Spectro Scientific
AMETEK

Oil Analysis Report

Released Date: 2022-07-18 16:52:21

Asset Information	
Site: South Side Fleet	Location: ABC
Asset: Vessel 2	Serial Number:
Manufacturer: Kobelt	Model: 7800 Sentinal
Component Type: Hydraulic, Mineral	Asset Operating: 200 hours
Sample Information	
Oil: Chevron Hydraulic Oil AW 68	Oil Operating: 120 hours
Draw Date: 2022-07-18 16:33:21	Top up: none
Notes: none	

Diagnosis/Recommendation

Observations:
Pb, ppm is severely high; Water, ppm is severely high; V40, cSt is severely high; ISO 14 is severely high; ISO 6 is severely high; Si, ppm is abnormally high; ISO 4 is severely high; Total Ferrous ppm is severely high

Diagnostics:
• Suspect Fe source to be shaft, pump, bearing, housing, casing, corrosion or rust.
• Suspect Pb source to be bearings, raceways, or cages. Verify wear with particle analysis, shape classification and vibration analysis.
• Suspect Si source to be contamination from dirt or dust ingression.
• Suspect source of particulate to be dirt, dust, or worn seal; Secondary sources include filter bypass or clogged filters.
• Suspect water source to be environment, condensation, process, or wash down.
• Viscosity change may be due to contamination, severly degraded oil, or wrong fluid added.

Actions:
• Change oil with approved lubricant.

Additional Recommendations: none

Test Results

TriVector	Parameter	Current Sample	History Sample(s)				Unit
	Sample ID	**503737-5**	**503737-4**	**503737-3**	**503737-2**	**503737-1**	
	Draw Date	2022-07-18 16:33:21	2022-07-18 16:33:18	2022-07-18 16:33:15	2022-07-18 16:33:12	2022-07-18 16:33:08	
	Oil	Hydraulic Oil AW 68	Hydraulic Oil AW 68	Hydraulic Oil AW 68	Hydraulic Oil AW 68	Hydraulic Oil AW 68	
	Asset Operating	200	180	140	120	100	*hours*
	Oil Operating	120	100	60	40	20	*hours*
	Top up						*litres*
	Alarm Code	⊘	⊘	⊘	⊘	⊘	
⚙	**Iron**	1.48	0.92	0.48	0.18	0.48	*ppm*
⚙	**Chrome**	0.0	0.0	0.0	0.0	0.0	*ppm*
⚙	**Nickel**	1.7	1.1	0.2	0.6	0.7	*ppm*
⚙	**Aluminium**	0.0	0.0	0.0	0.0	0.0	*ppm*
⚙	**Lead**	6.74	4.84	0.89	0.59	2.44	*ppm*
⚙	**Copper**	3.81	2.11	0.21	0.01	0.31	*ppm*
⚙	**Tin**	9.13	18.33	5.43	1.43	6.63	*ppm*
⚙	**Titanium**	0.0	0.0	0.0	0.0	0.0	*ppm*
⚙	**Silver**	0.0	0.0	0.0	0.0	0.0	*ppm*

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TriVector	Parameter	Current Sample	History Sample(s)				Unit
	Antimony	0.0	0.0	0.0	0.0	0.0	ppm
	Cadmium	4.87	3.57	1.34	0.34	7.37	ppm
	Manganese	7.94	6.54	3.47	1.47	2.24	ppm
	Total Ferrous	111.3				181.2	ppm
	Fatigue >20µm	10.0	5.0	11.0	9.0	7.0	part./ml
	Non-Metallic >20µm	1.54	1.35	2.85	11.25	11.25	part./ml
	Silicon	7.4	9.22	3.4	4.4	1.4	ppm
	Sodium	2.4	1.4	0.7	0.5	0.9	ppm
	Vanadium	2.15	6.65	0.11	0.05	0.81	ppm
	Potassium	5.58	4.68	0.94	0.38	1.78	ppm
	ISO 4406 Code (>4µm)	18.0	19.0	20.0	17.0	17.0	
	ISO 4406 Code (>6µm)	16.0	16.0	17.0	15.0	15.0	
	ISO 4406 Code (>14µm)	11.0	12.0	13.0	11.0	11.0	
	Cnts >4	1512.9	1722.6	1112.9	2002.2	2002.2	part./ml
	Cnts >6	429.5	422.9	339.6	385.9	385.9	part./ml
	Cnts >14	10.8	14.7	10.8	24.1	24.1	part./ml
	Cutting >20µm	8.0	9.0	9.0	7.0	5.0	part./ml
	Sliding >20µm	9.0	10.0	10.0	8.0	5.0	part./ml
	Water ppm	497.0	268.0	512.0	497.0	425.0	
	Molybdenum	0.0	0.0	0.0	0.0	0.0	ppm
	Calcium	58.98	71.38	44.68	21.68	62.18	ppm
	Magnesium	13.37	11.17	6.07	1.07	9.97	ppm
	Phosphorus	68.33	36.82	123.85	210.89	86.23	ppm
	Zinc	8.62	15.52	2.26	3.26	3.36	ppm
	Barium	12.63	17.33	2.03	0.03	8.03	ppm
	Boron	4.42	6.82	30.72	20.72	10.22	ppm
	TAN	0.76	0.38	0.54	0.76	3.22	mg KOH/g
	Oxidation	0.9	0.9	0.84	0.9	1.44	abs/0.1mm
	Visc 40	101.2	84.1	98.8	98.8	94.3	cSt

