

November 22, 2019

ARKEMA

Subject: November week 3-4 vibration service report

Weekly Equipment**Agitator, Hydrogenator C 7001-01**

No legitimate vibrations were found to be above 0.114"/sec velocity peak overall for the gearbox input axial. Spectrum appears normal for unit. No action required.

A/B Concentrator Vacuum Pump 57

Overall vibrations have increased slightly for the outboard pump bearing and is at 0.262"/sec velocity peak, at what looks to be mostly vane pass. We must note; however, that the vibration changes constantly as the vacuum breaks, so the overall reading and the data could change significantly during a short period of time. No immediate action is required at this time. **Rated a Class I Defect.**

Flash Vacuum Pump 2130-1

Vibrations in this unit appear normal again. No actions required.

Air Compressor C-201

Rotor bar vibrations stayed about the same, at just over 4 g's RMS. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. We will continue to monitor this unit for changes. No actions required.

Air Compressor C-202

Vibrations in this unit appear normal. No actions required.

Air Compressor C-203

Vibrations appear normal this week. The trend clearly shows that the vibrations vary considerably over time. We still believe these motors have possible weak rotor bar end connections that cause the vibrations to fluctuate higher due to loading. We will continue to monitor this unit for changes. No actions required.

Air Compressor NASH 201-08

Vibrations in this unit appear normal. No actions required.

D Hydrogenator Agitator 9002-10

Vibration data shows a slight increase in vibrations this survey. Highest amplitude is still only 0.282"/sec velocity peak for the gearbox top E-West measurement. Process variables are suspected for the change. **Still rated a Class I Defect Though.**

C Concentrator Vacuum Pump 2130-1 old

The motor axial vibration is at 0.194"/sec velocity Peak; otherwise, vibrations in this unit appear normal. Check the shaft alignment as time allows. **Rated a Class II Defect.**

Monthly Equipment this Survey on report**South Cooling Tower- North Fan**

Outboard motor measurement is just below 0.3"/sec velocity peak dominated by 1x RPM of the motor. Inspect for coupling wear, alignment or fasteners/frame issues.

Rated a Class I Defect.

Week 3-4 equipment list follows as well as measurements and a deviation report.

Hi-Speed Industrial Service tests and inspects industrial machinery and equipment and makes recommendations concerning maintenance and repairs based on its experience in the field of industrial repair and maintenance. The information contained herein is provided as an opinion only, not as a guaranty or warranty of the matters discussed herein.

This completes our assessment of your equipment for this survey. Thank you for your business and don't hesitate to call if you have any comments or questions.

Sincerely,

David W. Shook
Senior Reliability Specialist

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Hi-Speed Industrial Service

Last Monitored Machine List

Database: Arkema.rbm
 Station: PEROXIDE
 Route No. 5: ARK WK 3
 Report Date: 25-Nov-19 08:59
 Report Interval: 26-Oct-19 To 25-Nov-19

PERIODIC VIBRATION TECHNOLOGY

Collected Machine...

MACHINE ID -----	DESCRIPTION -----	NUMBER OF POINTS -----	LATEST DATE -----
7000-01	AGITATOR, HYDROGENATOR C	22 OUT OF 22	18-Nov-19
57	A/B Concentr Vac Pmp-var RPM	10 OUT OF 10	18-Nov-19
2130-1	FLASH VAP VAC PUMP-var speed	10 OUT OF 10	18-Nov-19
C-203	C-203 Comp (Old Joy)	17 OUT OF 20	18-Nov-19
C-202	C-202 Comp (New Location)	17 OUT OF 20	18-Nov-19
C-201	C-201 Comp (Old Centac)	17 OUT OF 20	18-Nov-19
9002-10	D-HYDROGENATOR AGITATOR	16 OUT OF 16	18-Nov-19
201-08A	COMPRESSOR, NASH A 201-08A	16 OUT OF 16	18-Nov-19
NTC-SF	N CT-SOUTH FAN, N TWR	6 OUT OF 7	18-Nov-19
NCT - NF	N CT -NORTH FAN, N TWR	6 OUT OF 6	18-Nov-19
530-02	PUMP, N.COOLING TWR, MIDDLE	2 OUT OF 2	18-Nov-19
530-03	PUMP, N.COOLING TWR, SOUTH	2 OUT OF 2	18-Nov-19
548-7	IRON-FREE H2O BOOSTER PUMP	5 OUT OF 5	18-Nov-19
STC-NF	S CT - NORTH FAN, S TWR	5 OUT OF 6	18-Nov-19
STC-MF	S CT - MID FAN, S TWR	6 OUT OF 6	18-Nov-19
STC-SF	S CT - SOUTH FAN, S TWR	6 OUT OF 6	18-Nov-19
SCT-1	SOUTH CT PUMP - EAST	5 OUT OF 5	18-Nov-19
SCT-2	SOUTH CT PUMP - MID	5 OUT OF 5	18-Nov-19
SCT-3	SOUTH CT PUMP - WEST	5 OUT OF 5	18-Nov-19
new AC	INSTRUMENT AIR COMPRESSOR	18 OUT OF 18	18-Nov-19
2130-1old	C Concentrator Vacuum Pump	6 OUT OF 6	18-Nov-19

Missed Machine...

