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Lubrication and the Different Levels of Success

Central Contra Costa Sanitary
District

Brian Walters

Maintenance Technician III – Mechanical



Brian Walters

- 14 Years at Central San
 - Summer Student → Maintenance Technician III
- Bachelors in Business Administration
 - California State East Bay
- Certified Reliability leader
- CWEA Mechanical Technician of the Year
 - 2024 San Francisco Bay Section
- CWEA Mechanical Technician Grade IV
- Machinery Lubrication Technician II



Reactive Maintenance vs. Safety

- Reactive work leads to the “Hero / get it done / we are under pressure” mentality of maintenance personnel who then take more risks
- When equipment fails you can have Heat, Debris, Fluid Spills, and Chemical Reactions
- Not enough time given to assess all the safety hazards
- Different studies have correlated an **increased risk** of 28-66% more likely to have an injury or incident when the work is reactive rather than planned and scheduled.



Machine Failure

- 70% of machine life loss is due to reduction of surface material



Surface Degradation

- 20% of Surface degradation is corrosive wear
- While 50% of surface degradation is mechanical wear

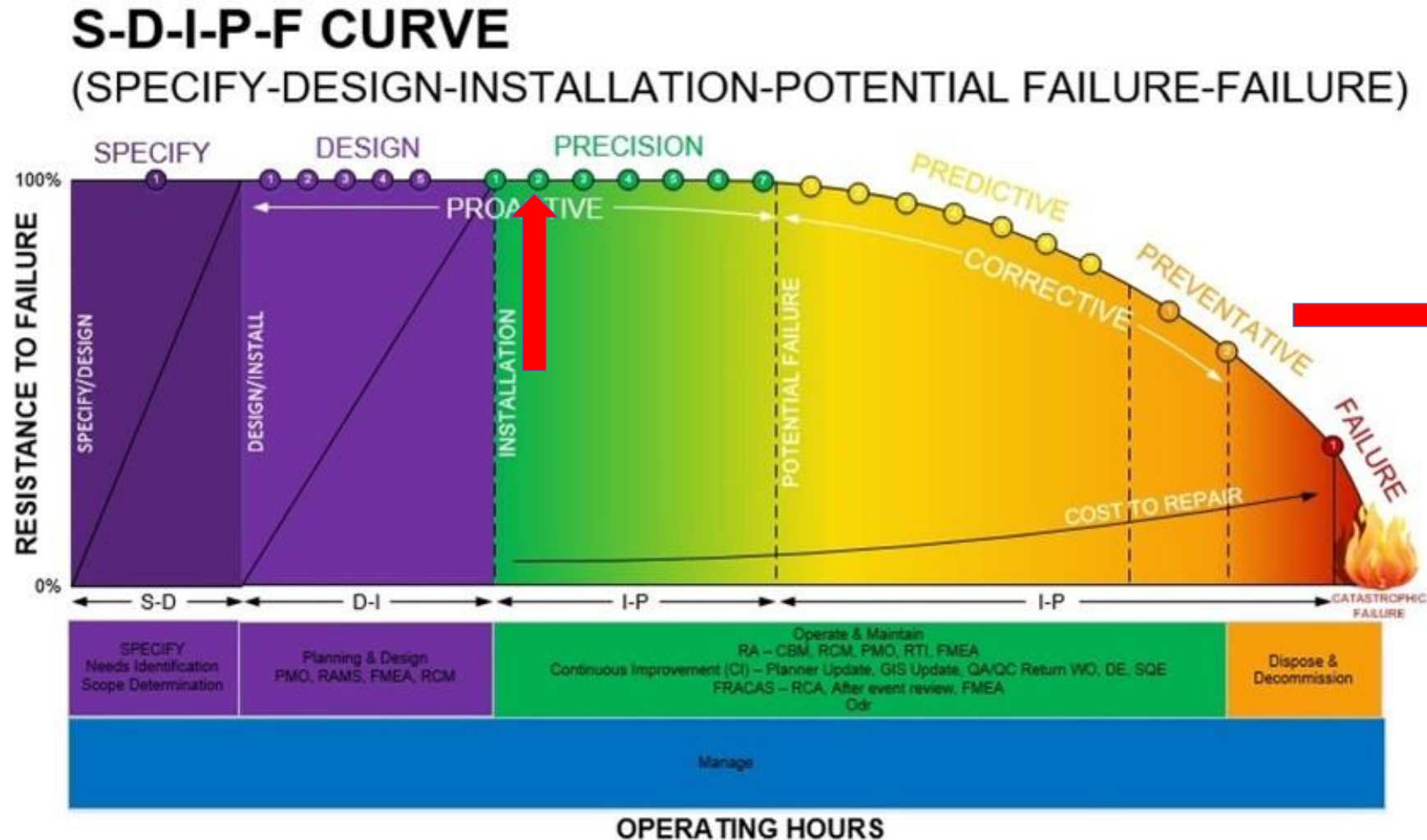


Mechanical Wear

- 82% of mechanical wear is caused by particle contamination
- **28% of all machine failure can be contributed to particle contamination, which you can control.**



Precision Lubrication



SPECIFY

1. Specify

DESIGN/INSTALL

- 1 Design
- 2 Source
- 3 Build/Fabricate
- 4 Install Commission
- 5 Reliability Analysis (RA)

PRECISION

- 1 Work Processes & Procedures
- 2 Asset Condition Management
- 3 Lubrication Reliability
- 4 Inspections
- 5 Parts for Reliability
- 6 Laser Alignment
- 7 Baseline ACI

PREDICTIVE

- 1 Condition Directed Tasks
- 2 MCA
- 3 US
- 4 IR
- 5 LU
- 6 MA
- 7 Other NDT

PREVENTATIVE

- 1 Time Directive
- 2 Human Senses Directed

FAILURE

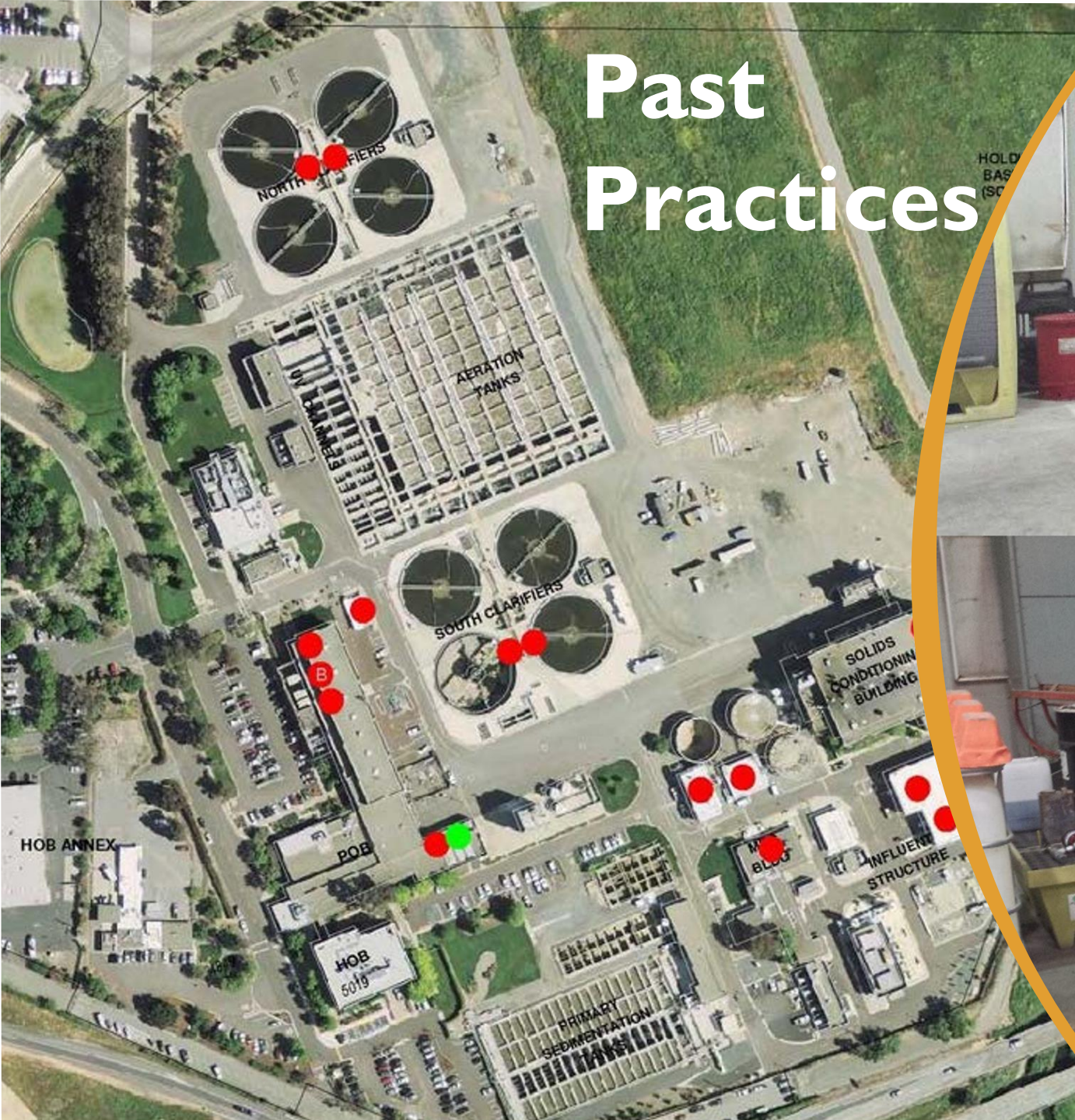
- 1 Functional Failure
- 2 Catastrophic Failure