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Triggered Limits (Current Sample)

ID	Parameter	Limit Type	Direction	Alarm Range	Reference Value	Last Value	Test Value
1	Lead	Absolute	↑	5.0 → ∞	0	4.8	6.74
2	Visc 40	Deviation %	↑	30.0% → ∞	64.6	84.1	101.2
3	Total Ferrous	Absolute	↑	50.0 → ∞	25	n/a	111.3
4	ISO 4406 Code (>4µm)	Absolute	↑	16.0 → ∞	16	19	18.0
5	ISO 4406 Code (>6µm)	Absolute	↑	14.0 → ∞	14	16	16.0
6	ISO 4406 Code (>14µm)	Absolute	↑	11.0 → ∞	11	12	11.0
7	Water ppm	Absolute	↑	250.0 → ∞	27	268	497.0
8	Silicon	Absolute	↑	5.0 → 10.0	0	9.2	7.4

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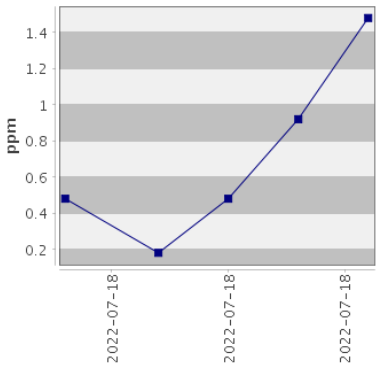
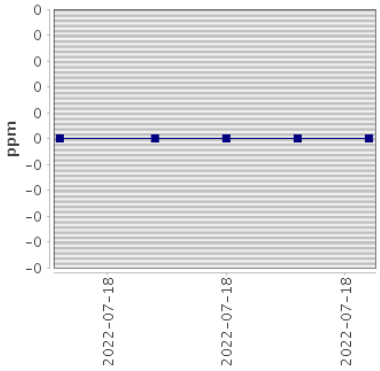
Single Charts

