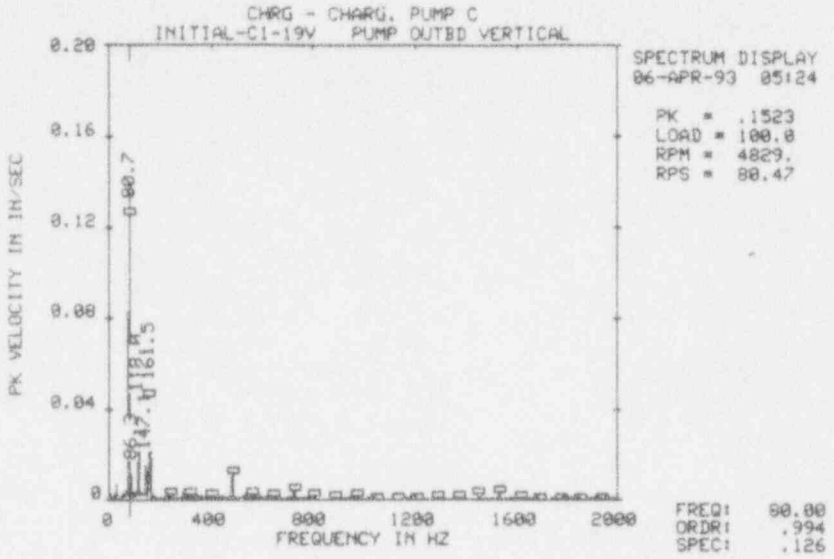

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-19V --> PUMP OUTBD VERTICAL
Date/Time: 06-APR-93 05:24:58 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0070	.37	13	161.46	.0510	2.01
2	59.01	.0039	.73	14	178.36	.0025	2.22
3	65.98	.0043	.82	15	228.24	.0033	2.84
4	80.75	.1332	1.00	16	241.84	.0031	3.01
5	86.29	.0133	1.07	17	293.61	.0034	3.65
6	95.73	.0039	1.19	18	322.91	.0028	4.01
7	103.89	.0034	1.29	19	484.37	.0128	6.02
8	118.04	.0423	1.47	20	531.09	.0025	6.60
9	126.17	.0035	1.57	21	565.33	.0029	7.02
10	131.40	.0036	1.63	22	726.86	.0043	9.03
11	136.34	.0030	1.69	23	1453.55	.0031	18.06
12	147.12	.0160	1.83	24	1534.42	.0034	19.07

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1523	.0102 / 0%	.1429 / 88%	.0516 / 12%

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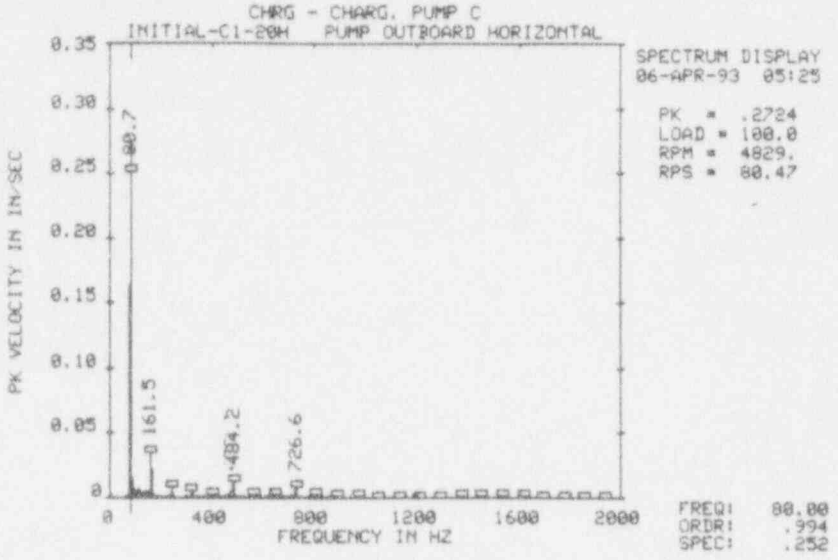

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-20H --> PUMP OUTBOARD HORIZONTAL
Date/Time: 06-APR-93 05:25:15 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.75	.2674	1.00	13	453.68	.0028	5.64
2	103.36	.0083	1.28	14	461.23	.0029	5.73
3	110.40	.0036	1.37	15	478.56	.0099	5.95
4	118.13	.0081	1.47	16	484.20	.0142	6.02
5	130.85	.0048	1.63	17	566.27	.0043	7.04
6	133.96	.0045	1.66	18	571.80	.0026	7.11
7	147.78	.0064	1.84	19	631.20	.0053	7.84
8	161.55	.0388	2.01	20	646.29	.0036	8.03
9	176.81	.0033	2.20	21	707.84	.0034	8.80
10	242.30	.0092	3.01	22	716.51	.0024	8.90
11	323.07	.0060	4.01	23	726.65	.0094	9.03
12	401.68	.0026	4.99	24	807.71	.0023	10.04

