Technical Bulletin

How to Read a Coolant Analysis Report

Coolant analysis can identify the onset of several problems that can lead to potential cooling system failure. Corrosion, Supplemental Coolant Additive (SCA) deficiencies or excesses and inadequate freeze point protection are just a few of the many destructive conditions that can cause major systems damage.

The Seakits Coolant Analysis Report is easy to read and offers detailed conclusions and maintenance recommendations that will enable you to reduce major repairs and increase equipment uptime, productivity and safety.

Equipment and Coolant information tells your lab when the sample was taken and how many miles/hours are on both the unit and the coolant. Referencing the **Lab Sample Number** indicates the lab location where testing was completed and will expedite any questions concerning the sample.

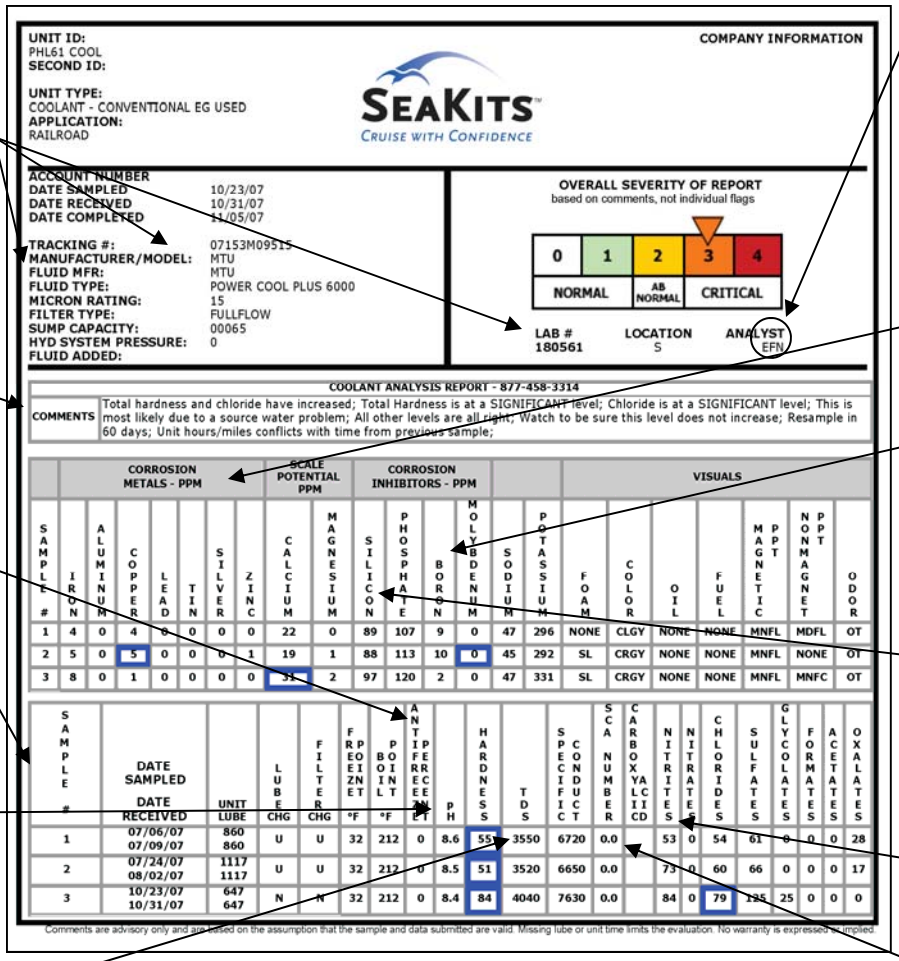
POLARIS analysts provide you with maintenance recommendations based on in-depth analysis, taking the guesswork out of interpreting coolant analysis results.

Adequate **Glycol** levels must be maintained to ensure proper freezepoint protection. High glycol can cause additive drop out and decrease coolant life. A glycol range of 40% to 60% is recommended.

The **Current Sample** is listed first. As many as four preceding samples may also be included.

Adequate **pH** range is vital to corrosion inhibition and should remain between 7.5 and 11.0.

Gradual buildup of **Total Dissolve Solids** (TDS) such as inhibitor chemicals, silicates, contaminants and water hardness compounds can lead to water pump leakage. TDS levels should not exceed 4%. Should leakage occur, drain coolant and flush pump with tap water.