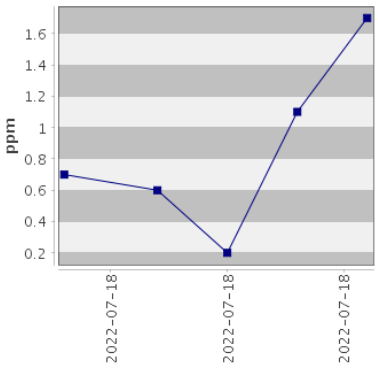
Iron



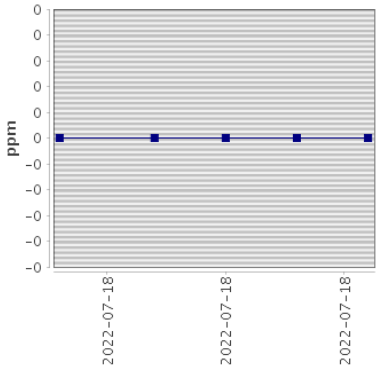
Chrome



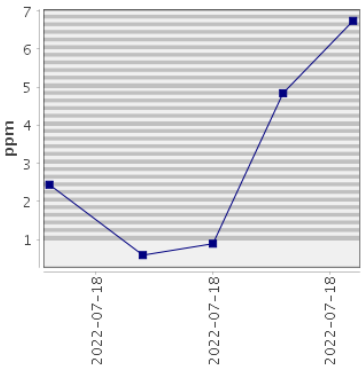
Nickel



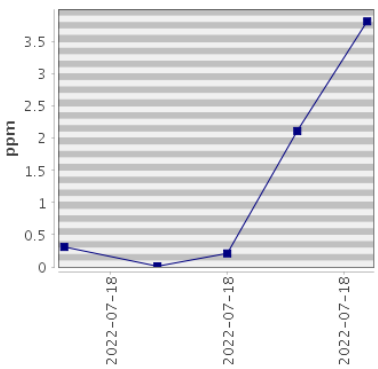
Aluminium



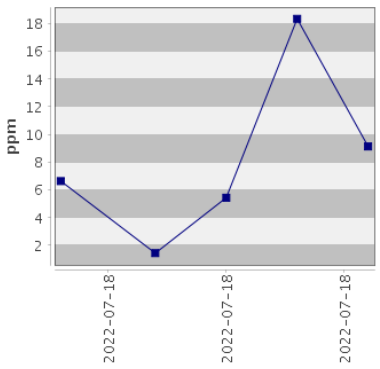
Lead



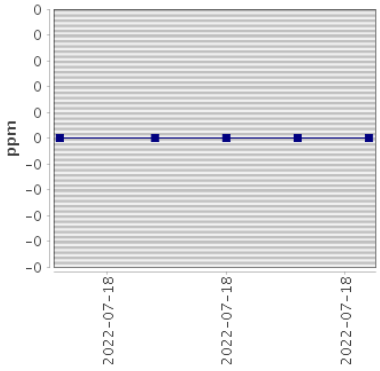
Copper



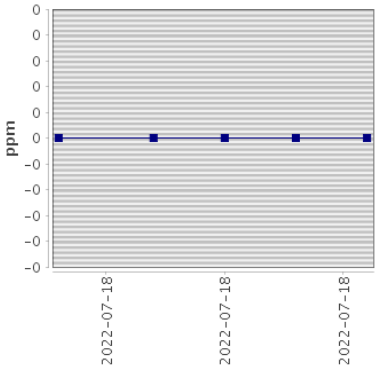
Tin



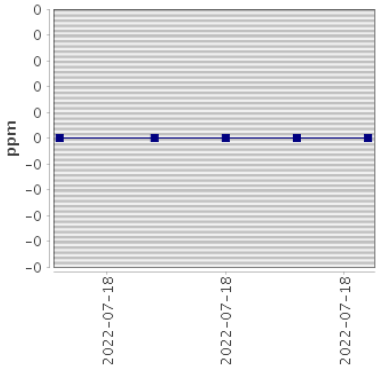
Titanium



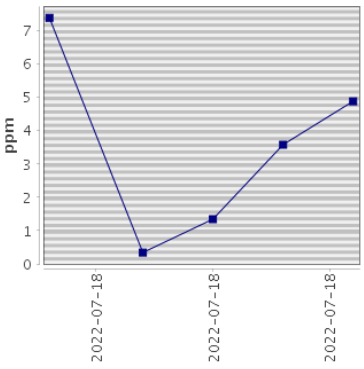
Silver



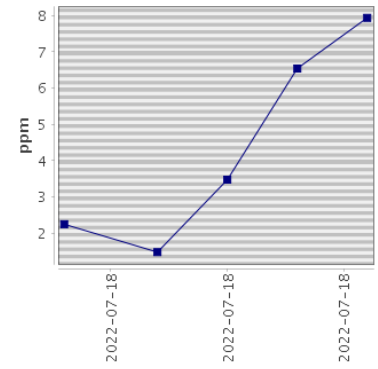
Antimony



Cadmium



Manganese



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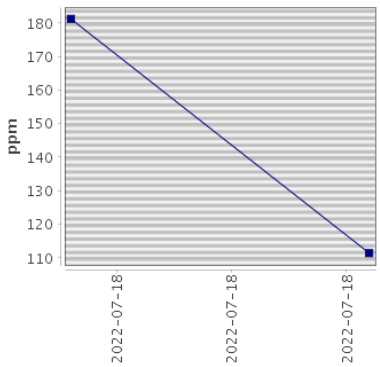
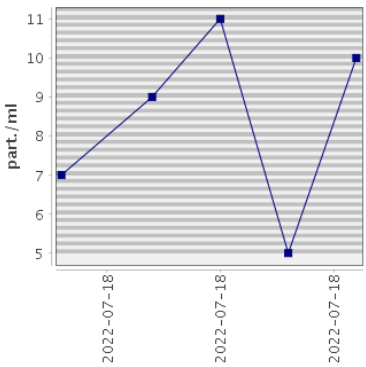
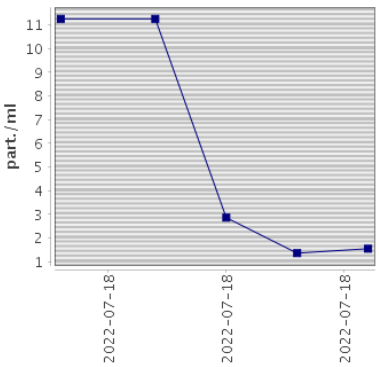
Total Ferrous