“Less than 0.5% of a plant’s maintenance budget is spent on purchasing lubricants, but the downstream effects of poor lubrication can impact as much as 30% of a plants total maintenance costs per year”

-Exxon Mobile case study

Level 1 – Jedi Initiate

Past Practices





Past Practices

Level 2 – Jedi Padawan

How to Get Started

- We have eight certified MLT's at CCCSD with more interest currently
- Helps with program buy in and acceptance
- Creates culture not tasks
- Helps to generate ideas when solving problems





Central
Storage

Central Storage



Secondary Storage

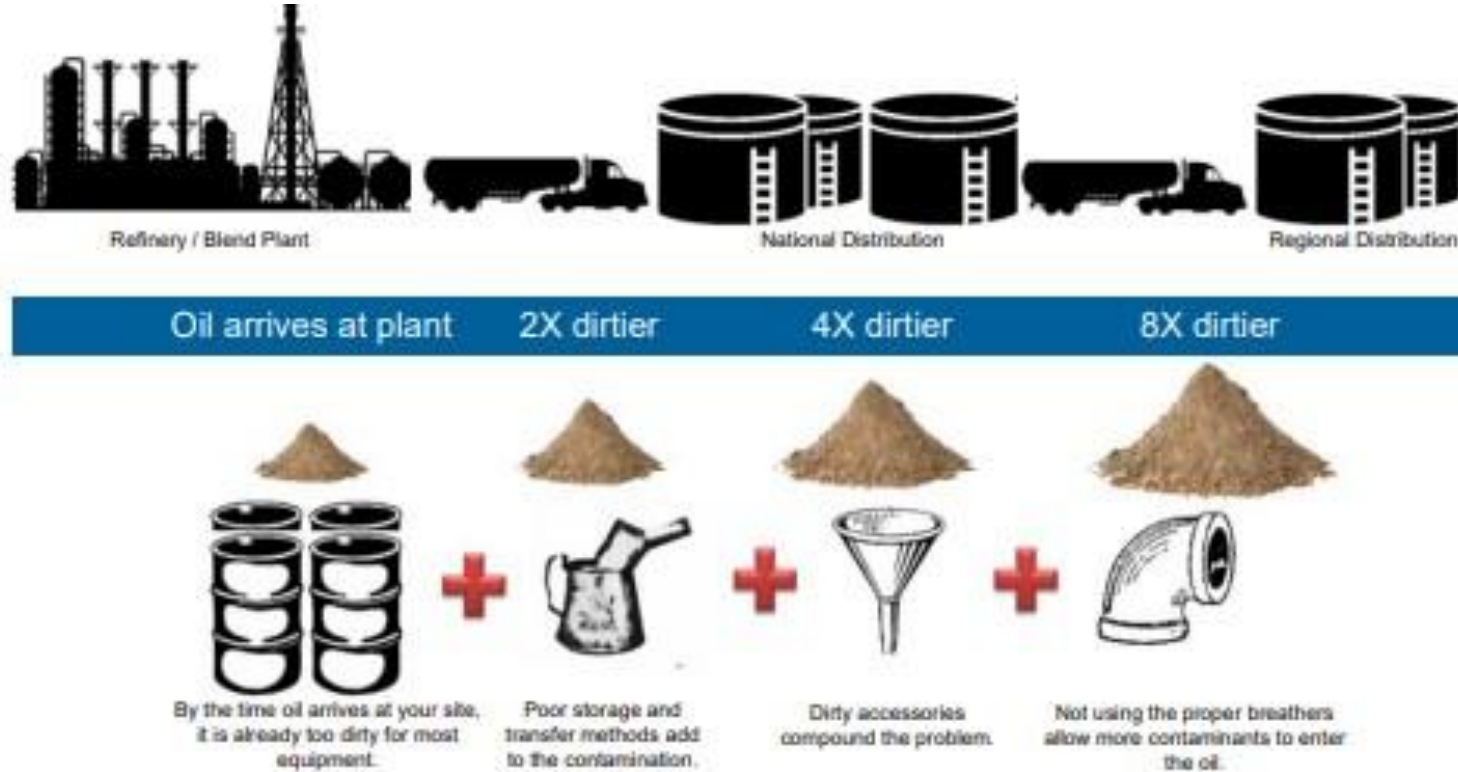




Satellite Storage



New oil is Not clean oil



Level 3 – Jedi Knight

Breathers and Adapters



Grease Improvements



Filter and Test



Level 4 – Jedi Master

Sampling



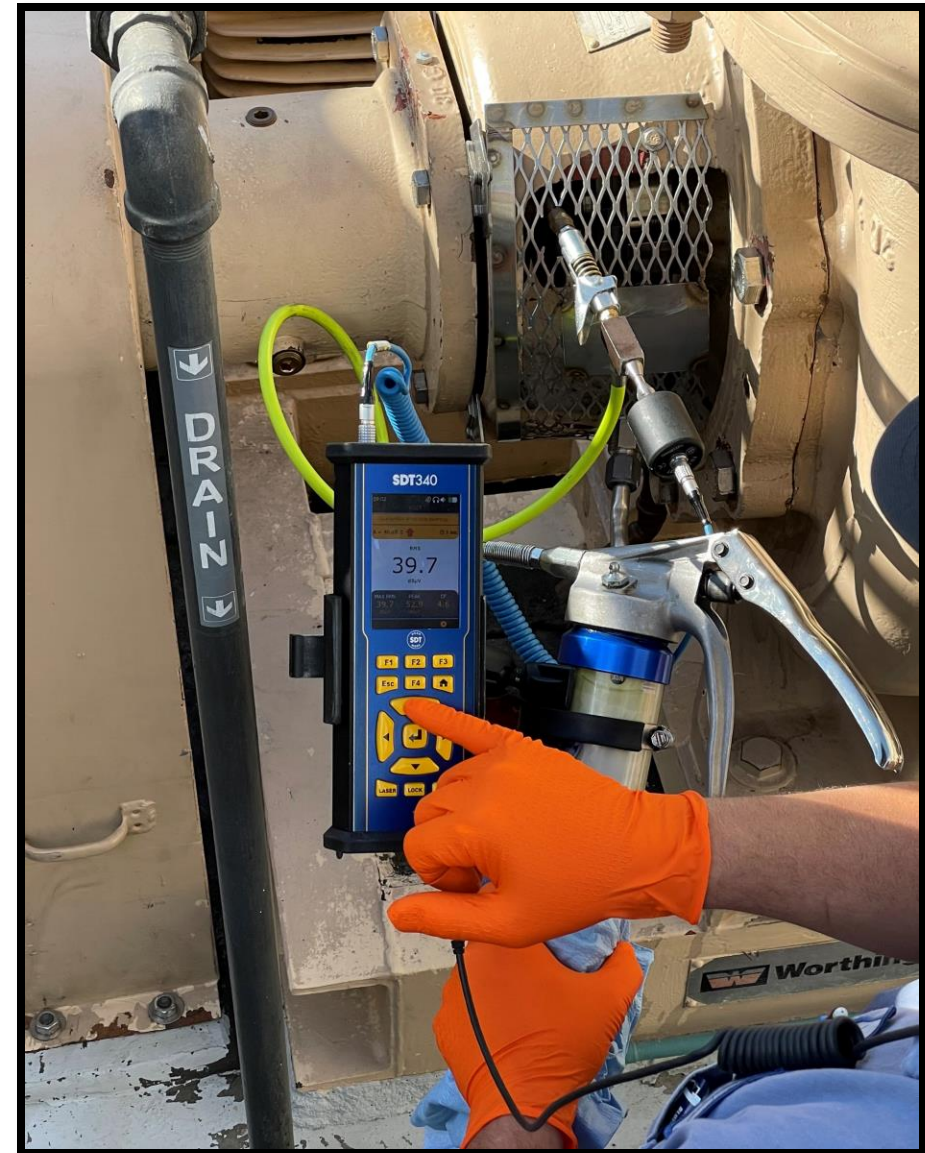
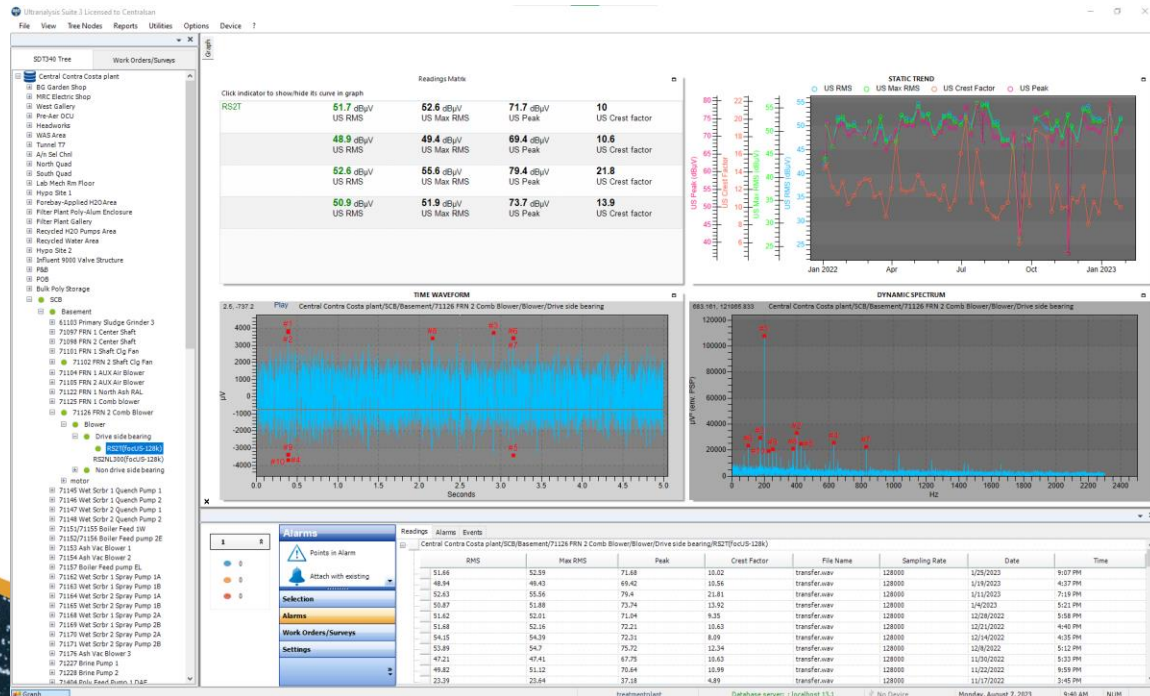
Sampling