MACHINE ID -----	DESCRIPTION -----	
236-26	HYDRO FD PUMP S 236-26-2FLR	0 OUT OF 5
530-01	PUMP, N.COOLING TWR, NORTH	0 OUT OF 2
FMT	CT FAN- MID TWR	0 OUT OF 6
NFST	CT FAN-NORTH FAN, S TWR	0 OUT OF 6
MFST	CT FAN-MIDDLE FAN, S TWR	0 OUT OF 6
SFST	CT FAN-SOUTH FAN, S TWR	0 OUT OF 6
EP15	CENTAC Compressor	0 OUT OF 9
Monitored Point Total =		202 OUT OF 253
Monitored Machine Total =		21 OUT OF 28

Abbreviated Last Measurement Summary

Database: Arkema.rbm
Station: PEROXIDE
Route No. 5: ARK WK 3
Report Date: 25-Nov-19 08:48

MEASUREMENT POINT -----	OVERALL LEVEL -----	HFD / VHFD -----
7000-01 - AGITATOR, HYDROGENATOR C	(18-Nov-19)	
	OVERALL LEVEL	
01 - DRIVESHAFT BRG-NORTH-SOUTH	.050 In/Sec	
02 - DRIVESHAFT BRG-EAST-WEST	.041 In/Sec	
03 - DRIVESHAFT BRG-VERTICAL	.044 In/Sec	
11 - C Hydro Agitator MOTOR OB HORIZ	.048 In/Sec	
11H - MOTOR OB HORIZ - HI FREQ	.043 In/Sec	
12 - C Hydro Agitator MOTOR OB VERT	.042 In/Sec	
12H - MOTOR OB VERT - HI FREQ	.041 In/Sec	
13 - C Hydro Agitator Motor OB Axial	.037 In/Sec	
13H - MOTOR OB AXIAL - HI FREQ	.041 In/Sec	
21 - C Hydro Agitator MOTOR IB HORIZ	.050 In/Sec	
21H - MOTOR IB HORIZ - HI FREQ	.045 In/Sec	
22 - C Hydro Agitator MOTOR IB VERT	.051 In/Sec	
22H - MOTOR IB VERT - HI FREQ	.047 In/Sec	
23 - C Hydro Agitator Motor IB Axial	.053 In/Sec	
23H - MOTOR IB AXIAL - HI FREQ	.055 In/Sec	
31 - C Hydro Agitator GrBx In Horizon	.071 In/Sec	
32 - C Hydro Agitator GrBx In VERT	.079 In/Sec	
33 - C Hydro Agitator GrBx In Axial	.060 In/Sec	
41 - C Hydro Agitator GrBx Top Horizo	.060 In/Sec	
42 - C Hydro Agitator GrBx Top VERT	.041 In/Sec	
53 - C Hydro Agitator GrBx Top Axial	.114 In/Sec	
53L - C Hydro Agitator GrBx Top Axial	.106 In/Sec	
57 - A/B Concentr Vac Pmp-var RPM	(18-Nov-19)	
	OVERALL LEVEL	
11 - Motor OB HOR	.098 In/Sec	
	OVERALL LEVEL	1-20 KHz
11H - Motor OB HOR	.061 In/Sec	.232 G-s
12 - Motor OB VERT	.057 In/Sec	
12H - Motor OB VERT	.062 In/Sec	.150 G-s
13 - Motor OB AXIAL	.071 In/Sec	
21 - Motor IB HOR	.132 In/Sec	
23 - Motor IB AXIAL	.061 In/Sec	
71 - Compressor IB HOR	.126 In/Sec	
81 - Compressor OB Horiz	.262 In/Sec	
83 - Compressor OB Axial	.062 In/Sec	
2130-1 - FLASH VAP VAC PUMP-var speed	(18-Nov-19)	
	OVERALL LEVEL	
11 - Motor OB HOR	.046 In/Sec	
12 - Motor OB VERT	.029 In/Sec	
21 - Motor IB HOR	.049 In/Sec	

22	- Motor IB VERT	.041 In/Sec
23	- Motor IB AXIAL	.052 In/Sec
71	- Compressor IB HOR	.063 In/Sec
72	- Compressor IB VERT	.051 In/Sec
81	- Compressor OB Horiz	.066 In/Sec
82	- Compressor OB VERT	.072 In/Sec
83	- Compressor OB Axial	.051 In/Sec

C-203 - C-203 Comp (Old Joy)

(18-Nov-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.027 In/Sec	.591 G-s
12 - MOTOR OB VERT	.048 In/Sec	1.667 G-s
13 - MOTOR OB AXIAL	.068 In/Sec	2.739 G-s
21 - MOTOR IB HOR	.019 In/Sec	.209 G-s
22 - MOTOR IB VERT	.037 In/Sec	1.181 G-s
23 - MOTOR IB AXIAL	.027 In/Sec	.844 G-s
71M - COMP MALE SHAFT IB HOR	.035 In/Sec	
72M - COMP MALE SHAFT IB VERT	.041 In/Sec	
73M - COMP MALE SHAFT IB AXIAL	.055 In/Sec	
81M - COMP MALE SHAFT OB HOR	.055 In/Sec	
82M - COMP MALE SHAFT OB VERT	.049 In/Sec	
83M - COMP MALE SHAFT OB AXIAL	.030 In/Sec	
71F - COMP FEMALE SHAFT IB HOR	.041 In/Sec	
72F - COMP FEMALE SHAFT IB VERT	.042 In/Sec	
73F - COMP FEMALE SHAFT IB AXIAL	.077 In/Sec	
81F - COMP FEMALE SHAFT OB HOR	.048 In/Sec	
82F - COMP FEMALE SHAFT OB VERT	.040 In/Sec	