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.2724	.0050 / 0%	.2702 / 98%	.0341 / 2%

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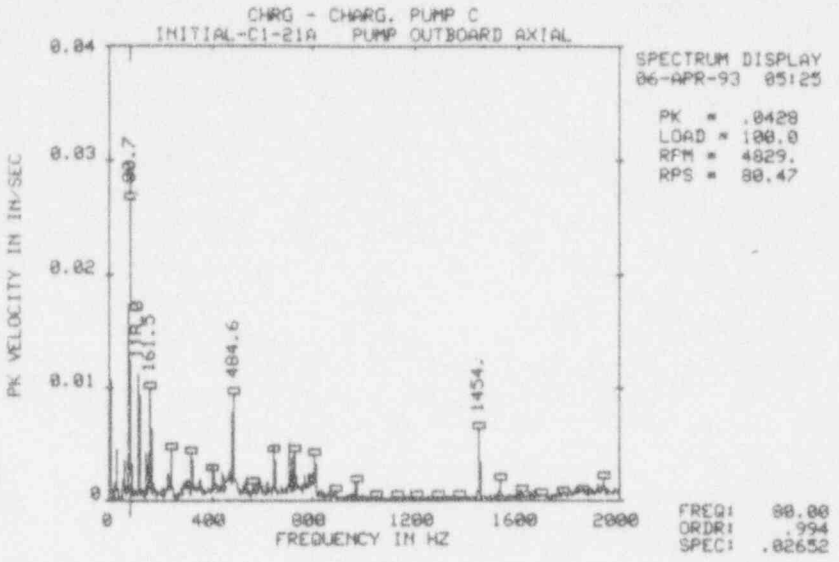

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-21A --> PUMP OUTBOARD AXIAL
Date/Time: 06-APR-93 05:25:45 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.53	.0046	.37	13	464.03	.0024	5.77
2	58.94	.0040	.73	14	471.14	.0031	5.85
3	80.75	.0281	1.00	15	484.56	.0097	6.02
4	88.49	.0035	1.10	16	646.44	.0055	8.03
5	117.98	.0115	1.47	17	708.12	.0055	8.80
6	147.10	.0042	1.83	18	726.73	.0047	9.03
7	161.50	.0112	2.01	19	738.06	.0022	9.17
8	228.23	.0025	2.84	20	766.49	.0024	9.52
9	242.33	.0046	3.01	21	786.15	.0028	9.77
10	322.93	.0034	4.01	22	796.38	.0026	9.90
11	404.00	.0034	5.02	23	807.72	.0041	10.04
12	441.83	.0028	5.49	24	1453.54	.0073	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0428	.0113 / 7%	.0336 / 62%	.0238 / 31%

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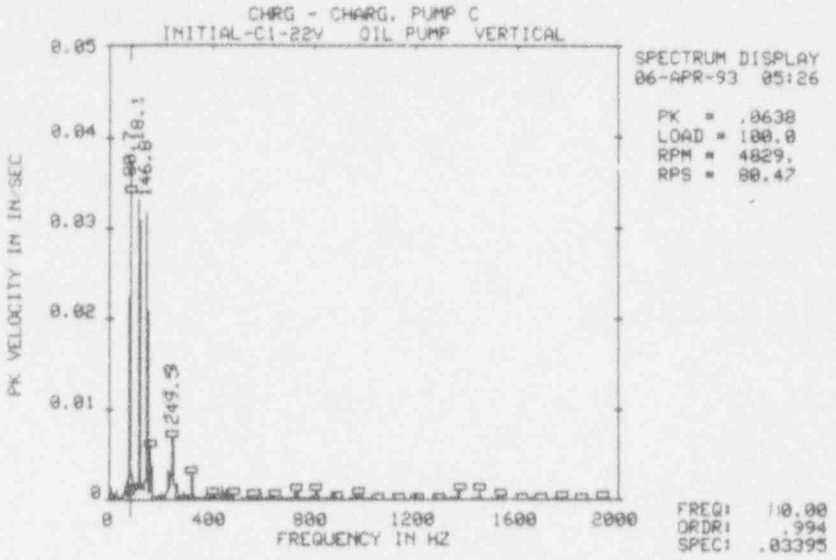

