



Silver Streak Application

National Convention 2008

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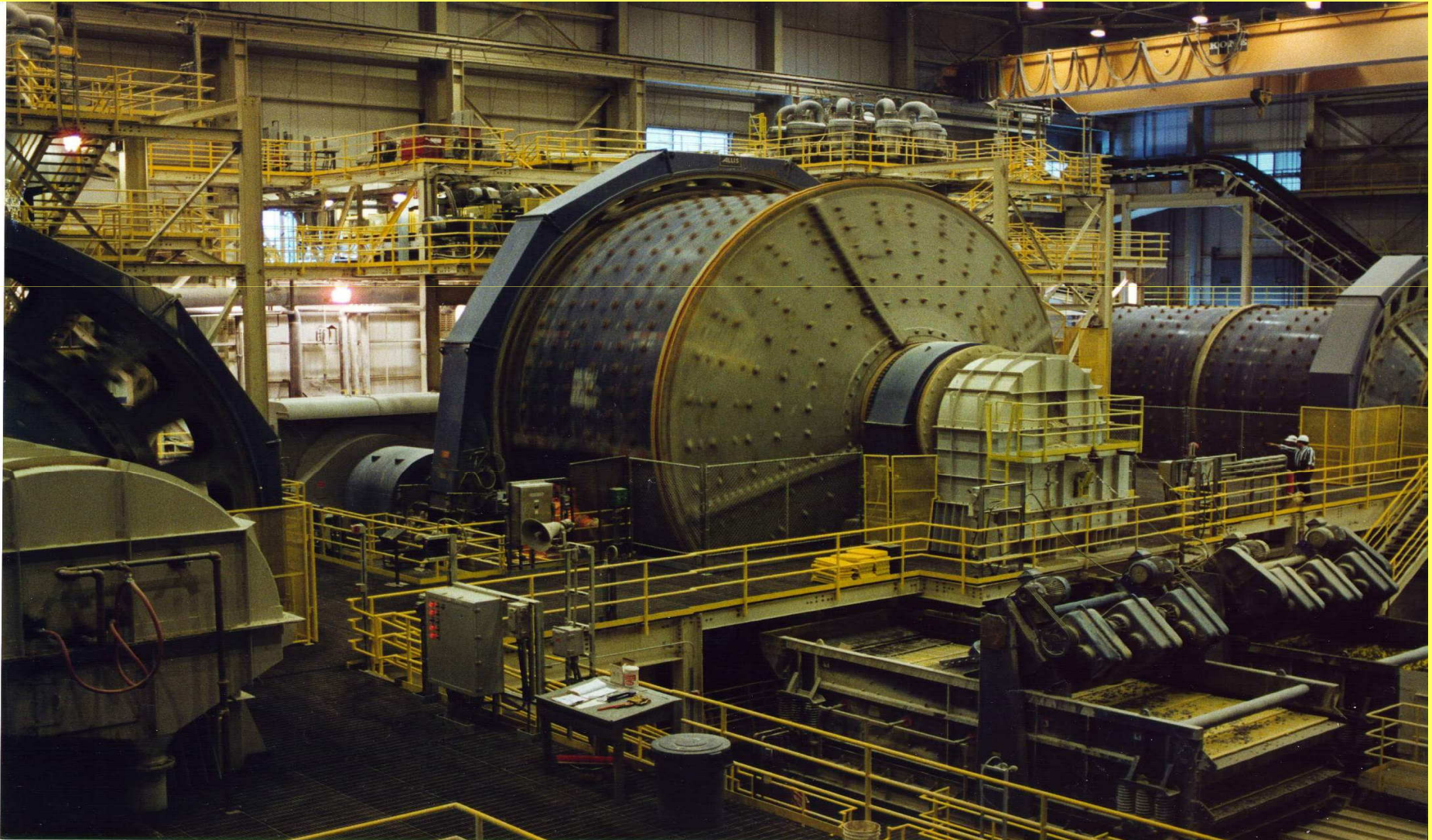