C-202 - C-202 Comp (New Location)

(18-Nov-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.073 In/Sec	2.351 G-s
12 - MOTOR OB VERT	.100 In/Sec	.688 G-s
13 - MOTOR OB AXIAL	.073 In/Sec	1.419 G-s
21 - MOTOR IB HOR	.057 In/Sec	.187 G-s
22 - MOTOR IB VERT	.044 In/Sec	.246 G-s
23 - MOTOR IB AXIAL	.039 In/Sec	.528 G-s
71M - COMP MALE SHAFT IB HOR	.042 In/Sec	
72M - COMP MALE SHAFT IB VERT	.054 In/Sec	
73M - COMP MALE SHAFT IB AXIAL	.078 In/Sec	
81M - COMP MALE SHAFT OB HOR	.046 In/Sec	
82M - COMP MALE SHAFT OB VERT	.053 In/Sec	
83M - COMP MALE SHAFT OB AXIAL	.081 In/Sec	
71F - COMP FEMALE SHAFT IB HOR	.034 In/Sec	
72F - COMP FEMALE SHAFT IB VERT	.046 In/Sec	
73F - COMP FEMALE SHAFT IB AXIAL	.054 In/Sec	
81F - COMP FEMALE SHAFT OB HOR	.040 In/Sec	
82F - COMP FEMALE SHAFT OB VERT	.043 In/Sec	

C-201 - C-201 Comp (Old Centac)

(18-Nov-19)

	OVERALL LEVEL	1-20 KHz
11 - MOTOR OB HOR	.092 In/Sec	2.451 G-s
12 - MOTOR OB VERT	.053 In/Sec	.382 G-s
13 - MOTOR OB AXIAL	.055 In/Sec	1.961 G-s
21 - MOTOR IB HOR	.085 In/Sec	.490 G-s
22 - MOTOR IB VERT	.034 In/Sec	.671 G-s
23 - MOTOR IB AXIAL	.111 In/Sec	4.088 G-s
71M - COMP MALE SHAFT IB HOR	.040 In/Sec	

72M - COMP MALE SHAFT IB VERT	.049 In/Sec
73M - COMP MALE SHAFT IB AXIAL	.075 In/Sec
81M - COMP MALE SHAFT OB HOR	.065 In/Sec
82M - COMP MALE SHAFT OB VERT	.060 In/Sec
83M - COMP MALE SHAFT OB AXIAL	.070 In/Sec
71F - COMP FEMALE SHAFT IB HOR	.046 In/Sec
72F - COMP FEMALE SHAFT IB VERT	.050 In/Sec
73F - COMP FEMALE SHAFT IB AXIAL	.063 In/Sec
81F - COMP FEMALE SHAFT OB HOR	.041 In/Sec
82F - COMP FEMALE SHAFT OB VERT	.052 In/Sec

9002-10 - D-HYDROGENATOR AGITATOR	(18-Nov-19)
	OVERALL LEVEL
11 - MOTOR OUTBOARD HORIZONTAL	.095 In/Sec
21 - MOTOR INBOARD HORIZONTAL	.092 In/Sec
23 - motor inboard axial	.047 In/Sec
31 - GEARBOX INPUT SHAFT -HORIZONTAL	.199 In/Sec
31H - GEARBOX INPUT SHAFT -HORIZONTAL	.120 In/Sec
31L - GEARBOX INPUT SHAFT-N-S-LOW FRQ	.157 In/Sec
51 - GEARBOX TOP PLATE- E-W	.282 In/Sec
51L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.245 In/Sec
52 - GEARBOX TOP PLATE- N-S	.124 In/Sec
52L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.253 In/Sec
53 - GEARBOX OUTPUT SHAFT -VERTICAL	.059 In/Sec
61 - GEARBOX OUTPUT SHAFT-HORIZONTAL	.196 In/Sec
61L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ	.177 In/Sec
81 - AGIT INTERMED BRG @ SEAL- N-S	.038 In/Sec
82 - AGIT INTERMED BRG @ SEAL- E-W	.041 In/Sec
83 - AGIT INTERMED BRG @ SEAL- VERT	.048 In/Sec

