

PROBLEM SUMMARY

Sample Rating Trend

VISCOSITY

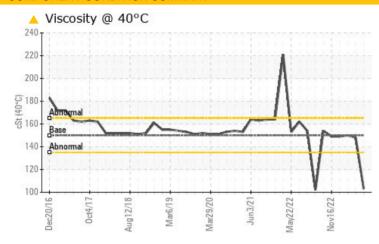
M45

45-P-2820B HP METHANOL INJECTION PUMP GEARBOX (S/N Maint Plan 22463)

Gearbox

GEAR OIL ISO 150 (--- LTR)

COMPONENT CONDITION SUMMARY



RECOMMENDATION

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as (GENERIC) GEAR OIL ISO 150, however, a fluid match indicates that this fluid is ISO 100 AW Hydraulic Oil (Hi-Visc). Please confirm the oil type and grade on your next sample. NOTE: Please provide information regarding reservoir capacity. filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

Customer Id: SPESTJ
Sample No.: PP
Lab Number: 02592269

Test Package: IND 2

To manage this report scan the QR code

To discuss the diagnosis or test data: Kevin Marson +1 (289)291-4644 x4644 Kevin.Marson@wearcheck.com

To change component or sample information: Gloria Gonzalez +1 (289)291-4643 x4643 gloria.gonzalez@wearcheck.com

PROBLEMATIC TEST RESULTS									
Sample Status				ABNORMAL	NORMAL	NORMAL			
Sulfur	ppm	ASTM D5185(m)	12500	1084	13604	14286			
Visc @ 40°C	cSt	ASTM D7279(m)	150	103	148	150			

RECOMMENDED ACTIONS

Action	Status	Date	Done By	Description
Alert			?	Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment.
Information Required			?	Please specify the brand, type, and viscosity of the oil on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample.
Check Fluid Source			?	Confirm the source of the lubricant being utilized for top-up/fill.

HISTORICAL DIAGNOSIS

17 Jul 2023 Diag: Wes Davis



Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. The water content is negligible. There is no indication of any contamination in the oil. The condition of the oil is acceptable for the time in service.



22 Jan 2023 Diag: Kevin Marson

NORMAL



Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.All component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.



15 Jan 2023 Diag: Kevin Marson

NORMAL



Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.





OIL ANALYSIS REPORT

Sample Rating Trend

VISCOSITY

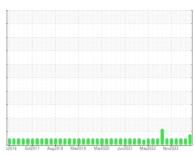


45-P-2820B HP METHANOL INJECTION PUMP GEARBOX (S/N Maint Plan 22463)

Component

Gearbox

GEAR OIL ISO 150 (--- LTR)





DIAGNOSIS

Recommendation

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Confirm the source of the lubricant being utilized for top-up/fill. Resample at the next service interval to monitor. The fluid was specified as (GENERIC) GEAR OIL ISO 150, however, a fluid match indicates that this fluid is ISO 100 AW Hydraulic Oil (Hi-Visc). Please confirm the oil type and grade on your next sample. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

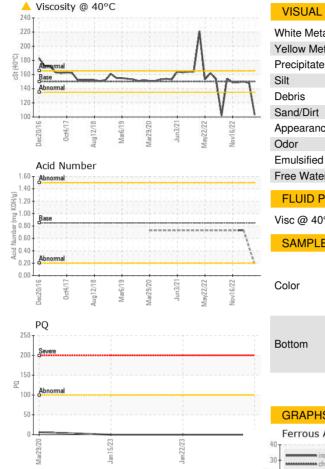
Fluid Condition

Viscosity of sample indicates oil is within ISO 100 range, advise investigate. This plus the additive levels indicates that this is not the same brand, or type of oil as reported. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