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-22V --> OIL PUMP VERTICAL
Date/Time: 06-APR-93 05:26:21 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.47	.0012	.37	13	242.27	.0072	3.01
2	58.89	.0014	.73	14	249.51	.0069	3.10
3	66.07	.0024	.82	15	264.33	.0018	3.28
4	80.75	.0360	1.00	16	293.55	.0009	3.65
5	95.98	.0012	1.19	17	322.93	.0030	4.01
6	103.90	.0021	1.29	18	440.28	.0015	5.47
7	118.05	.0377	1.47	19	455.29	.0010	5.66
8	131.43	.0020	1.63	20	587.21	.0013	7.30
9	146.82	.0332	1.82	21	726.58	.0013	9.03
10	161.49	.0066	2.01	22	807.39	.0010	10.03
11	227.56	.0033	2.83	23	1372.61	.0011	17.06
12	234.66	.0022	2.92	24	1453.33	.0011	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0638	.0036 / 0%	.0373 / 34%	.0517 / 65%

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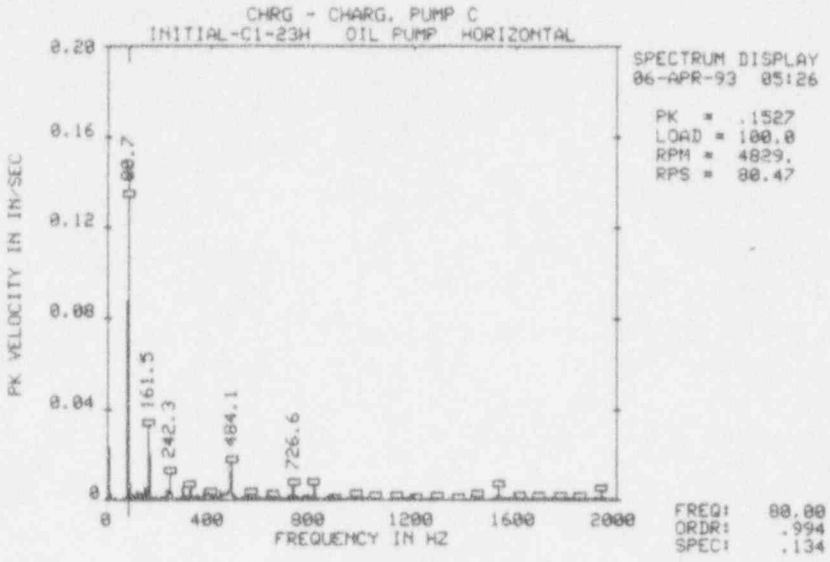

LIST OF SPECTRAL PEAKS

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Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-23H --> OIL PUMP HORIZONTAL
Date/Time: 06-APR-93 05:26:35 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.75	.1419	1.00	13	403.87	.0030	5.02
2	103.43	.0027	1.29	14	440.84	.0043	5.48
3	118.13	.0046	1.47	15	455.97	.0039	5.67
4	131.95	.0034	1.64	16	484.14	.0188	6.02
5	146.90	.0059	1.83	17	493.33	.0028	6.13
6	161.47	.0368	2.01	18	564.61	.0026	7.02
7	228.31	.0047	2.84	19	631.41	.0028	7.85
8	242.32	.0118	3.01	20	708.56	.0026	8.80
9	293.53	.0054	3.65	21	726.63	.0073	9.03
10	323.01	.0058	4.01	22	807.29	.0071	10.03
11	374.00	.0043	4.65	23	1534.17	.0063	19.06
12	393.11	.0038	4.88	24	1938.21	.0041	24.08

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.1527	.0197 / 2%	.1486 / 95%	.0291 / 4%

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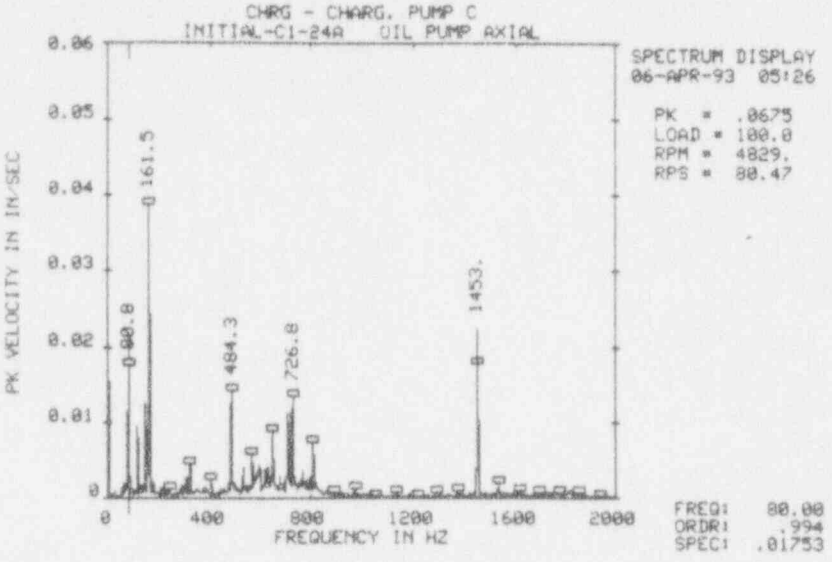


