

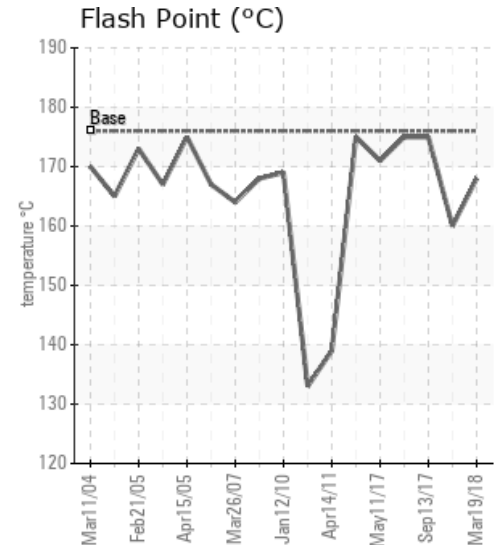
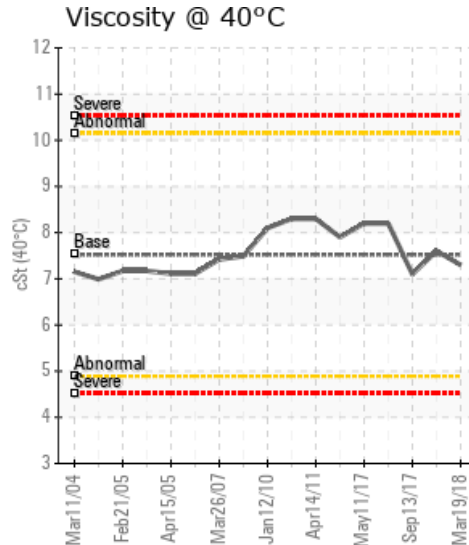
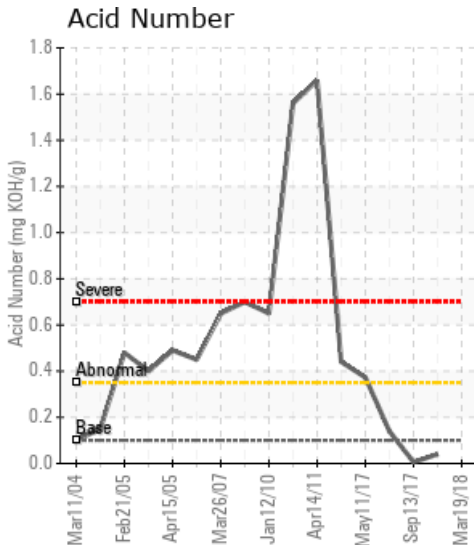
INOAC HOT OIL SYSTEM PUMP 4 SAMPLE 10

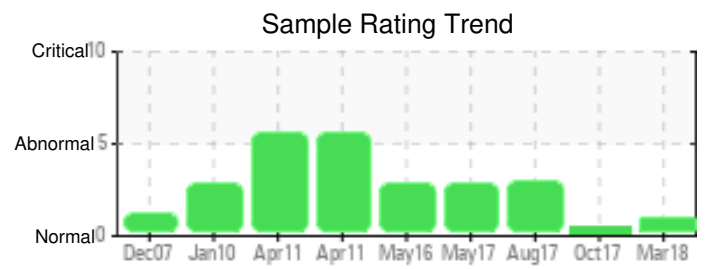
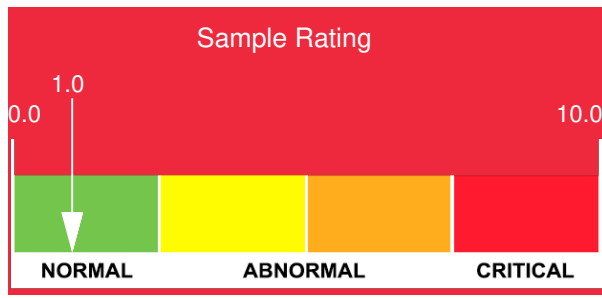
Customer: PTRHTF30023	System Information	Sample Information
INOAC INTERIOR SYSTEMS 575 JAMES STREET SOUTH ST MARYS, ON N4X 1B9 Canada Attn: Jeff Brown Tel: (519)808-2649 E-Mail: jbrown@inoacusa.com	System Volume: 0 gal Bulk Operating Temp: Not Specified Heating Source: Blanket: Fluid: PETRO CANADA CALFLO LT Make: COLD OIL SYSTEM	Lab No: 02205159 Analyst: Adam Koscielak Sample Date: 03/19/18 Received Date: 03/20/18 Completed: 04/05/18 To discuss this report contact Adam Koscielak at 905-331-1323

Recommendation: Sample off the Cold Oil System Pump 4, indicates the fluid is suitable for continued use. Phosphorus level is lower than expected. All other parameters are suitable for continued use. Some indication of pentane insoluble. Resample after 6 months.

Comments: Phosphorus ppm levels are noted.

Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/19/18	03/20/18	150d	AK180319-10	334 / 168	14.9	7.3		0.216	611 / 321	643 / 339	733 / 389	39.30
10/26/17	10/27/17	0d	CENTRE PUMP DRAIN	320 / 160	24.0	7.6	0.04	0.028	609 / 320	643 / 339	735 / 391	40.16
09/13/17	09/14/17	1d	AK170913-01	347 / 175	0.00	7.1	0.006		611 / 322	645 / 341	741 / 394	38.32
08/17/17	08/18/17	13d	COLD OIL DRAIN	347 / 175	21.2	8.2	0.14	0.329	611 / 322	661 / 349	789 / 421	37.96
05/11/17	05/25/17	13d	COLD OIL ROOM	340 / 171	7.5	8.2	0.373	0.426	611 / 321	658 / 348	755 / 401	35.26
05/30/16	06/07/16	6d	MODULE #5	347 / 175	47.4	7.9	0.44	0.742	612 / 322	656 / 347	743 / 395	34.72
Baseline Data				349 / 176		7.52	0.1		604 / 318	640 / 338	734 / 390	35.0

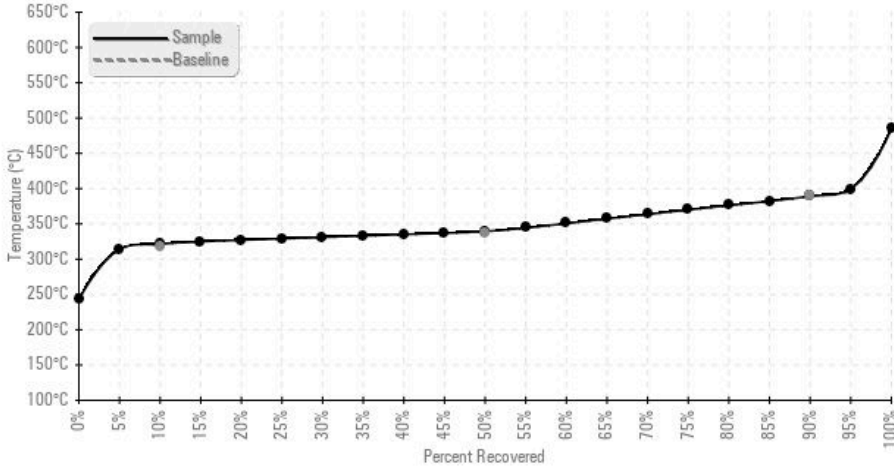




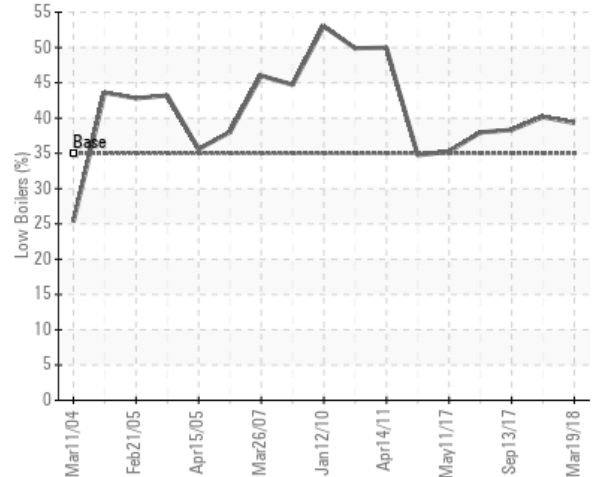
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/19/18	4	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	59	0
10/26/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	0
09/13/17	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	246	4
08/17/17	23	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	203	0
05/11/17	18	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	195	0
05/30/16	70	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	236	0
Baseline Data			0	0						0			0	0					0				270	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]

Gas Chromatography Distillation (GCD)



% Boiling < 335°C



Historical Comments

10/26/17	PHOSPHORUS LEVEL DEPLETED AT 51 VERSUS TYPICAL OF 270. Phosphorus ppm levels are noted.
09/13/17	Resample at the next service interval to monitor.All component wear rates are normal. The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The water content is negligible. The system and fluid cleanliness is acceptable. The AN level is acceptable for this fluid. The condition of the fluid is suitable for further service.
08/17/17	90% Distillation Point is high, indicating the oil has oxidized, % <335°C is slightly above the maximum of 35% at 38%, indicating increased level of low boilers due to cracking. Distillation points at 10% and 50% Distillation Point have also increased slightly. Pentane insoluble have been reconfirmed at 0.329%. Viscosity of the oil is slightly higher than typical but well with in normal range. Acid number is within normal parameters. (GCD) 90% Distillation Point is severely high.
05/11/17	Acid number is high, indicating oxidation of the fluid. 90% Distillation Point is approx. 10°C higher than typical again indicating the possibility of oxidation of the fluid, along with the 10% distillation point. Pentane insoluble have been reduced based on this sample since last year, but are still considered high. Iron level has also shown a decrease since 2016. Pentane insoluble should be reduced in addition to the acid number.Resample in three months. Pentane Insolubles levels are abnormally high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally high.
05/30/16	The results from this sample indicate some oxidation products present as the Acid number is above normal as is the pentane insoluble. I would suggest that we obtain another sample at the end of November to monitor. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high.