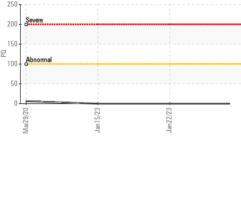
Sample Number Client Info PP PP PP PP Sample Date Client Info 0 0 0 0 Machine Age days Client Info 0 0 0 0 Oil Age days Client Info 0 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Image: Client Info N/A N/A N/A N/A WEAR METALS method Imitives current bistory1 bistory2 PQ ASTM DSI Silver 10 -1 4 2 ctron 0 -1 0 -1 0 -1 0 -1 0 -1 0 </th <th>SAMPLE INFORM</th> <th>MATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th>	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age days Client Info 0 0 0 Oil Age days Client Info 0 0 0 Oil Changed Client Info N/A N/A N/A N/A Sample Status Image: Client Info N/A N/A N/A N/A N/A WEAR METALS method limit/base current history1 history2 PQ ASTM D5185(m) 150 -1 4 2 Iron ppm ASTM D5185(m) >10 0 -1 0 Chromium ppm ASTM D5185(m) >10 0 -1 0 Nickel ppm ASTM D5185(m) >10 0 -1 0 Silver ppm ASTM D5185(m) >5 0 0 0 Aluminum ppm ASTM D5185(m) >65 <1	Sample Number		Client Info		PP	PP	PP
Oil Age days Client Info N/A N/A N/A N/A Sample Status method limit/base current history1 history2 WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 0 Iron ppm ASTM D5185(m) >10 0 <1	Sample Date		Client Info		18 Sep 2023	17 Jul 2023	22 Jan 2023
Oil Changed Sample Status Client Info N/A <	Machine Age	days	Client Info		0	0	0
Sample Status method limit/base current history1 history2 PQ ASTM D8184* 0 0 Iron ppm ASTM D5185(m) >150 <1	Oil Age	days	Client Info		0	0	0
WEAR METALS method limit/base current history1 history2 PQ ASTM D8184* 0 0 Iron ppm ASTM D5185(m) >150 <1	Oil Changed		Client Info		N/A	N/A	N/A
PQ ASTM D8184* 0 0 Iron ppm ASTM D5185(m) >150 -1 4 2 Chromium ppm ASTM D5185(m) >10 0 <1 0 Nickel ppm ASTM D5185(m) >10 0 <1 0 Titanium ppm ASTM D5185(m) >10 0 <1 0 Aluminum ppm ASTM D5185(m) >5 0 0 0 Aluminum ppm ASTM D5185(m) >5 0 0 0 Lead ppm ASTM D5185(m) >665 <1 0 0 Copper ppm ASTM D5185(m) >80 <1 <1 0 0 Lead ppm ASTM D5185(m) >80 <1 <1 0 0 Copper ppm ASTM D5185(m) >80 <1 <1 0 0 Astm bo185(m) ppm ASTM D5185(m) 0	Sample Status				ABNORMAL	NORMAL	NORMAL
Iron	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185(m) >10 0 <1 0 Nickel ppm ASTM D5185(m) >10 0 <1 0 Titanium ppm ASTM D5185(m) 0 0 0 0 Silver ppm ASTM D5185(m) >5 0 0 0 Aluminum ppm ASTM D5185(m) >65 <1 0 0 Lead ppm ASTM D5185(m) >65 <1 0 0 Copper ppm ASTM D5185(m) >80 <1 <1 0 Tin ppm ASTM D5185(m) >80 <1 <1 0 Antimony ppm ASTM D5185(m) >5 0 0 0 Vanadium ppm ASTM D5185(m) >0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 50 1	PQ		ASTM D8184*		0		0
Nickel ppm ASTM D5185(m) >10 0 <1 0 Titanium ppm ASTM D5185(m) 0 0 0 Silver ppm ASTM D5185(m) <1	Iron	ppm	ASTM D5185(m)	>150	<1	4	2
Titanium ppm ASTM D5185(m) 0 0 0 Silver ppm ASTM D5185(m) <1 0 0 Aluminum ppm ASTM D5185(m) >5 0 0 0 Lead ppm ASTM D5185(m) >65 <1 0 0 Copper ppm ASTM D5185(m) >80 <1 <1 0 Tin ppm ASTM D5185(m) >8 0 0 0 Antimony ppm ASTM D5185(m) >5 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27	Chromium	ppm	ASTM D5185(m)	>10	0	<1	0
Silver ppm ASTM D5185(m) <1 0 0 Aluminum ppm ASTM D5185(m) >5 0 0 0 Lead ppm ASTM D5185(m) >65 <1	Nickel	ppm	ASTM D5185(m)	>10	0	<1	0
Aluminum ppm ASTM D5185(m) >5 0 0 0 Lead ppm ASTM D5185(m) >65 <1	Titanium	ppm	ASTM D5185(m)		0	0	0
Lead ppm ASTM D5185(m) >65 <1 0 0 Copper ppm ASTM D5185(m) >80 <1	Silver	ppm	ASTM D5185(m)		<1	0	0
Copper ppm ASTM D5185(m) >80 <1 <1 0 Tin ppm ASTM D5185(m) >8 0 0 0 Antimony ppm ASTM D5185(m) >5 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1	Aluminum	ppm	ASTM D5185(m)	>5	0	0	0
Tin ppm ASTM D5185(m) >8 0 0 0 Antimony ppm ASTM D5185(m) >5 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1 0 0 Molybdenum ppm ASTM D5185(m) 15 <1 0 0 0 Magnesium ppm ASTM D5185(m) 50 0 <1 <1 <1 Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m)	Lead	ppm	ASTM D5185(m)	>65	<1	0	0