LIST OF SPECTRAL PEAKS

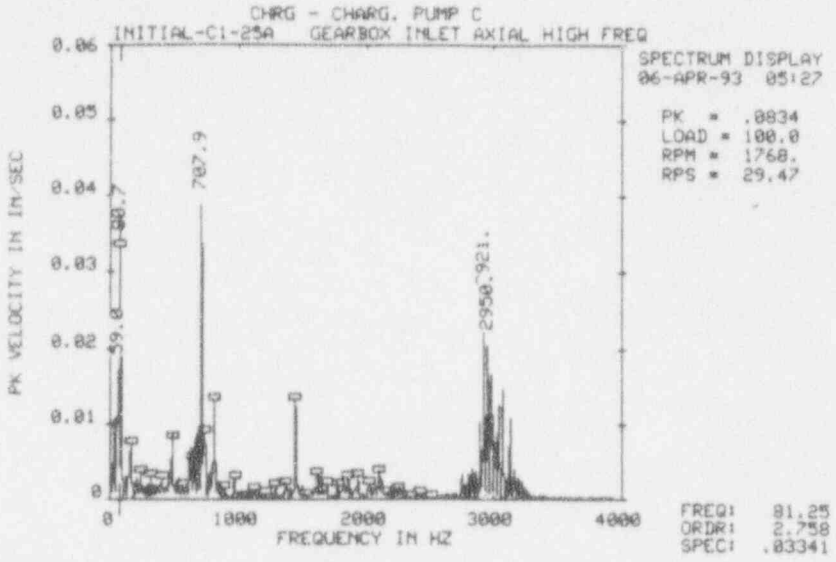
****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-24A --> OIL PUMP AXIAL
Date/Time: 06-APR-93 05:26:53 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	80.77	.0187	1.00	13	618.71	.0045	7.69
2	118.04	.0098	1.47	14	631.20	.0047	7.84
3	147.14	.0127	1.83	15	645.33	.0090	8.02
4	161.47	.0433	2.01	16	676.41	.0032	8.41
5	308.30	.0031	3.83	17	708.06	.0117	8.80
6	323.10	.0048	4.01	18	713.98	.0033	8.87
7	484.30	.0149	6.02	19	726.78	.0142	9.03
8	531.22	.0047	6.60	20	738.29	.0031	9.17
9	564.85	.0058	7.02	21	766.66	.0040	9.53
10	575.93	.0030	7.16	22	788.61	.0030	9.80
11	583.61	.0041	7.25	23	807.32	.0075	10.03
12	593.96	.0049	7.38	24	1453.33	.0242	18.06

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0675	.0132 / 4%	.0529 / 61%	.0399 / 35%

F1/Enter=Accept F2=Paging is OFF F7=Title F9=Copy Esc=Quit



LIST OF SPECTRAL PEAKS

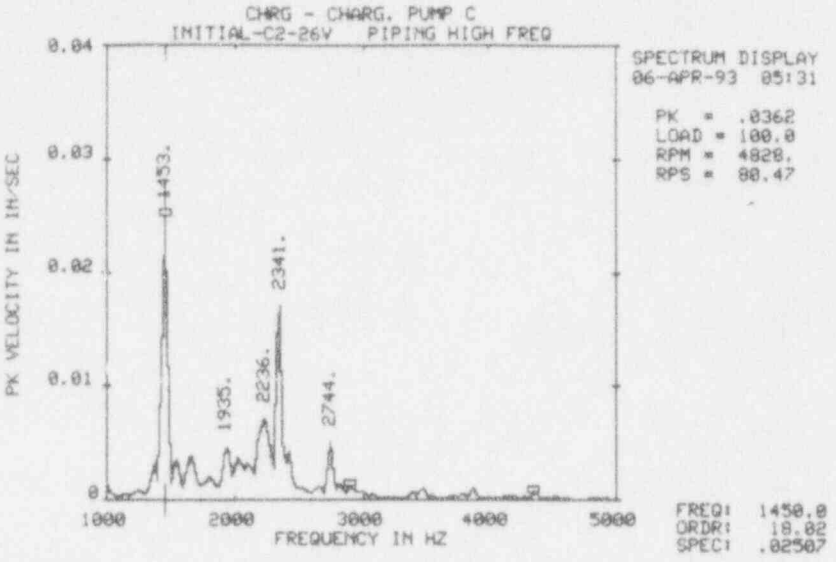
****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C1-25A --> GEARBOX INLET AXIAL HIGH FREQ
Date/Time: 06-APR-93 05:27:22 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	29.59	.0112	1.00	13	807.47	.0135	27.40
2	59.03	.0193	2.00	14	1452.36	.0145	49.29
3	80.67	.0336	2.74	15	2832.09	.0041	96.12
4	160.97	.0076	5.46	16	2890.99	.0117	98.12
5	241.62	.0039	8.20	17	2920.50	.0277	99.12
6	484.79	.0102	16.45	18	2950.19	.0206	100.13
7	619.35	.0070	21.04	19	2979.62	.0175	101.12
8	648.77	.0082	22.02	20	3009.28	.0085	102.13
9	678.58	.0103	23.03	21	3038.50	.0126	103.12
10	707.93	.0408	24.03	22	3068.13	.0146	104.13
11	726.33	.0091	24.65	23	3127.21	.0116	106.13
12	735.34	.0080	24.96	24	3156.62	.0038	107.13