Ultrasound Greasing

Establish Baselines and lubricate as needed

Allows the bearing to be lubricated the correct amount



Documentation

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1			Old Record			Verification										
2	EQ. #	DESCRIPTION	TYPE	ISO	Equipment Capacity (Gall)	Manufacturer	Model#	TYPE	Size	Equipment Capacity (Gallon)	Field/O&	Geoportal/Libra	Last Update Date	In Citywork	Last Update Date	COMMENTS
							INGZ	Cetus Hipersyn Oil 460								Machine oil ISO 460.
142	37011	Hypo Pump 2 Hydraulic	CLARITY MA	150	2.5	Milton Roy	MBH2428HPBCBM4SEST11N NG2	Zumpreem 15A/ Chevron Hydraulic Oil AW 32	32	0.75	O&M	Geoportal	3/25/2024		EKandahari	O&M in Geoportal PDF page 86 in the most recent version. O&M in Geoportal PDF page 86 in the most recent version. The closest oil to the manufacturer's recommendation that we have available is Clarity SYN Machine oil ISO 32.
143	37012	Hypo Pump 3 Drive End	CLARITY MA	460	0.13	Milton Roy	MBH2428HPBCBM4SEST11N NG2	Zum AGMA 7 or Chevron Cetus Hipersyn Oil 460	460	2.5	O&M	Geoportal	3/25/2024		EKandahari	O&M in Geoportal PDF page 86 in the most recent version. The closest oil to the manufacturer's recommendation that we have available is Clarity SYN Machine oil ISO 460.
144	37012	Hypo Pump 3 Drive End	CLARITY MA	150		Milton Roy	MBH2428HPBCBM4SEST11N NG2	Zumpreem 15A/ Chevron Hydraulic Oil AW 32	32	0.75	O&M	Geoportal	12/2/2024		MHaga	O&M in Geoportal PDF page 86 in the most recent version. The closest oil to the manufacturer's recommendation that we have available is Clarity SYN Machine oil ISO 32.
145	37013	Hypo Pump 4 Drive End	CLARITY MA	150	0.13	Milton Roy	MBH	Zum AGMA 7 or Chevron Cetus Hipersyn Oil 460	460	2.5	O&M	Geoportal	3/25/2024		EKandahari	O&M in Geoportal PDF page 86 in the most recent version.
146	37013	Hypo Pump 4 Hydraulic	CLARITY MA			Milton Roy	MBH	Zumpreem 15A/ Chevron Hydraulic Oil AW 32	32	0.75	O&M	Geoportal	12/2/2024		MHaga	recommendation that we have available is Clarity SYN Machine oil ISO 32.
147	37014	Hypo Pump 5 Drive End	CLARITY MA			Milton Roy	MBH	Zum AGMA 7 or Chevron Cetus Hipersyn Oil 460	460	2.5	O&M	Geoportal	12/2/2024		MHaga	recommendation that we have available is Clarity SYN Machine oil ISO 460.
148	37014	Hypo Pump 5 Hydraulic	CLARITY MA			Milton Roy	MBH	Zumpreem 15A/ Chevron Hydraulic Oil AW 32	32	0.75	O&M	Geoportal	12/2/2024		MHaga	recommendation that we have available is Clarity SYN Machine oil ISO 32.
149	37015	Hypo Pump 6 Drive End	CLARITY MA	150	7.5	Milton Roy	MCH16D56B2M	Zum AGMA 7 or Chevron Cetus Hipersyn Oil 460	460	7.5	O&M	Geoportal	3/25/2024		EKandahari	O&M in Geoportal PDF page 86 in the most recent version. The closest oil to the manufacturer's recommendation that we have available is Clarity SYN Machine oil ISO 460.
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151	42101	Appld H2O Pump 1 Lower Brg	CLARITY MA	150	6	Aurora Pump	36FHL					Geoportal	8/2/2024		MHaga	Abandoned
152	42101	Appld H2O Pump 1 Upper Brg	CLARITY MA	150	6	Aurora Pump	36FHL					Geoportal	8/2/2024		MHaga	Abandoned
153	42102	Appld H2O Pump 2 Lower Brg	CLARITY MA	150	6	aurora Pump	36FHL						1/29/2024		BWalters	This Bearing is now greased with the new motor/ We need confirmation on what type of grease bearing is 6218-J/C3
154	42102	Appld H2O Pump 2 Upper Brg	CLARITY MA	150	6	Aurora Pump	36FHL			1.16	Field		1/29/2024		BWalters	For temps above 100 degrees f nameplate data says to use ISO 68 with a SSU of 284-347 at 100f Chevron Cetus PAO 68 meets those requirements. Bearing is 7320 BEM. capacity is on nameplate information. As of now it has GST 68 but our recommendation is to switch to cetus PAO 68

Level 5 – Jedi Grandmaster

It's not about the products, its about the people.



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