Rights of Lubrication

- Right Amount
 - Identify each point and amount of lubricant to be added
- Right Type
 - OEM should be primary source of lubricant recommendations along with lube supplier
- Right Quality
 - Plant lubrication engineer should set quality standards for plant
- Right Place
 - All lubrication points should be labeled with markers, stickers, or tags
- Right Time
 - Relubrication intervals should be established based on equipment type and criticality



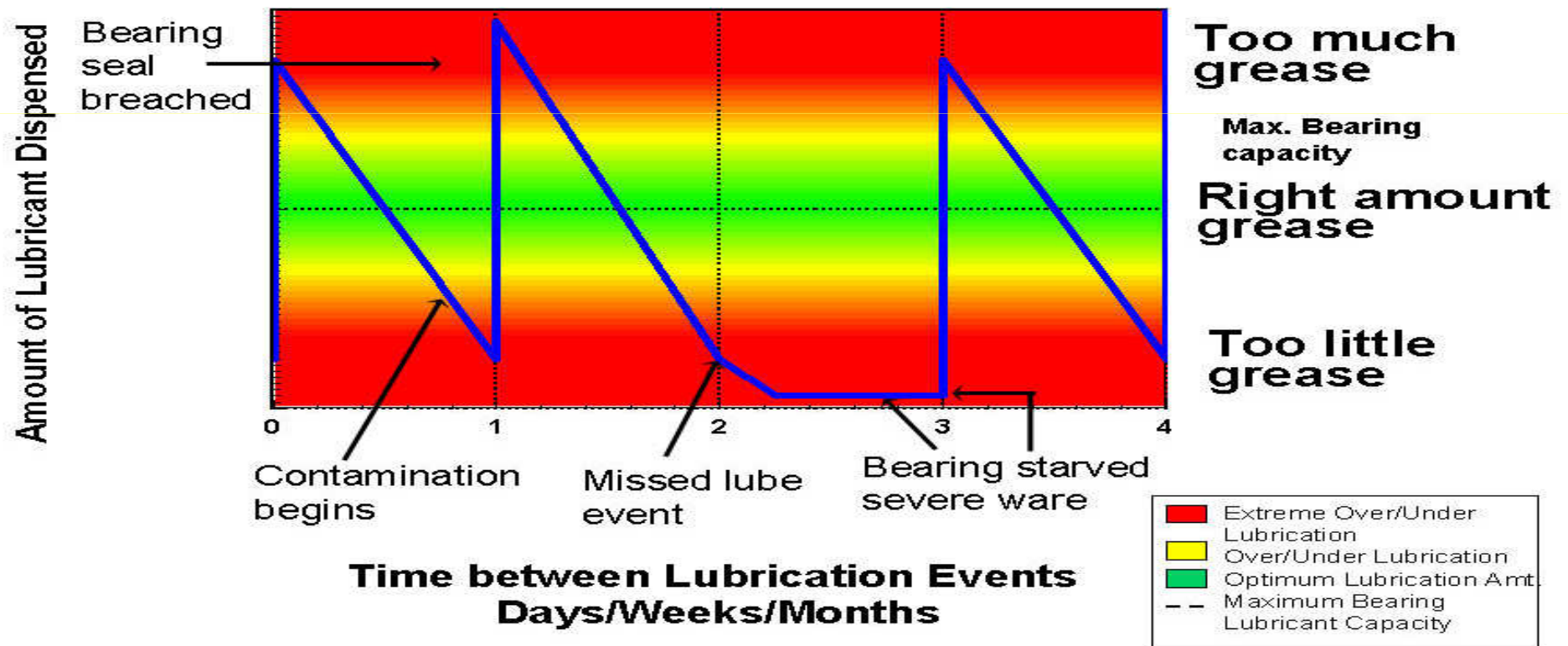
Typical Mills





Manual Lubrication

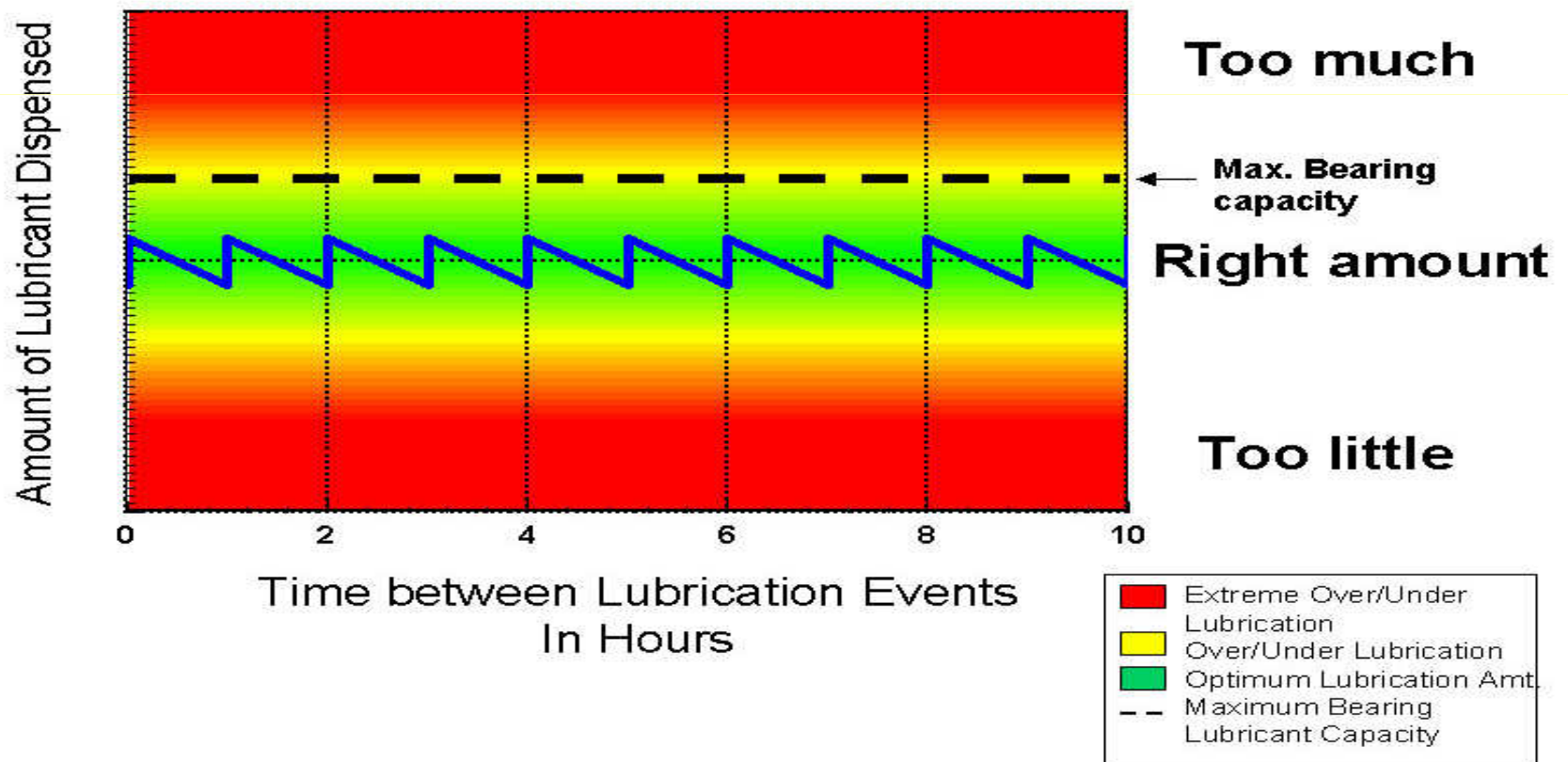
Manual Lubrication Cycles





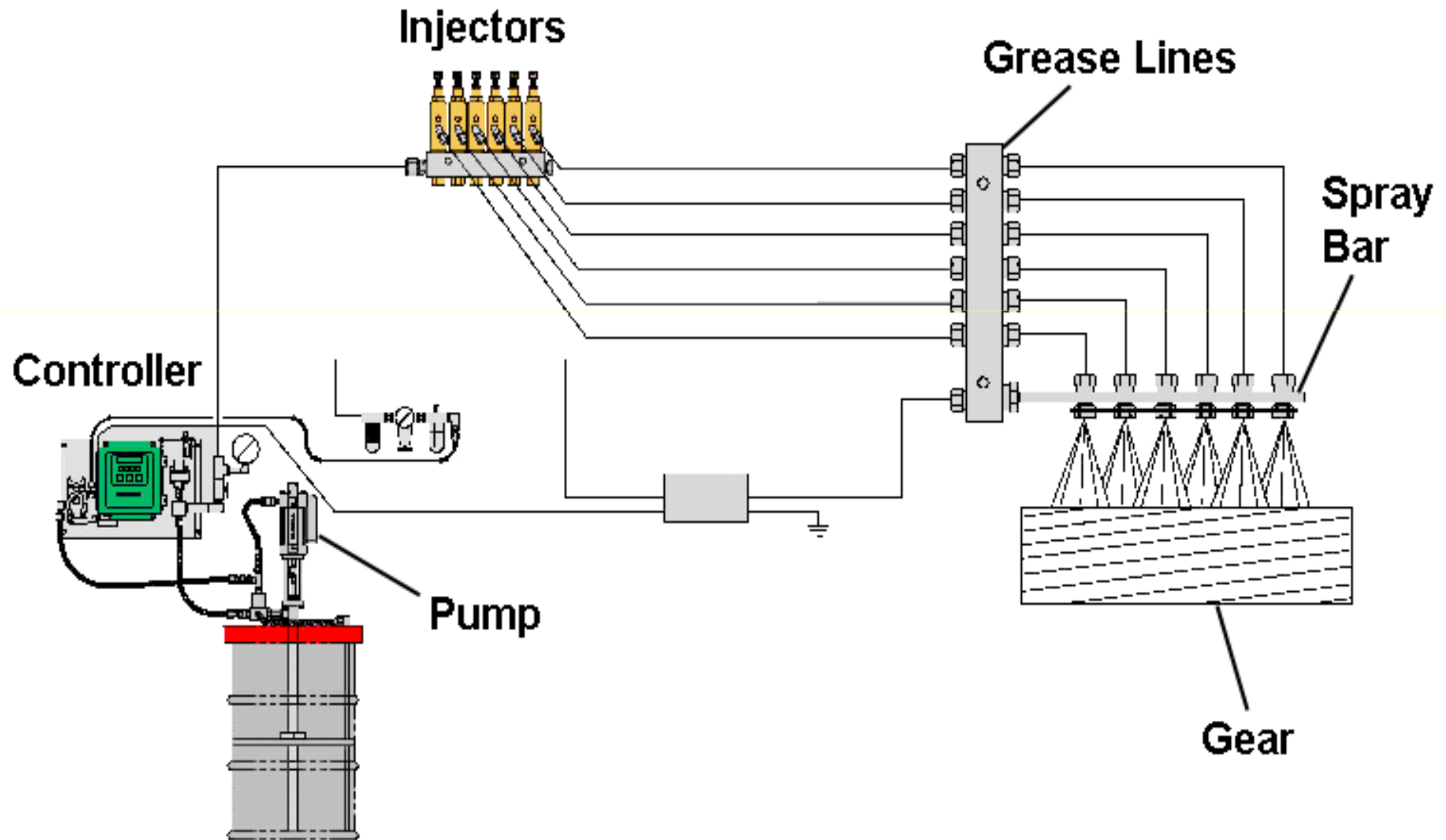
Automated Lubrication

Automated Lubrication Cycles





Typical Spray System





Lincoln Injectors

- Lincoln SL1 injector = 1.31 grams

Injectors can be run in series to increase output

2 SL1 injectors = 2.62 grams

3 SL1 injectors = 3.93 grams



Pump Selection

- Pump ratio should be 50:1 minimum
 - 100 psi supply. The pump will stall at 5000psi
- 75:1 shovel pump is preferred
 - 100psi supply. The pump will stall at 7500psi



Supply Nozzle Air Pressure

- Minimum 60 PSI
- Optimum 80 PSI
- Air should continue to blow for 5 to 10 seconds after product is dispensed to ensure the nozzles are kept clean and free of debris and any build up of product.