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0834	Undefined / 0%	.0778 / 87%	.0271 / 11%

F1/Enter=Accept F2=Paging is OFF F7=Title F9=Copy Esc=Quit



LIST OF SPECTRAL PEAKS

****

Machine: (CHRG) CHARG. PUMP C
Meas. Point: Initial-C2-26V --> PIPING HIGH FREQ
Date/Time: 06-APR-93 05:31:44 Amplitude Units: IN/SEC PK

PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE	PEAK NO.	FREQUENCY (Hz)	PEAK VALUE	ORDER VALUE
1	1258.59	.0010	15.64	13	2513.20	.0012	31.23
2	1374.28	.0035	17.08	14	2659.44	.0013	33.05
3	1453.32	.0254	18.06	15	2744.46	.0052	34.11
4	1539.43	.0039	19.13	16	2822.43	.0015	35.08
5	1660.75	.0043	20.64	17	2909.95	.0014	36.16
6	1809.28	.0022	22.48	18	2963.45	.0009	36.83
7	1935.40	.0052	24.05	19	3066.66	.0006	38.11
8	2033.69	.0041	25.27	20	3390.20	.0007	42.13
9	2110.85	.0036	26.23	21	3471.01	.0010	43.14
10	2235.88	.0080	27.79	22	3792.03	.0006	47.13
11	2341.35	.0184	29.10	23	3876.22	.0010	48.17
12	2417.36	.0046	30.04	24	4358.99	.0007	54.17

TOTAL MAG	SUBSYNCHRONOUS	SYNCHRONOUS	NONSYNCHRONOUS
.0362	Undefined / 0%	Undefined / 0%	Undefined / 0%

