

# Success with Molub-Alloy 777 in Dragline Bearings

## PHOSPHATE MINING (USA)

Dragline drag, hoist & fairlead bearings

Castrol Molub-Alloy® 777-1 ES grease

**ANNUAL SAVINGS: \$20,639**



### THE SITUATION

- A major phosphate mining company was experiencing frequent bearing failures on their Bucyrus 1370 dragline.
- Fairlead front-left bearing and drag drum left bearing had failed catastrophically. Fairlead front-right bearing and drag drum right bearing were replaced due to significant wear.
- Inspection revealed that grease consistency in each bearing was visually different, as shown in the pictures below, despite all bearings being lubricated with the same grease from the same system.
- Grease composition testing indicated an extremely high amount of wear materials such as Iron and Copper.
- 1260 lbs of grease were used every month to lubricate these bearings.

### BEFORE

**Total annual lubrication cost** of drag (2), hoist (2) and fairlead (2) bearings before introduction of Castrol Molub-Alloy 777-1 ES grease : **\$89,964**

### AFTER

**Total annual lubrication cost** of drag (2), hoist (2) and fairlead (2) bearings after introduction of Castrol Molub-Alloy 777-1 ES grease : **\$69,325**

### SAVINGS

**Annual savings per six (6) bearings: \$20,639.**

- Annual savings calculations are based only on 30% usage reduction and do not include bearing replacement and downtime cost.

### THE SOLUTION

- The customer was looking for ways to significantly increase the service life of bearings, reduce cost of lubrication and improve housekeeping.
- Based on a thorough investigation of the problem, Castrol engineers introduced Castrol Molub-Alloy 777-1 ES grease.
- **After the previous grease was completely purged out of the lube system and bearings, the Lincoln injectors were adjusted to reduce the amount of Molub-Alloy 777-1 ES grease by 30%.**
- Inspections of the bearings after grease changeover have indicated that fretting wear marks are less visible. See the before and after pictures below.
- Grease appearance and consistency are as good as new, as shown in the pictures below.
- As is evident in the table below, the amount of wear materials is radically reduced (Iron reduced 5.5 times) after conversion to Molub-Alloy 777.

## SUPPORTING INFORMATION

### Bearing and grease conditions before Castrol



Fretting wear marks are present as shown in red.

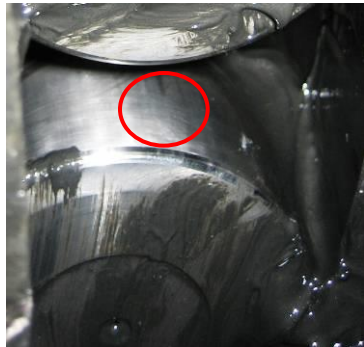


Grease appears too soft and running out of bearing.



Grease is very hard like rubber material.

### Bearing and grease conditions after Castrol



Fretting marks less visible. Same bearing area shown in red.



Bearings are sufficiently lubricated. Grease is not running out.



Grease appearance and consistency like new.

## CONCLUSION

Molub-Alloy 777-1 ES with its outstanding wear protection and roll stability properties has provided the customer with the following benefits:

- 30% grease usage reduction with \$20,639 savings
- Longer bearing life as indicated by reduction of fretting wear and dramatic reduction of wear materials
- Improved housekeeping
- Eliminated antimony from the grease, which is considered hazardous by the EPA.



### Wear Materials & Other Components

Grease Components	Previous Grease	Molub-Alloy 777
Iron, ppm	2615	478
Copper, ppm	165	0
Aluminum, ppm	4874	477
Molybdenum, ppm (EP additive)	1064	6110
Antimony, ppm (new grease)	4960	Nil