Formulation Amount

- 1.5 – 2 grams per centimeter of face width per hour
– Small Pinion Gear.
- Larger Gears can go as high as 3.5 grams per hour per centimeter of face width.
- 17” pinion (43.18 cm) 2gph = 86 grams per hour.
- 2.54” = 1 cm
- 2.54 X 17” = 43.18 cm



Choosing the Correct Grade

- Technical Data Sheet
- Temperature dependent (Pumpability)
- Heavy 50F
- **Medium** 45F
- **Light** 32F
- Extra Light 14F
- Extreme Light -20F



Measuring



Turn Off Air Line

Cycle system to relieve pressure

Disconnect line before going to nozzle

Tare weigh plastic bag

Catch lube in plastic bag

Weigh the bag after one cycle

Can also be used for grease guns



Application Formulation

| Formulation for applying #200 Silver Streak | | | | |
|---|---|-------------------------------|---|---------------------------------|
| Pinion Width X 1.5 grams per hour | | | | |
| <i>Pinion Size</i> | | <i>Amount per size</i> | | <i>Amount of product</i> |
| 17" = 43.18 cm | x | 1.5 grams | = | 65 grams per hour |
| 18" = 45.72 cm | x | 1.5 grams | = | 68.5 grams per hour |
| 19" = 48.26 cm | x | 1.5 grams | = | 72 grams per hour |
| 20" = 50.80 cm | x | 1.5 grams | = | 76 grams per hour |
| 21" = 52.34 cm | x | 1.5 grams | = | 78.5 grams per hour |
| 22" = 55.88 cm | x | 1.5 grams | = | 84 grams per hour |
| 23" = 58.42 cm | x | 1.5 grams | = | 87.5 grams per hour |
| 24" = 60.96cm | x | 1.5 grams | = | 91.5 grams per hour |



Application Formulation

| Formulation for applying #200 Silver Streak | | | | |
|---|----------|------------------------|---|--------------------------|
| Pinion Width X | 2 | Grams per hour | | |
| <i>Pinion Size</i> | | <i>Amount per size</i> | | <i>Amount of product</i> |
| 17" = 43.18 cm | x | 2 grams | = | 86 grams per hour |
| 18" = 45.72 cm | x | 2 grams | = | 91.5 grams per hour |
| 19" = 48.26 cm | x | 2 grams | = | 96.5 grams per hour |
| 20" = 50.80 cm | x | 2 grams | = | 101.5 grams per hour |
| 21" = 52.34 cm | x | 2 grams | = | 104.5 grams per hour |
| 22" = 55.88 cm | x | 2 grams | = | 112 grams per hour |
| 23" = 58.42 cm | x | 2 grams | = | 117 grams per hour |
| 24" = 60.96cm | x | 2 grams | = | 122 grams per hour |



Application Formulation

| Formulation for applying #200 Silver Streak | | | | |
|---|------------|-------------------------------|---|---------------------------------|
| Pinion Width X | 2.5 | grams per hour | | |
| <i>Pinion Size</i> | | <i>Amount per size</i> | | <i>Amount of product</i> |
| 17" = 43.18 cm | X | 2.5 grams | = | 108 grams per hour |
| 18" = 45.72 cm | X | 2.5 grams | = | 114.3 grams per hour |
| 19" = 48.26 cm | X | 2.5 grams | = | 120.6 grams per hour |
| 20" = 50.80 cm | X | 2.5 grams | = | 127 grams per hour |
| 21" = 52.34 cm | X | 2.5 grams | = | 130.85 grams per hour |
| 22" = 55.88 cm | X | 2.5 grams | = | 139.7 grams per hour |
| 23" = 58.42 cm | X | 2.5 grams | = | 146.05 grams per hour |
| 24" = 60.96cm | X | 2.5 grams | = | 152.4 grams per hour |