F1/Enter=Accept F2=Paging is OFF F7=Title F9=Copy Esc=Quit

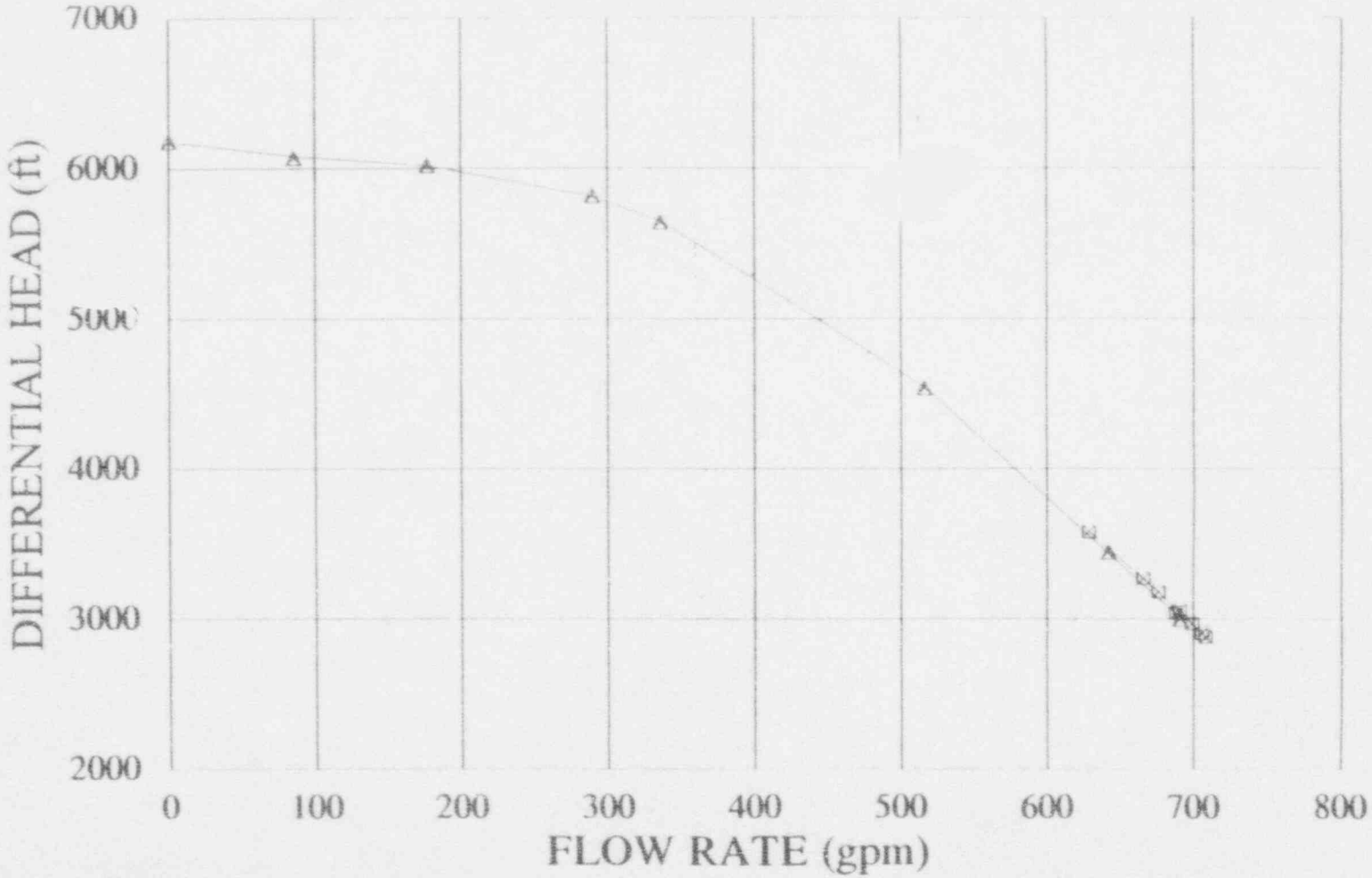
ATTACHMENT 4

CH/SI PUMP PERFORMANCE CURVES

This attachment contains Head / Flow performance curves for all three CH/SI pumps. These curves include data recorded during procedure STP-230.006A overplayed with the vendor's shop test curves.