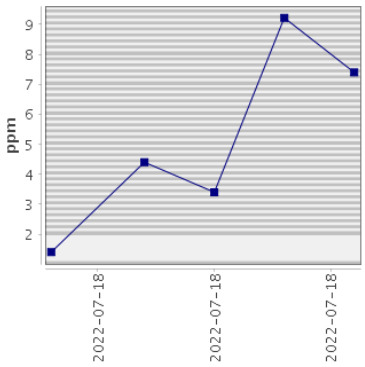
Fatigue >20µm



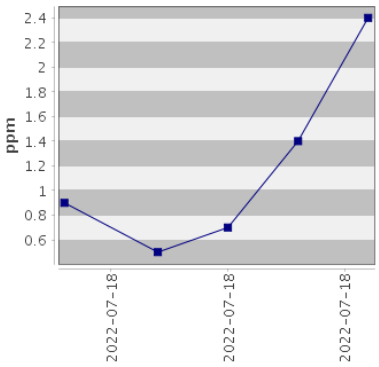
Non-Metallic >20µm



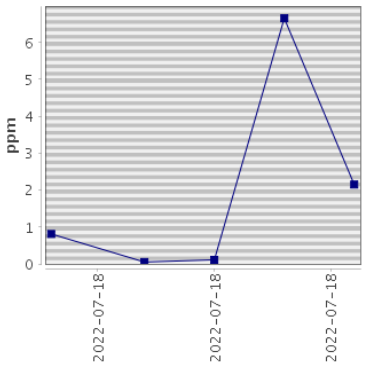
Silicon



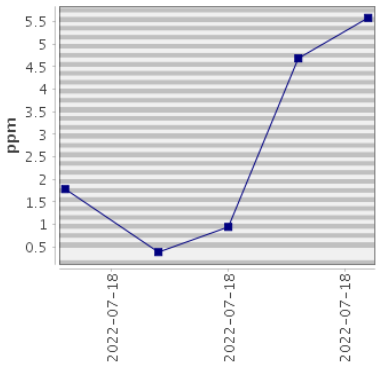
Sodium



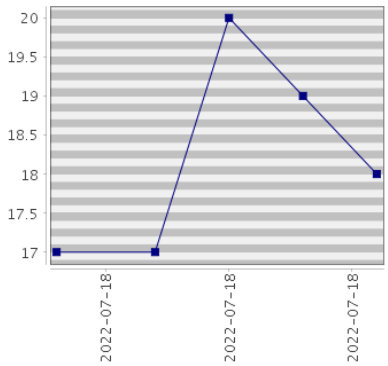
Vanadium



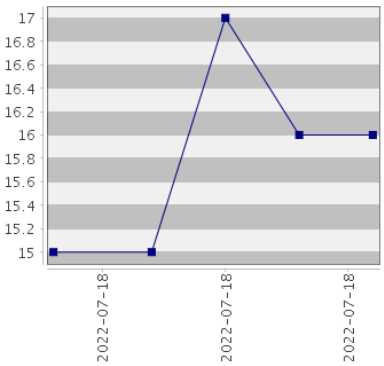
Potassium



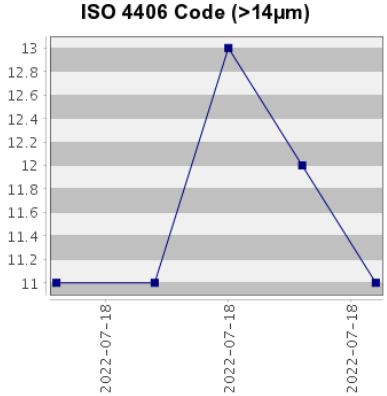
ISO 4406 Code (>4µm)



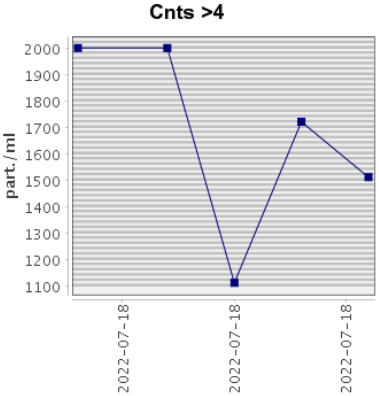
ISO 4406 Code (>6µm)