Antimony ppm ASTM D5185(m) >5 0 0 0 Vanadium ppm ASTM D5185(m) 0 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 1 0 0 Molybdenum ppm ASTM D5185(m) 15 0 0 0 0 Magnesium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m)	Copper	ppm	ASTM D5185(m)	>80	<1	<1	0
Vanadium ppm ASTM D5185(m) 0 0 0 Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 50 0 0 0 Molybdenum ppm ASTM D5185(m) 15 0 0 0 Manganese ppm ASTM D5185(m) 15 0 0 0 Magnesium ppm ASTM D5185(m) 50 0 <1	Tin	ppm	ASTM D5185(m)	>8	0	0	0
Beryllium ppm ASTM D5185(m) 0 0 0 Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1 0 0 Molybdenum ppm ASTM D5185(m) 15 <1 0 0 Manganese ppm ASTM D5185(m) 50 0 <1 <1 Magnesium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 2500 1084 13604	Antimony	ppm	ASTM D5185(m)	>5	0	0	0
Cadmium ppm ASTM D5185(m) 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1 0 0 Molybdenum ppm ASTM D5185(m) 15 0 0 0 Manganese ppm ASTM D5185(m) 50 0 <1 <1 Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) >20 <1 <1 <1 CONTAMINANTS method limit/base current <	Vanadium	ppm	ASTM D5185(m)		0	0	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1	Beryllium	ppm	ASTM D5185(m)		0	0	0
Boron ppm ASTM D5185(m) 50 1 21 27 Barium ppm ASTM D5185(m) 15 <1 0 0 Molybdenum ppm ASTM D5185(m) 15 0 0 0 Manganese ppm ASTM D5185(m) 50 0 <1 <1 Magnesium ppm ASTM D5185(m) 50 98 2 1 Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) >20 1 1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm AS	Cadmium	ppm	ASTM D5185(m)		0	0	0
Barium ppm ASTM D5185(m) 15 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185(m) 15 0 0 0 Manganese ppm ASTM D5185(m) 0 0 0 0 Magnesium ppm ASTM D5185(m) 50 0 <1 <1 Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1 1 <1 Sodium ppm ASTM D5185(m) >20 <1 <1 <1 FLUID DEGRADATION method limit/base	Boron	ppm	ASTM D5185(m)	50	1	21	27
Manganese ppm ASTM D5185(m) 0 0 0 Magnesium ppm ASTM D5185(m) 50 0 <1	Barium	ppm	ASTM D5185(m)	15	<1	0	0
Magnesium ppm ASTM D5185(m) 50 0 <1 <1 Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1 1 <1 Sodium ppm ASTM D5185(m) >20 <1 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 FLUID DEGRADATION method limit/base current history1 history2	Molybdenum	ppm	ASTM D5185(m)	15	0	0	0
Calcium ppm ASTM D5185(m) 50 98 2 1 Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1 1 <1 Sodium ppm ASTM D5185(m) >20 <1 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 FLUID DEGRADATION method limit/base current history1 history2	Manganese	ppm	ASTM D5185(m)		0	0	0
Phosphorus ppm ASTM D5185(m) 350 180 333 359 Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1	Magnesium	ppm	ASTM D5185(m)	50	0	<1	<1
Zinc ppm ASTM D5185(m) 100 1 4 2 Sulfur ppm ASTM D5185(m) 12500 ▲ 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1	Calcium	ppm	ASTM D5185(m)	50	98	2	1
Sulfur ppm ASTM D5185(m) 12500 ▲ 1084 13604 14286 Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1	Phosphorus	ppm	ASTM D5185(m)	350	180	333	359
Lithium ppm ASTM D5185(m) <1 <1 <1 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1	Zinc	ppm	ASTM D5185(m)	100	1	4	2
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >20 <1	Sulfur	ppm	ASTM D5185(m)	12500	1084	13604	14286
Silicon ppm ASTM D5185(m) >20 <1 1 <1 Sodium ppm ASTM D5185(m) <1 <1 <1 Potassium ppm ASTM D5185(m) >20 0 <1 <1 FLUID DEGRADATION method limit/base current history1 history2	Lithium	ppm	ASTM D5185(m)		<1	<1	<1
Sodium ppm ASTM D5185(m) <1	CONTAMINANTS	3	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 0 <1 <1 FLUID DEGRADATION method limit/base current history1 history2	Silicon	ppm	ASTM D5185(m)	>20		1	<1
FLUID DEGRADATION method limit/base current history1 history2	Sodium	ppm	ASTM D5185(m)		<1	<1	<1
	Potassium	ppm	ASTM D5185(m)	>20	0	<1	<1
Acid Number (AN) mg KOH/g ASTM D974* 0.85 0.18 0.73	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D974*	0.85	0.18		0.73