201-08A - COMPRESSOR, NASH A 201-08A	(18-Nov-19)
	OVERALL LEVEL
11 - Nash Compr A Motor OB Horiz	.063 In/Sec
12 - Nash Compr A Motor OB Vertical	.077 In/Sec
12H - Nash Compr A Motor OB Vertical	.077 In/Sec
13 - Nash Compr A Motor OB Axial	.138 In/Sec
21 - Nash Compr A Motor IB Horiz	.083 In/Sec
22 - Nash Compr A Motor IB VERT	.131 In/Sec
23 - Nash Compr A Motor IB AXIAL	.161 In/Sec
71 - Nash Compr A COMP IB HORIZ	.171 In/Sec
72 - Nash Compr A Compressor IB Verti	.252 In/Sec
72H - Nash Compr A COMP IB Vertical	.258 In/Sec
73 - Nash Compr A COMP IB AXIAL	.148 In/Sec
81 - Nash Compr A COMP OB HORIZ	.153 In/Sec
82 - Nash Compr A Compressor OB Verti	.263 In/Sec
82H - Nash Compr A COMP OB Vertical	.273 In/Sec
83 - Nash Compr A Compressor OB Axial	.147 In/Sec
83H - Nash Compr A COMP OB AXIAL	.164 In/Sec

NTC-SF - N CT-SOUTH FAN, N TWR	(18-Nov-19)
	OVERALL LEVEL
1 - MOTOR OB HORIZ	.051 In/Sec
2 - MOTOR IB HORIZ	.041 In/Sec
3 - MOTOR IB AXIAL	.100 In/Sec
4 - GEARBOX INPUT HORIZONTAL	.072 In/Sec
5 - GEARBOX VERTICAL	.0047 In/Sec
6 - GEARBOX AXIAL	.047 In/Sec

NCT - NF	- N CT -NORTH FAN, N TWR	(18-Nov-19)
		OVERALL LEVEL
7	- MOTOR OB HORIZ	.257 In/Sec
8	- MOTOR IB HORIZ	.223 In/Sec
9	- MOTOR IB AXIAL	.255 In/Sec
10	- GEARBOX INPUT HORIZONTAL	.165 In/Sec
11	- GEARBOX VERTICAL	.194 In/Sec
12	- GEARBOX AXIAL	.101 In/Sec
530-02	- PUMP,N.COOLING TWR,MIDDLE	(18-Nov-19)
		OVERALL LEVEL
11	- MOT TOP N-S	.130 In/Sec
12	- MOTOR TOP E-W	.108 In/Sec
530-03	- PUMP,N.COOLING TWR,SOUTH	(18-Nov-19)
		OVERALL LEVEL
11	- MOT TOP N-S	.089 In/Sec
12	- MOTOR TOP E-W	.116 In/Sec
548-7	- IRON-FREE H2O BOOSTER PUMP	(18-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZONTAL	.053 In/Sec
21	- MOTOR INBOARD HORIZONTAL	.027 In/Sec
23	- MOTOR INBOARD AXIAL	.063 In/Sec
71	- PUMP HORIZONTAL	.049 In/Sec
72	- PUMP VERTICAL	.020 In/Sec
STC-NF	- S CT - NORTH FAN, S TWR	(18-Nov-19)
		OVERALL LEVEL
1	- MOTOR OB HORIZ	.294 In/Sec
2	- MOTOR IB HORIZ	.222 In/Sec
3	- MOTOR IB AXIAL	.171 In/Sec
4	- GEARBOX INPUT HORIZONTAL	.162 In/Sec
6	- GEARBOX AXIAL	.214 In/Sec
STC-MF	- S CT - MID FAN, S TWR	(18-Nov-19)
		OVERALL LEVEL
1	- MOTOR OB HORIZ	.244 In/Sec
2	- MOTOR IB HORIZ	.197 In/Sec
3	- MOTOR IB AXIAL	.123 In/Sec
4	- GEARBOX INPUT HORIZONTAL	.131 In/Sec
5	- GEARBOX VERTICAL	.200 In/Sec
6	- GEARBOX AXIAL	.110 In/Sec
STC-SF	- S CT - SOUTH FAN, S TWR	(18-Nov-19)
		OVERALL LEVEL
1	- MOTOR OB HORIZ	.026 In/Sec
2	- MOTOR IB HORIZ	.121 In/Sec
3	- MOTOR IB AXIAL	.042 In/Sec
4	- GEARBOX INPUT HORIZONTAL	.024 In/Sec
5	- GEARBOX VERTICAL	.034 In/Sec
6	- GEARBOX AXIAL	.055 In/Sec
SCT-1	- SOUTH CT PUMP - EAST	(18-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZONTAL	.040 In/Sec

21	- MOTOR INBOARD HORIZONTAL	.042 In/Sec
23	- MOTOR INBOARD AXIAL	.085 In/Sec
71	- PUMP HORIZONTAL	.131 In/Sec
72	- PUMP VERTICAL	.093 In/Sec

SCT-2	- SOUTH CT PUMP - MID	(18-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZONTAL	.040 In/Sec
21	- MOTOR INBOARD HORIZONTAL	.047 In/Sec
23	- MOTOR INBOARD AXIAL	.064 In/Sec
71	- PUMP HORIZONTAL	.150 In/Sec
72	- PUMP VERTICAL	.143 In/Sec