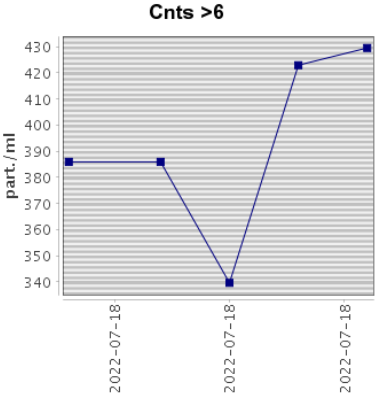
ISO 4406 Code (>14µm)



Cnts >4



Cnts >6



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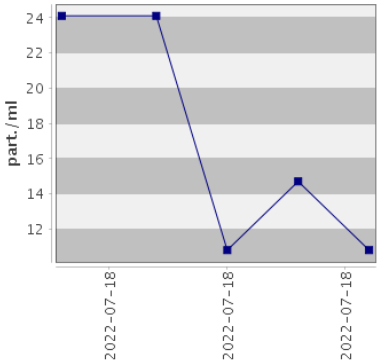
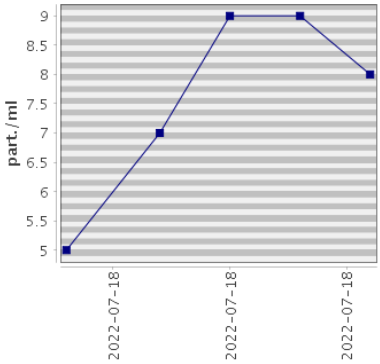
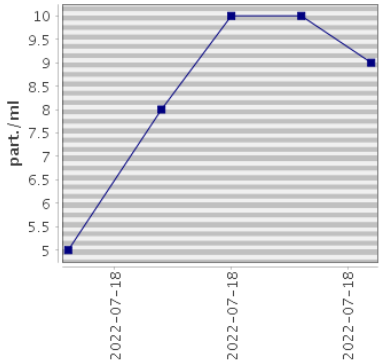
Cnts >14