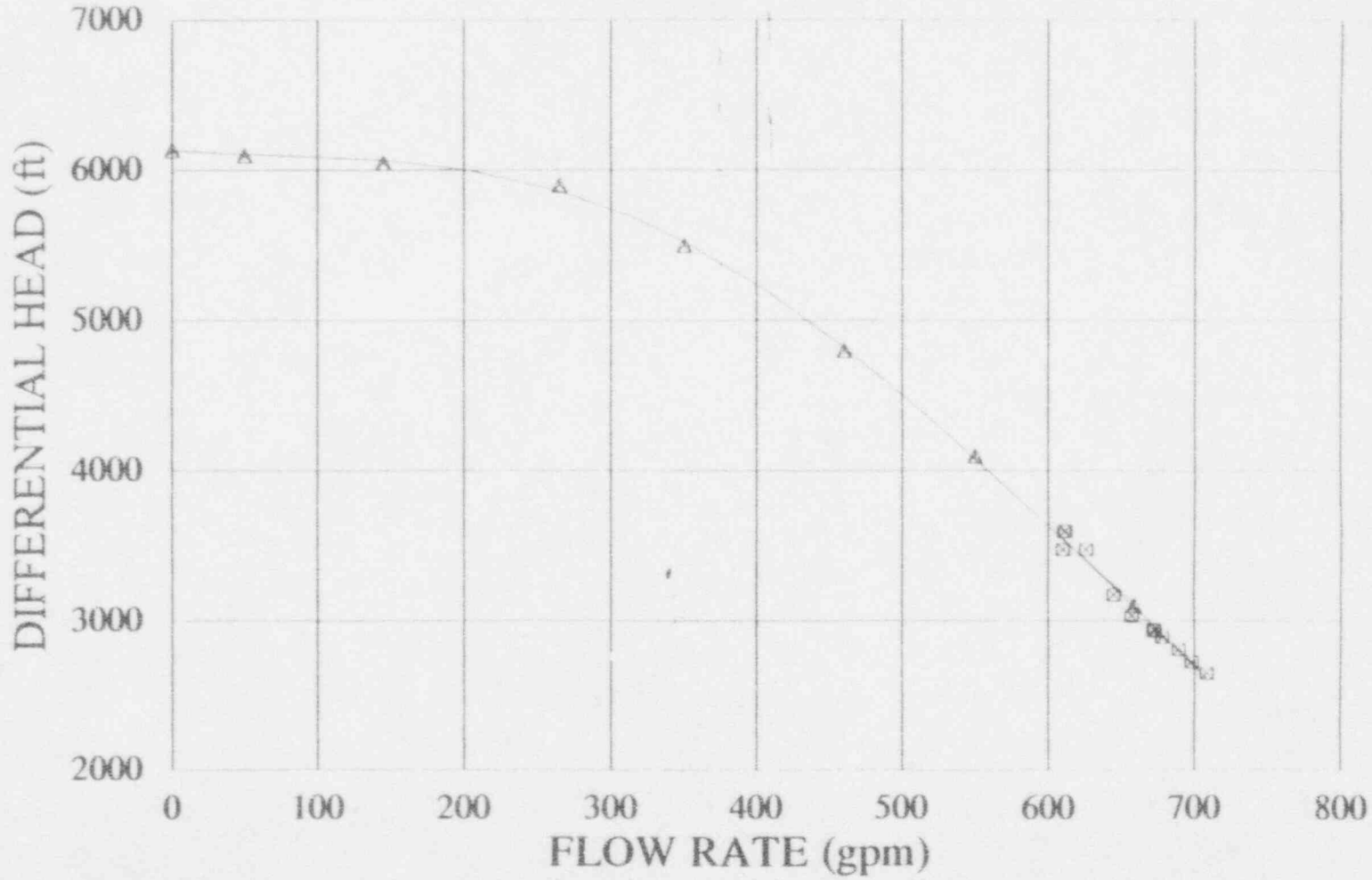
V.C. SUMMER CH/SI PUMP A

PUMP PERFORMANCE CURVES



V.C. SUMMER CH/SI PUMP B

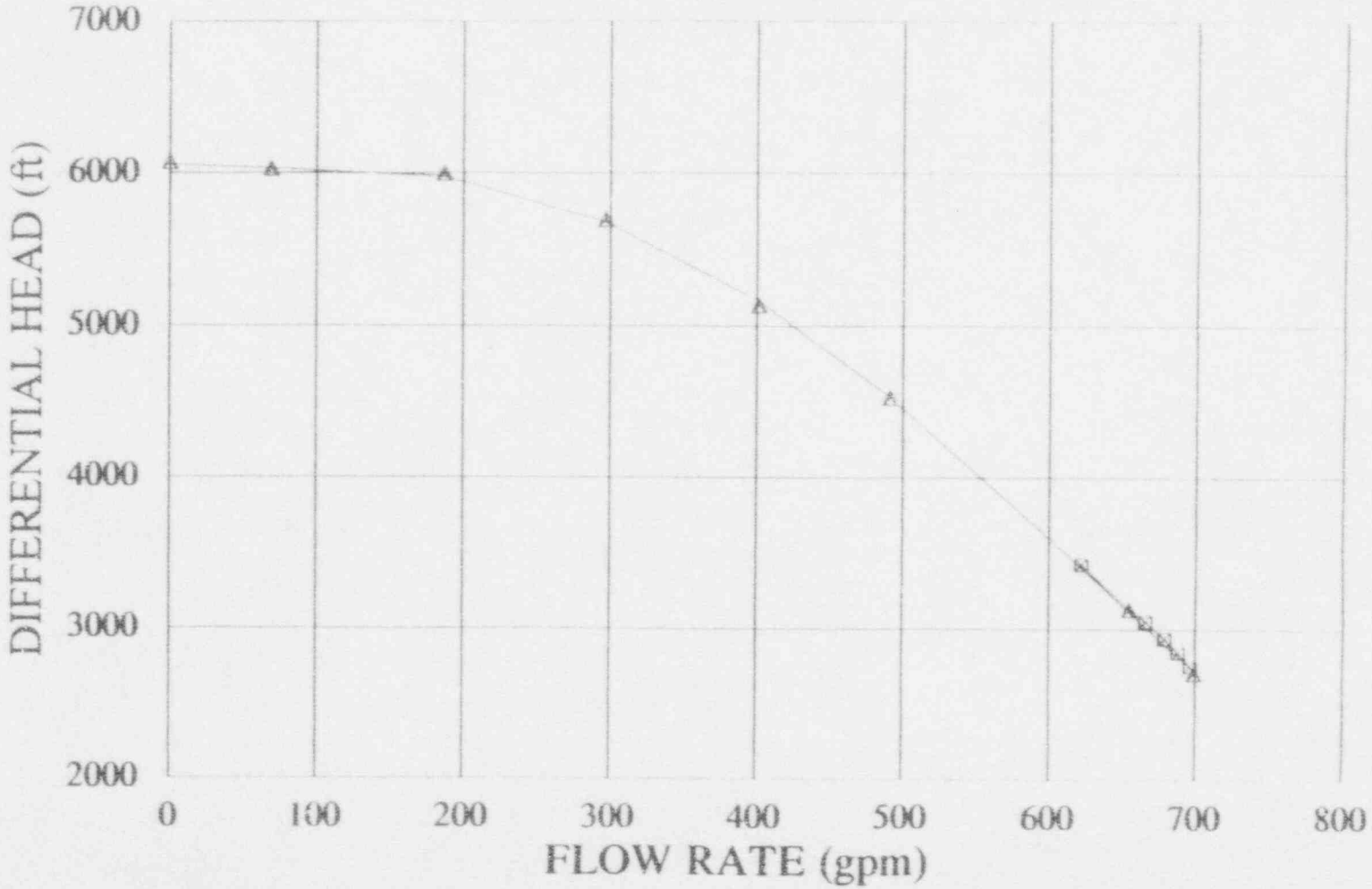
PUMP PERFORMANCE CURVES



Runout Test Data, Best Fit Line Vendor Curve No. 36897 Spare

V.C. SUMMER CH/SI PUMP C

PUMP PERFORMANCE CURVES



ATTACHMENT 5

"AS FOUND" PUMP HEAD/FLOW DATA

The tables in this attachment were taken from Reference 3, and are the source of the "as found" pump performance data which was plotted in the graphs of Attachment 4.

Charging Pump B - Head Curve & Run-out Test

HDR FLOW GPM	SEAL INJ FLOW GPM	CHG FLOW GPM	PUMP FLOW GPM	HEAD FT	SUCT PRESS PSIG	DISCH PRESS PSIG	HDR PRESS PSIG	CHG PRESS PSIG	LINE TEMP DEG F
100	15	N/A	115	6374	17.1	2765	74.81	N/A	92.74
179	27	N/A	206	6264	16.8	2720	172.5	N/A	84.39
286	26	N/A	312	5886	16.7	2557	390	N/A	79.71
378	25	N/A	402	5271	16.5	2290	652.5	N/A	75.98
482	26	N/A	508	4469	15.8	1940	1003.1	N/A	73.43
585	25	N/A	610	3472	15.4	1505	1475.6	N/A	71.39
585	25	N/A	610	3472	15.4	1505	1475.6	N/A	71.39
497	27	87	611	3594	15.4	1558	1055.8	1051.9	70.39
497	27	88	612	3599	15.5	1560	1056.6	1050	70.42
510	26	89	626	3473	15.3	1505	1112	1108	70.04
522	29	94	644	3167	15.4	1372	1202.3	1200	69.5