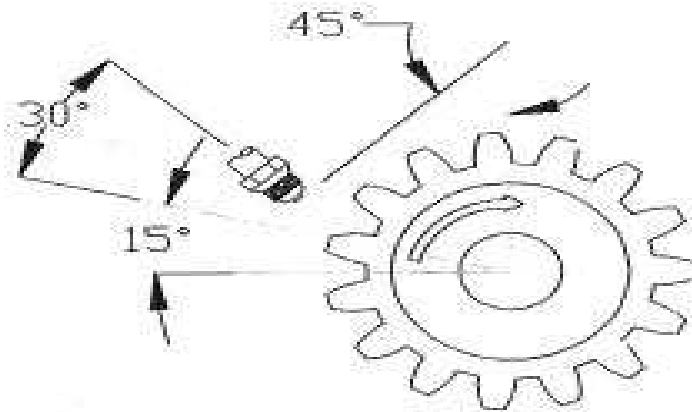


Application Formulation

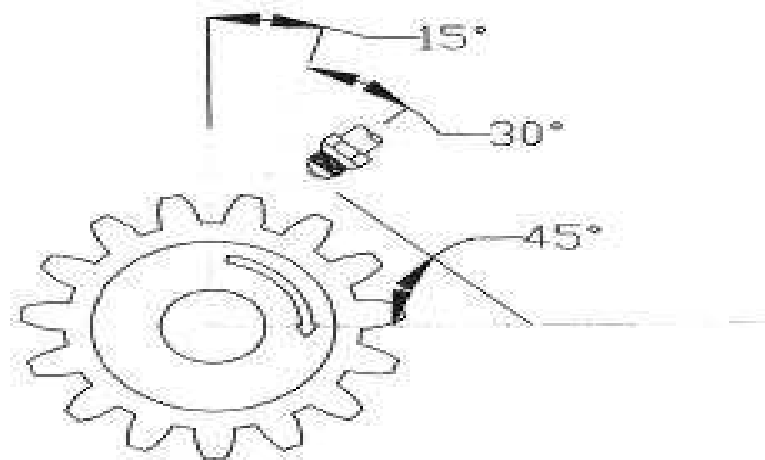
| <i>Pinion Size</i> | | <i>Amount per size</i> | | <i>Amount of product</i> |
|---------------------------|---|-----------------------------------|---|---------------------------------|
| Pinion width X | | 3 grams per operating hour | | |
| 17" = 43.18 cm | X | 3 grams | = | 108 grams per hour |
| 18" = 45.72 cm | X | 3 grams | = | 114.3 grams per hour |
| 19" = 48.26 cm | X | 3 grams | = | 120.6 grams per hour |
| 20" = 50.80 cm | X | 3 grams | = | 127 grams per hour |
| 21" = 52.34 cm | X | 3 grams | = | 130.85 grams per hour |
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| 24" = 60.96cm | X | 3 grams | = | 152.4 grams per hour |
| | | | | |
| | | | | |