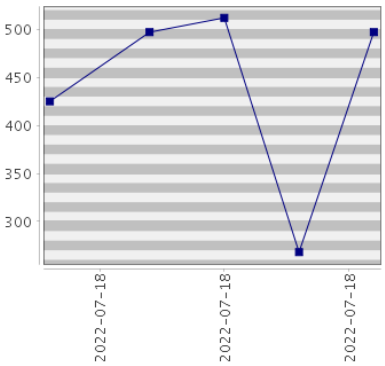
Cutting >20µm



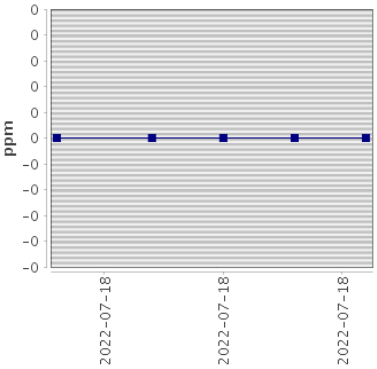
Sliding >20µm



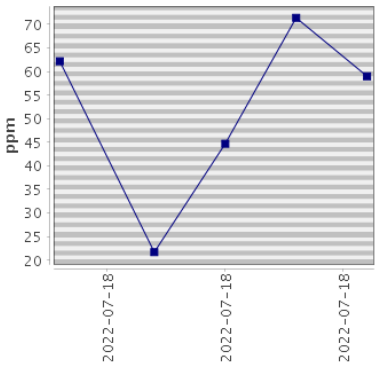
Water ppm



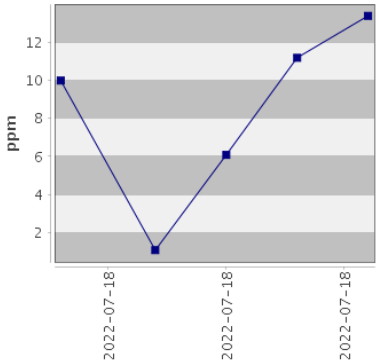
Molybdenum



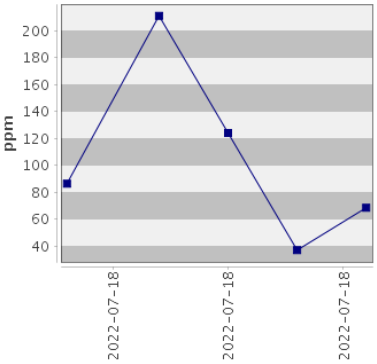
Calcium



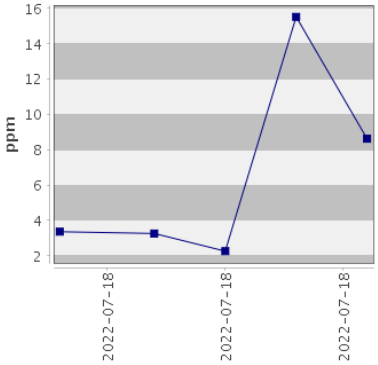
Magnesium



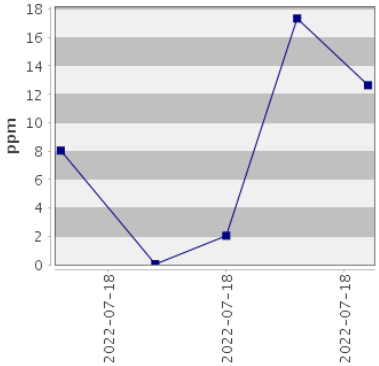
Phosphorus



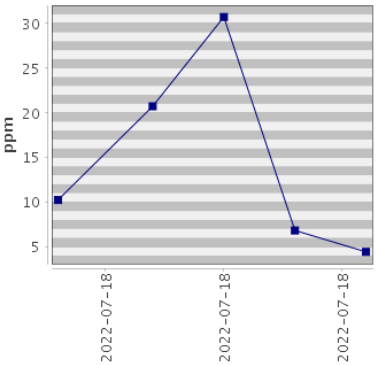
Zinc



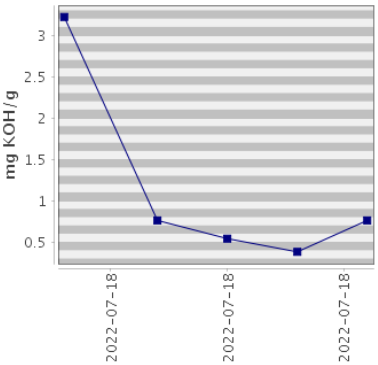
Barium



Boron



TAN



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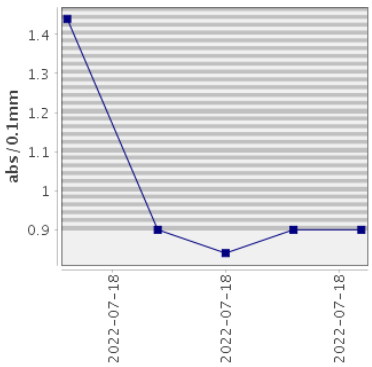
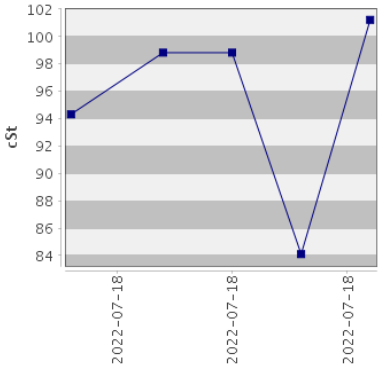
Oxidation