SCT-3	- SOUTH CT PUMP - WEST	(18-Nov-19)
		OVERALL LEVEL
11	- MOTOR OUTBOARD HORIZONTAL	.037 In/Sec
21	- MOTOR INBOARD HORIZONTAL	.048 In/Sec
23	- MOTOR INBOARD AXIAL	.084 In/Sec
71	- PUMP HORIZONTAL	.166 In/Sec
72	- PUMP VERTICAL	.187 In/Sec

new AC	- INSTRUMENT AIR COMPRESSOR	(18-Nov-19)	
		OVERALL LEVEL	1-20 KHz
11	- MOTOR OB HOR	.141 In/Sec	.408 G-s
12	- MOTOR OB VERT	.098 In/Sec	.945 G-s
13	- MOTOR OB AXIAL	.060 In/Sec	.716 G-s
21	- MOTOR IB HOR	.191 In/Sec	1.988 G-s
22	- MOTOR IB VERT	.067 In/Sec	1.030 G-s
23	- MOTOR IB AXIAL	.157 In/Sec	.285 G-s
71M	- COMP MALE SHAFT IB HOR	.185 In/Sec	
72M	- COMP MALE SHAFT IB VERT	.149 In/Sec	
73M	- COMP MALE SHAFT IB AXIAL	.127 In/Sec	
81M	- COMP MALE SHAFT OB HOR	.149 In/Sec	
82M	- COMP MALE SHAFT OB VERT	.230 In/Sec	
83M	- COMP MALE SHAFT OB AXIAL	.202 In/Sec	
71F	- COMP FEMALE SHAFT IB HOR	.194 In/Sec	
72F	- COMP FEMALE SHAFT IB VERT	.143 In/Sec	
73F	- COMP FEMALE SHAFT IB AXIAL	.138 In/Sec	
81F	- COMP FEMALE SHAFT OB HOR	.142 In/Sec	
82F	- COMP FEMALE SHAFT OB VERT	.188 In/Sec	
83F	- COMP FEMALE SHAFT OB AXIAL	.164 In/Sec	

2130-1old	- C Concentrator Vacuum Pump	(18-Nov-19)
		OVERALL LEVEL
11	- Motor OB HOR	.071 In/Sec
21	- Motor IB HOR	.060 In/Sec
23	- Motor IB AXIAL	.194 In/Sec
71	- Compressor IB HOR	.120 In/Sec
81	- Compressor OB Horiz	.156 In/Sec
83	- Compressor OB Axial	.070 In/Sec

Clarification Of Vibration Units:

Acc	-->	G-s	PK
Vel	-->	In/Sec	PK

Last Measurement Deviation Report

Database: Arkema.rbm
 Station: PEROXIDE
 Route No. 5: ARK WK 3
 Report Date: 25-Nov-19 09:21

Reference Value is the PREVIOUS DATA

PARAMETER DESCRIPTION	CURRENT VALUE	REFERENCE VALUE	UNITS	ABSOLUTE DELTA	PERCENT DEVIATION	ALARM SYMBOL
7000-01 - AGITATOR, HYDROGENATOR C						(18-Nov-19)
11 - C Hydro Agitator MOTOR OB HORIZ						
10-100 X RPM	.032	.018	In/Sec	.013	72	%
HI FREQ VEL	.017	.0067	In/Sec	.010	155	%
13 - C Hydro Agitator Motor OB Axial						
HI FREQ VEL	.011	.0019	In/Sec	.0096	516	%
13H - MOTOR OB AXIAL - HI FREQ						
10-150 X RPM	.014	.0082	In/Sec	.0062	76	%
HI FREQ VEL	.0008	.0003	In/Sec	.0005	185	%
22 - C Hydro Agitator MOTOR IB VERT						
HI FREQ VEL	.020	.0097	In/Sec	.011	109	%
33 - C Hydro Agitator GrBx In Axial						
10-10 X RPM	.048	.031	In/Sec	.017	56	%
57 - A/B Concentr Vac Pmp-var RPM						(18-Nov-19)
11 - Motor OB HOR						
OVERALL	.098	.051	In/Sec	.048	95	%
SUBSYNCHRONOUS	.095	.027	In/Sec	.068	253	%+
11H - Motor OB HOR						
HI FREQ VEL	.014	.0080	In/Sec	.0056	70	%
1-20 KHz	.232	.136	G-s	.096	71	%
81 - Compressor OB Horiz						
10-30 X RPM	.250	.233	In/Sec	.017	7	#
2130-1 - FLASH VAP VAC PUMP-var speed						(18-Nov-19)
21 - Motor IB HOR						
SUBSYNCHRONOUS	.037	.021	In/Sec	.016	76	%
83 - Compressor OB Axial						
10-30 X RPM	.025	.016	In/Sec	.0086	52	%
HI FREQ VEL	.028	.015	In/Sec	.013	91	%
C-203 - C-203 Comp (Old Joy)						(18-Nov-19)
13 - MOTOR OB AXIAL						
OVERALL	.068	.043	In/Sec	.025	58	%
10-60 X RPM	.065	.039	In/Sec	.026	66	%
HI FREQ VEL	.0014	.0006	In/Sec	.0008	123	%
1-20 KHz	2.739	1.103	G-s	1.636	148	%
22 - MOTOR IB VERT						
OVERALL	.037	.020	In/Sec	.017	87	%
10-60 X RPM	.032	.0070	In/Sec	.025	355	%
HI FREQ VEL	.0006	.0002	In/Sec	.0004	287	%