Nozzle Position



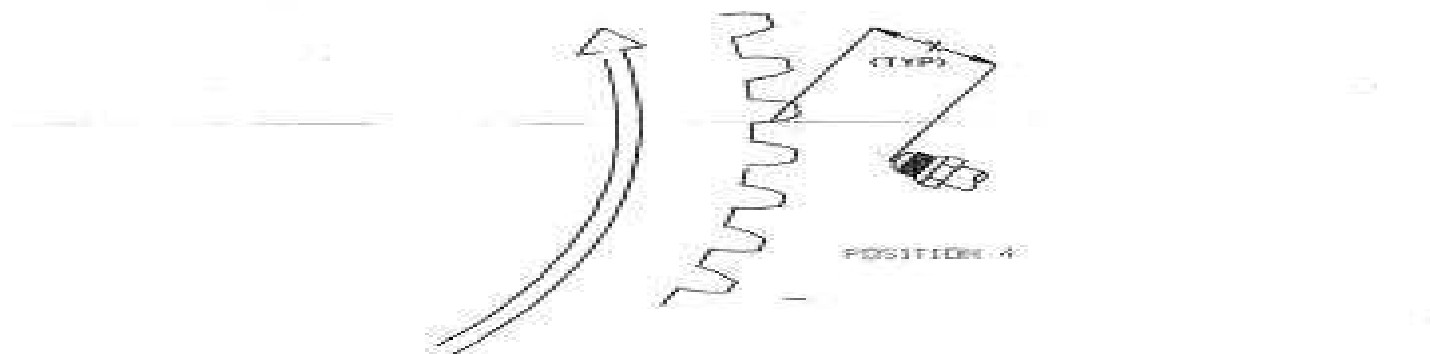
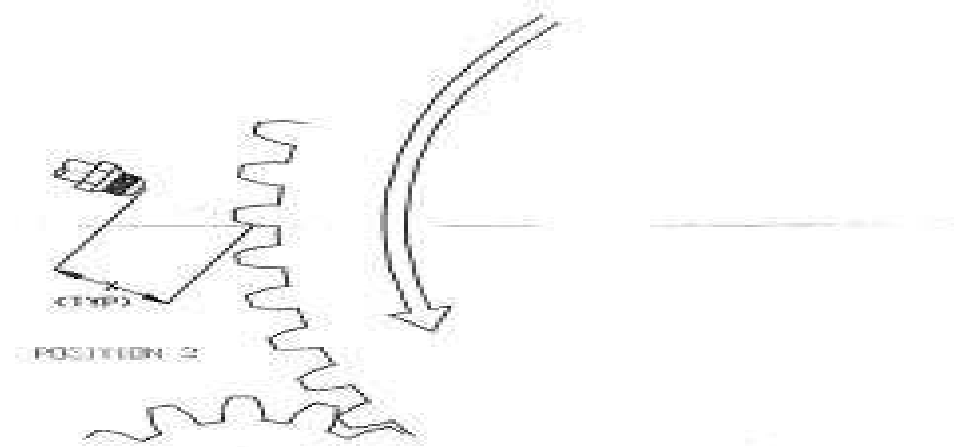
POSITION 1