522	29	94	645	3167	15.4	1372	1202.2	1198.1	69.47
533	29	96	657	3030	15.2	1312	1248.6	1246.9	69.18
535	29	108	672	2935	15.2	1270	1239.9	1237.5	69.1
536	29	109	673	2930	15.2	1268	1237.5	1235.6	69.1
531	28	118	678	2889	15.2	1250	1220.4	1215	69.14
525	28	136	689	2807	15.1	1214	1182.9	1177.5	69
516	27	155	698	2725	15	1178	1145.6	1138.1	69
510	27	171	708	2646	14.9	1143	1111.9	1102.5	68.9

Charging Pump A - Run-out Test

HDR FLOW GPM	SEAL INJ FLOW GPM	CHG FLOW GPM	PUMP FLOW GPM	HEAD FT	SUCT PRESS PSIG	DISCH PRESS PSIG	HDR PRESS PSIG	LINE TEMP DEG F
602	27	N/A	629	3577	15.3	1550	1464	69.23
575	N/A	92	666	3267	15	1414	1338.75	68.64
565	N/A	111	676	3176	15	1374	1299.4	68.87
555	N/A	133	688	3036	14.9	1313	1255.3	69
544	N/A	155	699	2966	14.8	1282	1211.25	69
535	N/A	174	708	2882	14.8	1245	1173.75	69.2
551	N/A	139	691	3053	14.8	1320	1250	70
535	N/A	171	706	2902	14.85	1254	1181.25	69.2

Charging Pump C - Run-out Test

HDR FLOW GPM	SEAL INJ FLOW GPM	CHG FLOW GPM	PUMP FLOW GPM	HEAD FT	SUCT PRESS PSIG	DISCH PRESS PSIG	HDR PRESS PSIG	LINE TEMP DEG F
596	26	N/A	622	3428	14.7	1485	1421.25	69.02
555	N/A	111	666	3051	14.6	1320	1256.25	69.16
542	N/A	136	679	2937	14.6	1270	1201.88	69.19
533	N/A	155	688	2846	14.4	1230	1162.5	69.22
523	N/A	173	696	2754	14.4	1190	1122	69.22