1-20 KHz	1.181	.265	G-s	.916	346	%
23 - MOTOR IB AXIAL						
HI FREQ VEL	.0031	.0009	In/Sec	.0022	242	%
C-202 - C-202 Comp (New Location) (18-Nov-19)						
11 - MOTOR OB HOR						
OVERALL	.073	.042	In/Sec	.032	76	%
RUNNING SPEED	.042	.025	In/Sec	.018	72	%
10-60 X RPM	.050	.022	In/Sec	.028	131	%
HI FREQ VEL	.0021	.0004	In/Sec	.0017	377	%
1-20 KHz	2.351	.670	G-s	1.682	251	%
12 - MOTOR OB VERT						
HI FREQ VEL	.0006	.0003	In/Sec	.0003	77	%
21 - MOTOR IB HOR						
1.5-2.5 X RPM	.019	.012	In/Sec	.0073	62	%
23 - MOTOR IB AXIAL						
RUNNING SPEED	.021	.012	In/Sec	.0091	76	%
1.5-2.5 X RPM	.021	.012	In/Sec	.0093	81	%
83M - COMP MALE SHAFT OB AXIAL						
M/F ROTOR 2,3X	.019	.010	In/Sec	.0085	84	%
81F - COMP FEMALE SHAFT OB HOR						
M/F ROTOR 1X	.011	.0045	In/Sec	.0061	137	%
M/F ROTOR 2,3X	.0057	.0036	In/Sec	.0021	57	%
C-201 - C-201 Comp (Old Centac) (18-Nov-19)						
21 - MOTOR IB HOR						
SUBSYNCHRONOUS	.025	.014	In/Sec	.011	81	%
10-60 X RPM	.020	.0093	In/Sec	.011	117	%
23 - MOTOR IB AXIAL						
OVERALL	.111	.060	In/Sec	.051	86	%
10-60 X RPM	.101	.026	In/Sec	.075	292	%+
HI FREQ VEL	.0022	.0009	In/Sec	.0014	157	%
1-20 KHz	4.088	1.039	G-s	3.048	293	%
82M - COMP MALE SHAFT OB VERT						
SUBSYNCHRONOUS	.015	.0066	In/Sec	.0082	125	%
83M - COMP MALE SHAFT OB AXIAL						
M/F ROTOR 2,3X	.030	.016	In/Sec	.014	89	%
71F - COMP FEMALE SHAFT IB HOR						
PASS FREQ(4X)	.0010	.0007	In/Sec	.0003	52	%
72F - COMP FEMALE SHAFT IB VERT						
M/F ROTOR 2,3X	.0070	.0043	In/Sec	.0027	62	%
73F - COMP FEMALE SHAFT IB AXIAL						
OVERALL	.063	.039	In/Sec	.024	62	%
82F - COMP FEMALE SHAFT OB VERT						
M/F ROTOR 2,3X	.0056	.0036	In/Sec	.0020	57	%
9002-10 - D-HYDROGENATOR AGITATOR (18-Nov-19)						
21 - MOTOR INBOARD HORIZONTAL						
SUBSYNCHRONOUS	.072	.041	In/Sec	.031	77	%
23 - motor inboard axial						
HI FREQ VEL	.0079	.0037	In/Sec	.0043	117	%
51 - GEARBOX TOP PLATE- E-W						
SUBSYNCHRONOUS	.278	.283	In/Sec	-.0046	-2	#
52 - GEARBOX TOP PLATE- N-S						
2.5-10. X RPM	.013	.0084	In/Sec	.0050	60	%
10-30 X RPM	.064	.029	In/Sec	.036	125	%
52L - GEARBOX OUTPUT SHAFT-E-W-LOW FRQ						