UNIT ID: PHL61 COOL
SECOND ID:
UNIT TYPE: COOLANT - CONVENTIONAL EG USED
APPLICATION: RAILROAD
COMPANY INFORMATION

SEAKITS™ CRUISE WITH CONFIDENCE

ACCOUNT NUMBER
DATE SAMPLED 10/23/07
DATE RECEIVED 10/31/07
DATE COMPLETED 11/05/07

TRACKING #: 07153M09515
MANUFACTURER/MODEL: MTU
FLUID MFR: MTU
FLUID TYPE: POWER COOL PLUS 6000
MICRON RATING: 15
FILTER TYPE: FULLFLOW
SUMP CAPACITY: 00065
HYD SYSTEM PRESSURE: 0
FLUID ADDED:

OVERALL SEVERITY OF REPORT
based on comments, not individual flags

0	1	2	3	4
NORMAL		AB NORMAL	CRITICAL	

LAB # 180561 LOCATION S ANALYST EFN

COOLANT ANALYSIS REPORT - 877-458-3314

COMMENTS: Total hardness and chloride have increased; Total Hardness is at a SIGNIFICANT level; Chloride is at a SIGNIFICANT level; This is most likely due to a source water problem; All other levels are all right; Watch to be sure this level does not increase; Resample in 60 days; Unit hours/miles conflicts with time from previous sample;

	CORROSION METALS - PPM							SCALE POTENTIAL PPM		CORROSION INHIBITORS - PPM						VISUALS							
SAMPLE #	IRON	ALUMINUM	COPPER	LEAD	TIN	SILVER	ZINC	CALCIUM	MAGNESIUM	SILICON	PHOSPHATE	BORON	MOLYBDENUM	SODIUM	POTASSIUM	FOAM	COLOR	OIL	FUEL	MAGNETIC	PPT NONMAGNETIC	PPT	ODOR
1	4	0	4	0	0	0	0	22	0	89	107	9	0	47	296	NONE	CLGY	NONE	NONE	MNFL	MDFL		OT
2	5	0	5	0	0	0	1	19	1	88	113	10	0	45	292	SL	CRGY	NONE	NONE	MNFL	NONE		OT
3	8	0	1	0	0	0	0	31	2	97	120	2	0	47	331	SL	CRGY	NONE	NONE	MNFL	MNFC		OT

SAMPLE #	DATE SAMPLED / DATE RECEIVED	UNIT LUBE	LUBE CHG	FILTER CHG	FREEZPT °F	BOIL °F	ANTIFREEZE PCT	PH	HARDNESS	TDS	SPECIFIC CONDUCT	SCA NUMBER	CARBOXYLIC ACID	NITRITES	NITRATES	CHLORIDES	SULFATES	GLYCOLATES	FORMATES	ACETATES	OXALATES
1	07/06/07 07/09/07	860 860	U	U	32	212	0	8.6	55	3550	6720	0.0		53	0	54	61	0	0	0	28
2	07/24/07 08/02/07	1117 1117	U	U	32	212	0	8.5	51	3520	6650	0.0		73	0	60	66	0	0	0	17
3	10/23/07 10/31/07	647 647	N	N	32	212	0	8.4	84	4040	7630	0.0		84	0	79	135	25	0	0	0

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing lube or unit time limits the evaluation. No warranty is expressed or implied.

Data Analyst Initials

Corrosion occurs when buffers are no longer able to counter acid formation due to thermal degradation.
Typical Corrosion Product Sources:
Iron—liner, water pump, cylinder block/head
Aluminum—radiator tanks, coolant elbows, piping, spacer plates, thermostat housings
Copper—radiator, oil cooler, aftercooler, heater core
Lead—radiator solder, oil cooler, aftercooler, heater core

Without adequate phosphate and borate **Buffers**, acids form, corrosion begins and rapid additive depletion will occur due to reduced pH values. Cylinder liner pitting will result.

Silicon protect cooling system metals. Sudden introduction of large amounts of antifreeze or SCAs high in silicates can clog radiators and heaters as well as restrict engine coolant passages. Rapid failure of water pump seals may result. For accurate silicate level evaluation, also test new antifreeze.

Excessive **Nitrite** levels can lead to solder corrosion. The **maximum** acceptable is 3333 ppm (parts per million).

An **SCA (Supplement Coolant Additive) Level** of 1.2 is the **minimum** required for adequate liner pitting protection. A level of 2.5 is ideal for extending coolant life.