

**703 MONOLEC® GEAR LUBRICANT**  
**604 ALMASOL® VARI-PURPOSE GEAR LUBRICANT**  
**BRIDGER BOWL SKI RESORT, Bozeman, Montana**  
**Snowcat fleet • SIC 7999 Amusement and Recreation**

**CUSTOMER PROFILE**

Bridger Bowl is a ski resort located in Bozeman, Montana. They have been in business for 50 years, and an LE customer for 6 years.

**APPLICATION**

All equipment in both the shop (rolling stock) and lift maintenance to include Bombardier snow cat fleet. Two QB 200's, one PB 240, two LMC 3700AC's and one BR 400MP.

**AREA OF INTEREST (Gear Oils or Rolling Stock)**

After purchasing a brand new BR 400MP, the commercial torque hub oil was changed out at the recommended 250-hour intervals. At these changes the oil was dark gray and smelled like rotten eggs. There also was approximately 1/8" of metallic fuzz on the magnetic plugs. In addition, the synthetic gear oil used in their Tiller gearboxes would turn milky, and they found water contamination in it about 40% of the time that they serviced them.

**LE SOLUTION**

LE Representative Jim Pezoldt recommended LE's 703 MONOLEC® Gear Lubricant and 604 ALMASOL® Vari-Purpose Gear Lubricant. LE's 703 is a multi-



viscosity extreme pressure oil. It exceeds requirements for all types of differentials and transmissions in highway fleets and off-road equipment. It is used for heavily loaded industrial enclosed gearboxes. LE's 604 is used for heavy-duty service in transmissions, differentials and industrial gearing. It is an extreme pressure, long lasting, water resistant, nonfoaming, and very adhesive lubricant. 604 protects against corrosive wear and reduces overheating.

**CUSTOMER COST SAVINGS**

After 1400 hours of operation without oil changes in the BR 400MP, LE's 703 remained clear red (like new), retained its original smell and had less than half the amount of metallic fuzz on the magnetic drain plugs. In the Tiller gearboxes with 300-600 hours of operation, they have not found any milky gear oil, and no water contamination.

## **OTHER PRODUCTS USED**

- LE's 4622 MONOLEC MULTIPLEX® Lubricant
- 2420 BTU+ Power Supplement & Cleaner
- 6520 MONOLEC® Hydraulic Oil
- 8800 MONOLEC ULTRA® Engine Oil
- 607 ALMASOL® Vari-Purpose Gear Lubricant

LE's 4622 MONOLEC MULTIPLEX® Lubricant is used throughout the snowcat fleet in wheel bearings, suspensions, spherical joints, tiller shaft bearings, torsion arms, pins and miscellaneous lube points. Previously 3 greases were used for the same applications. Bridger Bowl was one of the first customers to ever evaluate, use and then purchase LE's new grease, a certified wheel bearing grease. Although it is an NLGI #2 grease, its pumpability in cold weather is excellent.

LE's 2420 BTU+ Power Supplement & Cleaner is used every season in the fuel storage tanks. Mixed at 1/1000 it is very inexpensive. In severe cold weather mixing has been increased to 1/800.

LE's 6520 MONOLEC® Hydraulic Oil has been evaluated in the resorts snowcats for the last two seasons. Using oil analysis and particle count readings, 6520 has gone 2,800 to 3,800 hours in various machines without an oil change being required. The snowcats have had little to no make-up oil added to them over this period of time. The particle count has averaged 16/14. During the summer, the resort filters the oil through a filter cart (3 micron absolute) and puts the cats into service the next season. Hydraulic oil use has been decreased by approximately

90% and the resort is very pleased with the performance of LE's 6520.

LE's 8800 MONOLEC ULTRA® Engine Oil has been in service for the last three years. Once again, intensive oil analysis was used to evaluate the use of LE Engine Oil. Through the use of LE Engine Oil, drain intervals were safely doubled from the conventional motor oil being used previously. This again greatly reduced the amount of oil used at the shop and provided needed flexibility to the shop's ability to manage their rolling stock, especially the snowcats. The snowcats work every night and on demand. They accumulate hours quickly and the use of 8800 has allowed the resort the ability to focus on production and not downtime.

LE's 607 ALMASOL® Vari-Purpose Gear Lubricant has been utilized in most lift gearboxes along with 300 MONOLEC® Industrial Lubricant, 4622 MONOLEC MULTIPLEX® Lubricant, and LE's 6520 MONOLEC® Hydraulic Oil in their hydraulic units. The addition of LE gear oils to lift maintenance was mainly based on the success of the gear oils in the rolling stock and at other resorts utilizing LE gear oils. Lift maintenance has various manufacturers for their lifts to include: Cone power drive reducers (Textron), Caterpillar final drives, Western gearboxes, Kissling gearboxes, and Eurodrive gearboxes and reducers.

We would like to thank Paul Brock, Shop Manager, Don Roberts, Lift Maintenance Manager, and LE Representative Jim Pezoldt (pictured) for providing the information used to prepare this report.