1.5-2.5X RPM	.0064	.0037	In/Sec	.0027	72	%
10X - 20X RPM	.060	.021	In/Sec	.039	189	%
61 - GEARBOX OUTPUT SHAFT-HORIZONTAL						
OVERALL	.196	.092	In/Sec	.104	113	%
SUBSYNCHRONOUS	.194	.087	In/Sec	.106	121	%+
2.5-10. X RPM	.0069	.0040	In/Sec	.0029	73	%
82 - AGIT INTERMED BRG @ SEAL- E-W						
10-30 X RPM	.017	.011	In/Sec	.0057	50	%
83 - AGIT INTERMED BRG @ SEAL- VERT						
OVERALL	.048	.029	In/Sec	.018	62	%
SUBSYNCHRONOUS	.033	.016	In/Sec	.018	114	%
RUNNING SPEED	.0091	.0047	In/Sec	.0044	93	%
HI FREQ VEL	.021	.0066	In/Sec	.014	217	%
201-08A - COMPRESSOR, NASH A 201-08A (18-Nov-19)						
11 - Nash Compr A Motor OB Horiz						
SUBSYNCHRONOUS	.027	.018	In/Sec	.0091	51	%
1.5-2.5X RPM	.0058	.0037	In/Sec	.0021	57	%
HI FREQ VEL	.0092	.0060	In/Sec	.0032	53	%
13 - Nash Compr A Motor OB Axial						
SUBSYNCHRONOUS	.027	.012	In/Sec	.015	124	%
2.5-10 X RPM	.054	.034	In/Sec	.020	59	%
10-30 X RPM	.113	.068	In/Sec	.045	67	%
21 - Nash Compr A Motor IB Horiz						
1.5-2.5X RPM	.0098	.0060	In/Sec	.0038	63	%
HI FREQ VEL	.010	.0064	In/Sec	.0037	57	%
22 - Nash Compr A Motor IB VERT						
2.5-10 X RPM	.076	.041	In/Sec	.035	84	%
HI FREQ VEL	.015	.0074	In/Sec	.0074	100	%
23 - Nash Compr A Motor IB AXIAL						
2.5-10 X RPM	.076	.045	In/Sec	.031	70	%
71 - Nash Compr A COMP IB HORIZ						
1.5-2.5X RPM	.023	.012	In/Sec	.012	96	%
72 - Nash Compr A Compressor IB Verti						
1.5-2.5X RPM	.040	.018	In/Sec	.022	121	%
2.5-10 X RPM	.170	.104	In/Sec	.066	63	%+
72H - Nash Compr A COMP IB Vertical						
1.5-2.5X RPM	.044	.015	In/Sec	.029	186	%
2.5-10. X RPM	.181	.120	In/Sec	.061	51	%
73 - Nash Compr A COMP IB AXIAL						
10-30 X RPM	.068	.044	In/Sec	.024	55	%
HI FREQ VEL	.051	.033	In/Sec	.018	55	%
81 - Nash Compr A COMP OB HORIZ						
1.5-2.5X RPM	.020	.012	In/Sec	.0077	62	%
82 - Nash Compr A Compressor OB Verti						
SUBSYNCHRONOUS	.012	.0066	In/Sec	.0051	77	%
1.5-2.5X RPM	.039	.018	In/Sec	.021	114	%
2.5-10 X RPM	.185	.122	In/Sec	.062	51	%
10-30 X RPM	.146	.097	In/Sec	.049	50	%
82H - Nash Compr A COMP OB Vertical						
1.5-2.5X RPM	.033	.018	In/Sec	.014	78	%
2.5-10. X RPM	.194	.121	In/Sec	.073	61	%+
10-30 X RPM	.145	.088	In/Sec	.057	65	%+
83 - Nash Compr A Compressor OB Axial						
10-30 X RPM	.071	.036	In/Sec	.035	95	%
83H - Nash Compr A COMP OB AXIAL						
1.5-2.5X RPM	.023	.011	In/Sec	.012	106	%

10-30 X	RPM	.068	.034	In/Sec	.035	103	%
HI FREQ VEL		.053	.035	In/Sec	.018	52	%
NCT - NF - N CT -NORTH FAN, N TWR (18-Nov-19)							
8 - MOTOR IB HORIZ							
OVERALL		.223	.129	In/Sec	.095	73	%
RUNNING SPEED		.195	.098	In/Sec	.097	99	%
9 - MOTOR IB AXIAL							
OVERALL		.255	.131	In/Sec	.125	96	%
SUBSYNCHRONOUS		.242	.102	In/Sec	.140	137	%+
10 - GEARBOX INPUT HORIZONTAL							
SUBSYNCHRONOUS		.133	.070	In/Sec	.063	91	%+
11 - GEARBOX VERTICAL							
OVERALL		.194	.126	In/Sec	.069	55	%
SUBSYNCHRONOUS		.143	.058	In/Sec	.085	145	%+
530-02 - PUMP,N.COOLING TWR,MIDDLE (18-Nov-19)							
11 - MOT TOP N-S							
RUNNING SPEED		.101	.062	In/Sec	.039	63	%
10-30 X RPM		.011	.0055	In/Sec	.0052	96	%
548-7 - IRON-FREE H2O BOOSTER PUMP (18-Nov-19)							
11 - MOTOR OUTBOARD HORIZONTAL							
OVERALL		.053	.032	In/Sec	.021	66	%
SUBSYNCHRONOUS		.043	.0096	In/Sec	.033	349	%
RUNNING SPEED		.0075	.0041	In/Sec	.0034	84	%
10-30 X RPM		.014	.0052	In/Sec	.0090	176	%
23 - MOTOR INBOARD AXIAL							
OVERALL		.063	.040	In/Sec	.024	60	%
SUBSYNCHRONOUS		.050	.022	In/Sec	.028	130	%
10-30 X RPM		.0077	.0048	In/Sec	.0029	59	%
71 - PUMP HORIZONTAL							
SUBSYNCHRONOUS		.015	.0085	In/Sec	.0062	72	%
STC-MF - S CT - MID FAN, S TWR (18-Nov-19)							
2 - MOTOR IB HORIZ							
HI FREQ VEL		.0042	.0022	In/Sec	.0020	92	%
5 - GEARBOX VERTICAL							
OVERALL		.200	.095	In/Sec	.105	110	%
SUBSYNCHRONOUS		.179	.053	In/Sec	.126	238	%+
6 - GEARBOX AXIAL							
1.5-2.5X RPM		.066	.038	In/Sec	.027	71	%
SCT-1 - SOUTH CT PUMP - EAST (18-Nov-19)							
11 - MOTOR OUTBOARD HORIZONTAL							
SUBSYNCHRONOUS		.024	.014	In/Sec	.0091	63	%
23 - MOTOR INBOARD AXIAL							
HI FREQ VEL		.017	.0063	In/Sec	.011	179	%
71 - PUMP HORIZONTAL							
SUBSYNCHRONOUS		.021	.0086	In/Sec	.012	140	%
72 - PUMP VERTICAL							
1.5-2.5X RPM		.021	.014	In/Sec	.0075	54	%
SCT-2 - SOUTH CT PUMP - MID (18-Nov-19)							
11 - MOTOR OUTBOARD HORIZONTAL							
1.5-2.5X RPM		.0054	.0028	In/Sec	.0026	94	%
21 - MOTOR INBOARD HORIZONTAL							