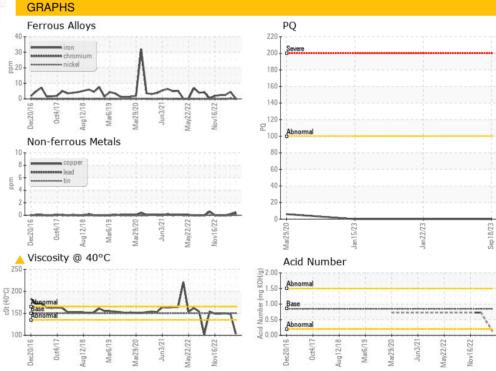


OIL ANALYSIS REPORT



VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Yellow Metal	scalar	Visual*	NONE	NONE	NONE	NONE
Precipitate	scalar	Visual*	NONE	NONE	NONE	NONE
Silt	scalar	Visual*	NONE	NONE	VLITE	NONE
Debris	scalar	Visual*	NONE	NONE	VLITE	NONE
Sand/Dirt	scalar	Visual*	NONE	NONE	NONE	NONE
Appearance	scalar	Visual*	NORML	NORML	NORML	NORML
Odor	scalar	Visual*	NORML	NORML	NORML	NORML
Emulsified Water	scalar	Visual*	>0.2	NEG	NEG	NEG
Free Water	scalar	Visual*		NEG	NEG	NEG
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	150	<u> </u>	148	150
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
Color						
Bottom					65	







CALA ISO 17025:2017 Accredited

Laboratory Sample No. Lab Number Unique Number

: PP : 02592269

: 5669348

: WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 HUSKY SEA ROSE /AKER SOLUTIONS Received

: 26 Oct 2023 Diagnosed

: 27 Oct 2023 Diagnostician : Kevin Marson

Test Package : IND 2 (Additional Tests: TAN Man)

PO BOX 20 ST. JOHN'S, NL CA A1C 6C9 Contact: Nick Fewer

nick.fewer@akersolutions.com

T: (709)757-4582 F: (709)722-8730

To discuss this sample report, contact Customer Service at 1-800-268-2131.