1375 GREG STREET, SUITE 104  
SPARKS, NV 89431-6494  
(800) 524-7848, FAX (775) 358-3871

CUSTOMER NO.: 3800  
UNIT NO.: 402  
DESCRIPTION: HYDROSTATIC  
END USER: BRIDGER BOWL INC  
END USER LOCATION: BOZEMAN, MT 59715

MAKE: SUNSTRAND  
MODEL: BR400  
OIL BRAND: LE 6520 VG  
OIL TYPE: 5W20  
SERIAL NO.:  
FUEL TYPE:

NO. COPIES 2

SAMPLE DATA			SPECTROCHEMICAL ANALYSIS (ppm)																PHYSICAL PROPERTIES									
LAB#	SAMPLE DATE RECEIPT DATE	TIME ON OIL TIME ON UNIT	IRON	CHROMIUM	LEAD	COPPER	TIN	ALUMINUM	NICKEL	SILVER	SILICON	BORON	SODIUM	MAGNESIUM	CALCIUM	BARIUM	PHOSPHORUS	ZINC	MOLYBDENUM	TITANIUM	VANADIUM	POTASSIUM	FUEL	VG @ 40 C cSt	VG @ 100 C cSt	WATER (%)	SCOTTSOLIDS (ppm)	GLYCOL
25709 NORMAL	04/08/2001 04/17/2001	3460 6650	23	0	15	73	0	1	0	0	1	12	0	4	66	0	482	537	1	0	0	0	N/A	N/A	6.3	<.1	N/A	N/A
11488 NORMAL	02/11/2001 02/15/2001	3058 6253	20	0	14	64	0	0	0	0	1	12	1	4	61	0	438	497	0	0	0	0	N/A	N/A	6.3	<.1	N/A	N/A
6614 NORMAL	01/22/2001 01/26/2001	2830 6025	20	0	17	61	1	1	0	0	1	11	1	4	65	0	405	495	0	0	0	0	N/A	N/A	5.9	<.1	N/A	N/A
1606 NORMAL	12/30/2000 01/05/2001	2602 5797	18	1	17	57	1	1	0	0	1	11	2	4	51	0	363	501	0	0	0	0	N/A	N/A	6.3	<.1	N/A	N/A

LAB#	ADDITIONAL TESTS		PARTICLE COUNT RESULTS (Per 1 ml of Sample)					
	OXID	NITR	ISO RATING	> 5	> 15	> 25	> 50	> 100
25709	.02	<.01	16/14	331	95	17	0	0
11488			16/13	437	67	17	2	0
6614			16/13	351	69	17	4	1
1606			16/14	525	117	27	5	1

Key  
A: Abnormal C: Critical

**LAB# ANALYSIS RECOMMENDATIONS**

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

25709 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

11488 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

6614 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

1606 ANALYST-DB

JIM PEZOLDT  
LUBRICATION ENGINEERS  
PO BOX 1307  
COLUMBUS, MT 59019

1375 GREG STREET, SUITE 104  
SPARKS, NV 89431-6494  
(800) 524-7848, FAX (775) 358-3871

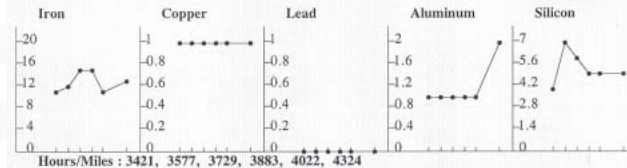
CUSTOMER NO.: 3800  
UNIT NO.: 403  
DESCRIPTION: DIESEL ENGINE  
END USER: BRIDGER BOWL INC  
END USER LOCATION: BOZEMAN, MT 59715

MAKE: CUMMINS  
MODEL: BR400  
OIL BRAND: LE ULTRA 8800  
OIL TYPE: 15W40  
SERIAL NO.:  
FUEL TYPE: DIESEL

NO. COPIES 2

SAMPLE DATA			SPECTROCHEMICAL ANALYSIS (ppm)																PHYSICAL PROPERTIES									
LAB#	SAMPLE DATE RECEIPT DATE	TIME ON OIL TIME ON UNIT	IRON	CHROMIUM	LEAD	COPPER	TIN	ALUMINUM	NICKEL	SILVER	SILICON	BORON	SODIUM	MAGNESIUM	CALCIUM	BARIUM	PHOSPHORUS	ZINC	MOLYBDENUM	TITANIUM	VANADIUM	POTASSIUM	FUEL	VG @ 40 C cSt	VG @ 100 C cSt	WATER (%)	SCOTTSOLIDS (ppm)	GLYCOL
9348 NORMAL	02/01/2001 02/07/2001	302 4324	13	0	0	1	0	2	0	0	5	138	0	1255	574	0	1272	1510	0	0	0	0	0.5	N/A	14.8	<.1	N/A	NEG
91994 NORMAL	12/16/2000 12/29/2000	130 4022	11	0	0	1	0	1	0	0	5	170	0	1218	582	0	1207	1532	1	0	0	0	0.5	N/A	13.8	<.1	N/A	NEG
24288 NORMAL	04/07/2000 04/13/2000	154 3883	15	0	0	1	0	1	0	0	5	1	6	104	3080	0	1121	1361	0	0	0	0	0.5	N/A	13.9	<.1	N/A	NEG
20340 NORMAL	03/23/2000 03/28/2000	152 3729	15	0	0	1	0	1	0	0	6	1	6	33	3085	0	1183	1383	1	0	0	0	0.5	N/A	13.5	<.1	N/A	NEG

LAB#	ADDITIONAL TESTS			GRAPHICAL ANALYSIS				
	OXID	NITR	F-SOBT	Iron	Copper	Lead	Aluminum	Silicon
9348	.06	<.01	1.0	-12	-0.8	-0.8	-1.2	-5.6
91994	.04	<.01	0.8	-10	-0.6	-0.6	-1.2	-4.2
24288	<.01	<.01	1.2	-8	-0.4	-0.4	-0.8	-2.8
20340	<.01	<.01	1.2	-4	-0.2	-0.2	-0.4	-1.4



Key  
A: Abnormal C: Critical

**LAB# ANALYSIS RECOMMENDATIONS**

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

9348 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

91994 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

24288 ANALYST-DB

RESULTS OF TEST PERFORMED INDICATE NO CORRECTIVE ACTION REQUIRED.

20340 ANALYST-DB

JIM PEZOLDT  
LUBRICATION ENGINEERS  
P.O. BOX 1307  
COLUMBUS, MT 59019