Visc 40



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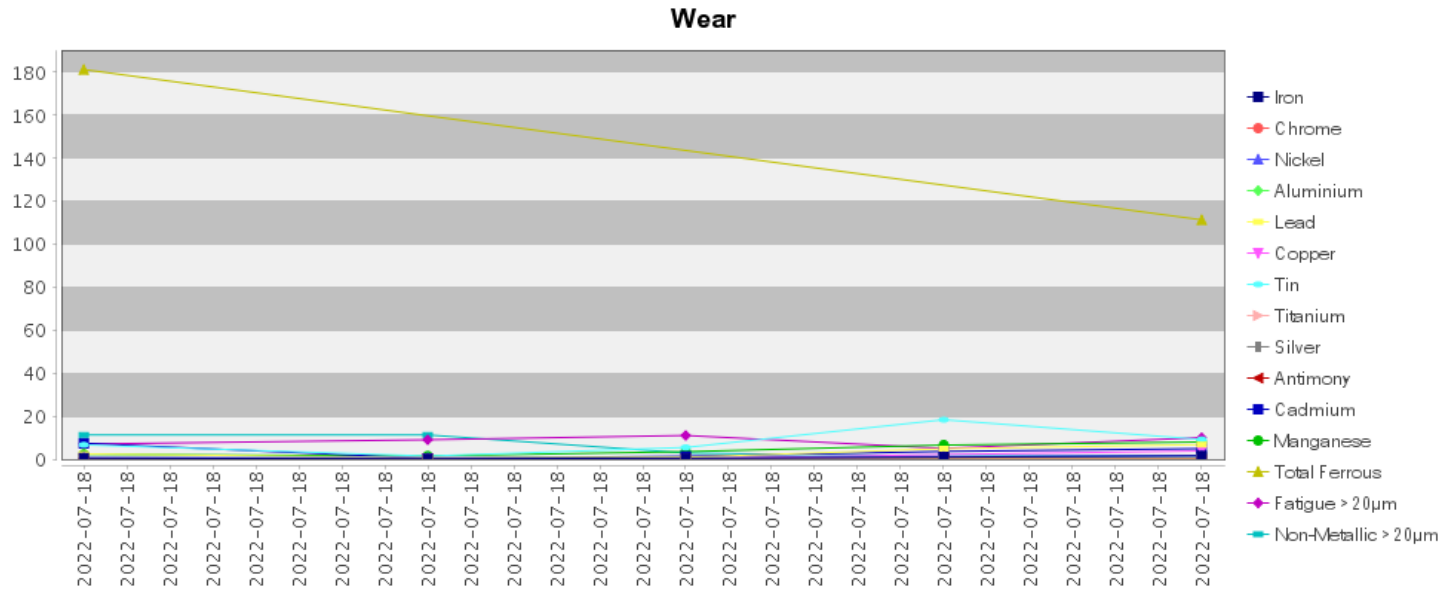
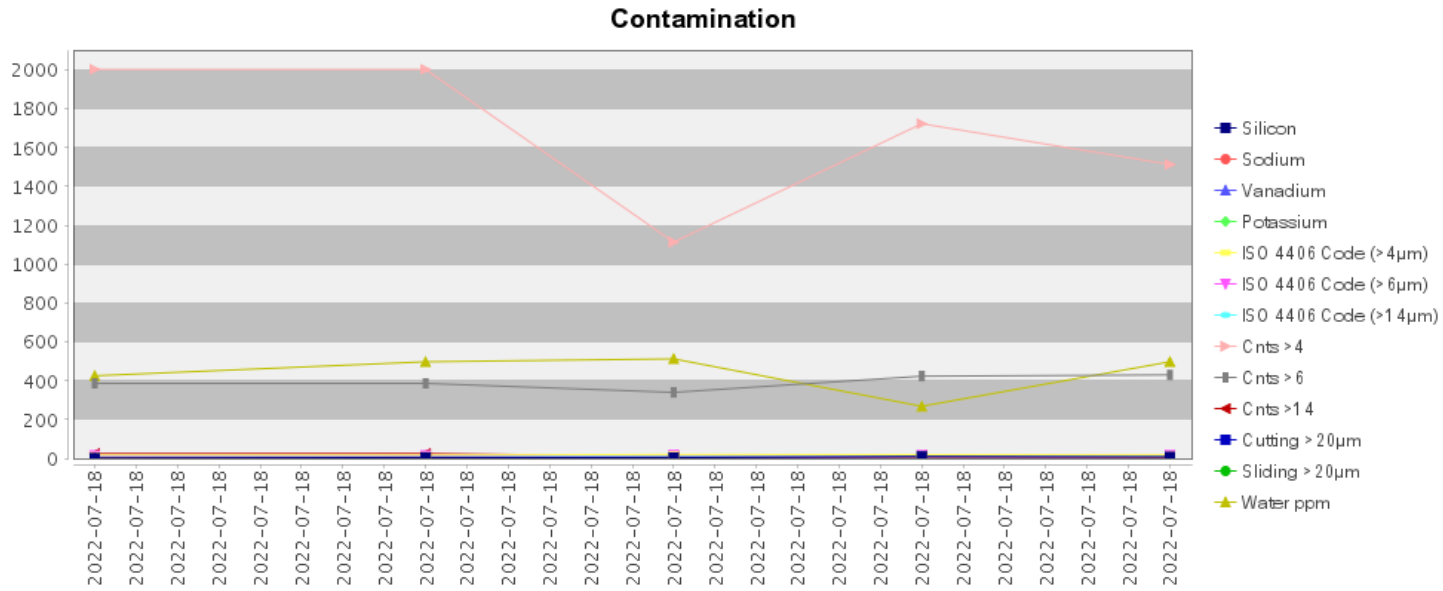
Multiple Charts