1.5-2.5X RPM	.0051	.0033	In/Sec	.0018	54	%
2.5-10 X RPM	.040	.027	In/Sec	.014	52	%
71 - PUMP HORIZONTAL						
SUBSYNCHRONOUS	.029	.0061	In/Sec	.023	380	%
1.5-2.5X RPM	.044	.027	In/Sec	.017	64	%
72 - PUMP VERTICAL						
HI FREQ VEL	.021	.012	In/Sec	.0095	81	%
SCT-3 - SOUTH CT PUMP - WEST				(18-Nov-19)		
11 - MOTOR OUTBOARD HORIZONTAL						
HI FREQ VEL	.103	.047	In/Sec	.056	120	%+
21 - MOTOR INBOARD HORIZONTAL						
SUBSYNCHRONOUS	.013	.0079	In/Sec	.0055	69	%
10-30 X RPM	.017	.011	In/Sec	.0057	51	%
HI FREQ VEL	.044	.023	In/Sec	.021	93	%
23 - MOTOR INBOARD AXIAL						
SUBSYNCHRONOUS	.0096	.0055	In/Sec	.0041	75	%
new AC - INSTRUMENT AIR COMPRESSOR				(18-Nov-19)		
11 - MOTOR OB HOR						
1.5-2.5 X RPM	.0066	.0040	In/Sec	.0026	65	%
12 - MOTOR OB VERT						
1.5-2.5 X RPM	.0025	.0015	In/Sec	.0010	65	%
13 - MOTOR OB AXIAL						
HI FREQ VEL	.0041	.0017	In/Sec	.0024	143	%
1-20 KHz	.716	.355	G-s	.361	102	%
21 - MOTOR IB HOR						
1-20 KHz	1.988	.577	G-s	1.410	244	%
22 - MOTOR IB VERT						
HI FREQ VEL	.015	.010	In/Sec	.0053	53	%
23 - MOTOR IB AXIAL						
OVERALL	.157	.058	In/Sec	.099	170	%
RUNNING SPEED	.016	.0085	In/Sec	.0079	93	%
1.5-2.5 X RPM	.0027	.0007	In/Sec	.0020	313	%
10-60 X RPM	.155	.052	In/Sec	.102	195	%+
72M - COMP MALE SHAFT IB VERT						
M/F ROTOR 2,3X	.010	.0053	In/Sec	.0051	96	%
73M - COMP MALE SHAFT IB AXIAL						
SUBSYNCHRONOUS	.029	.014	In/Sec	.015	103	%
M/F ROTOR 1X	.0047	.0016	In/Sec	.0032	201	%
M/F ROTOR 2,3X	.017	.0069	In/Sec	.011	152	%
81M - COMP MALE SHAFT OB HOR						
M/F ROTOR 2,3X	.0044	.0028	In/Sec	.0016	58	%
PASS FREQ(4X)	.019	.011	In/Sec	.0083	77	%
83M - COMP MALE SHAFT OB AXIAL						
M/F ROTOR 2,3X	.015	.010	In/Sec	.0053	53	%
71F - COMP FEMALE SHAFT IB HOR						
M/F ROTOR 2,3X	.015	.0094	In/Sec	.0054	58	%
72F - COMP FEMALE SHAFT IB VERT						
PASS FREQ(4X)	.0059	.0032	In/Sec	.0026	81	%
73F - COMP FEMALE SHAFT IB AXIAL						
SUBSYNCHRONOUS	.066	.017	In/Sec	.049	282	%+
81F - COMP FEMALE SHAFT OB HOR						
M/F ROTOR 1X	.0069	.0046	In/Sec	.0024	51	%
M/F ROTOR 2,3X	.0077	.0043	In/Sec	.0034	80	%
PASS FREQ(4X)	.069	.040	In/Sec	.030	75	%
83F - COMP FEMALE SHAFT OB AXIAL						

PASS FREQ(4X)	.016	.010	In/Sec	.0057	55	%
2130-1old - C Concentrator Vacuum Pump (18-Nov-19)						
11 - Motor OB HOR						
SUBSYNCHRONOUS	.045	.0070	In/Sec	.038	537	%
HI FREQ VEL	.060	.020	In/Sec	.040	206	%+
21 - Motor IB HOR						
HI FREQ VEL	.033	.014	In/Sec	.019	133	%
23 - Motor IB AXIAL						
SUBSYNCHRONOUS	.020	.011	In/Sec	.0091	82	%
83 - Compressor OB Axial						
HI FREQ VEL	.089	.045	In/Sec	.044	98	%+

% - Maximum Percentage Alarm
 + - Maximum Delta Alarm
 # - Maximum Value Alarm