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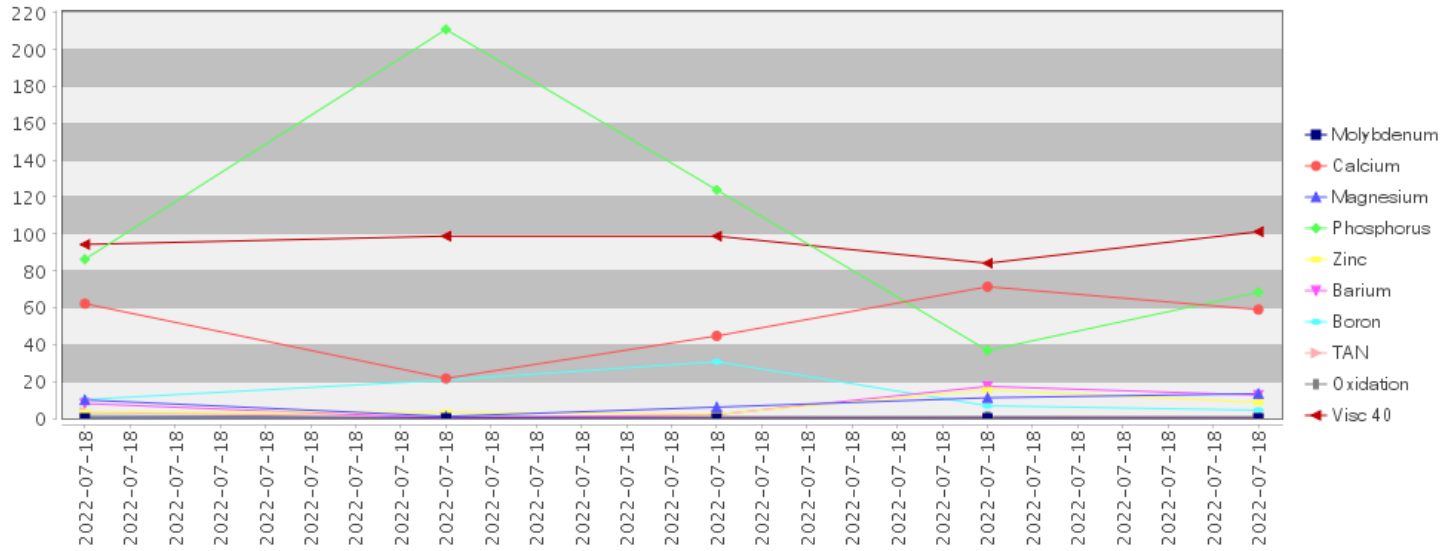
Chemistry



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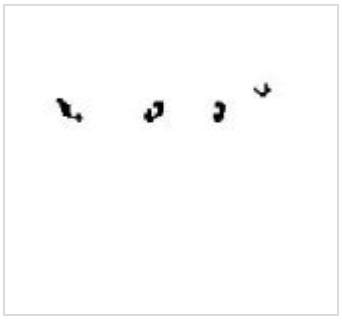
Released Date: 2022-07-18 16:52:21

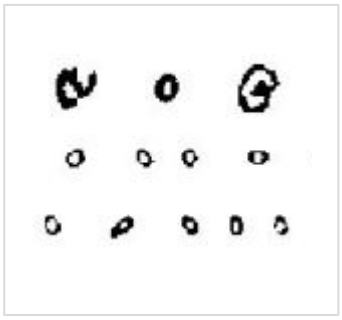
LNF Images



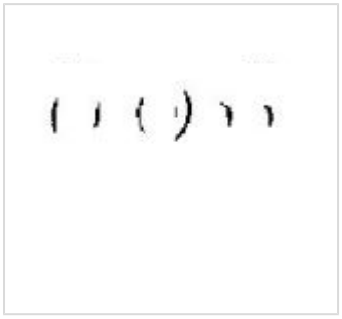
Cutting

Sliding

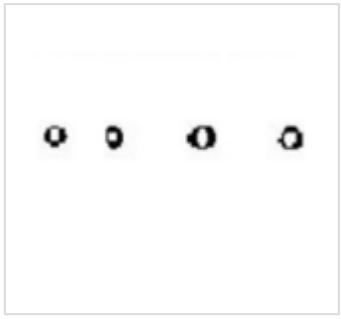
Fatigue



Non Metallic



Fiber



Water

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