POSITION 2

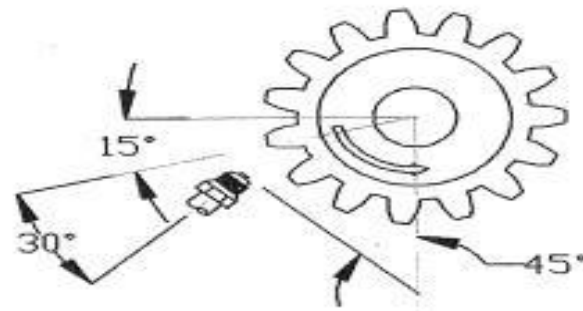


Nozzle Position

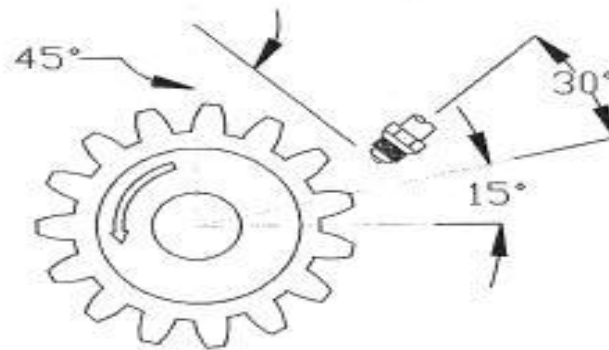




Nozzle Position



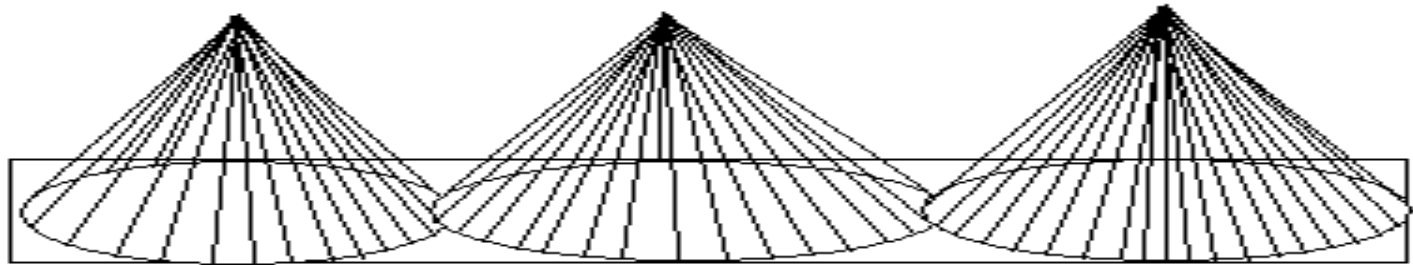
POSITION 5



POSITION 6



Correct Spray Pattern
Covers the entire gear face
Overlaps each other





Checking Spray Pattern

Use flat metal or cardboard inserted
in front of the gear.

Mark width of gear on test piece

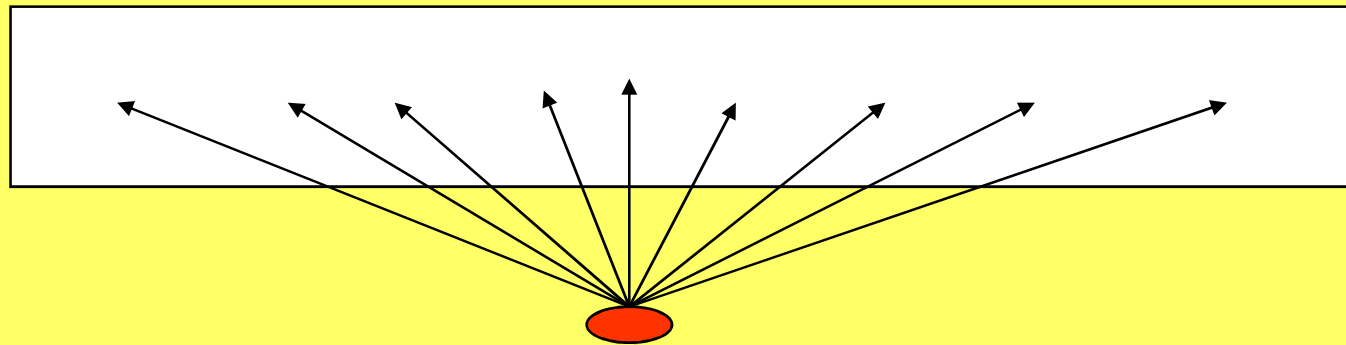
Check pattern after 1 cycle





Checking Alignment

Alignment can be checked by taking temperature readings across the face of the pinion gear. Stay at least one inch from the end of the gear tooth.





Record Information

- Ball Mill: #1
- (35" Pinion = 90 cm) ($2.54 \times 35" = 90 \text{ cm}$)
- Lube Measurements(L –R)
- Nozzle #1 – 6 grams
- Nozzle #2 – 3 grams
- Nozzle #3 – 5 grams
- Nozzle #4 – 3 grams
- Nozzle #5 – 4 grams
- Nozzle #6 – 5 grams
- Total: 26 Grams Per Cycle



Ball Mill Cont.

- Previous settings
- 13 min. off
- 12 seconds on
- 40 second purge
- 117 to 120 grams per hour
- Optimum: 2.5 – 3 grams per centimeter length. = 225 – 270 grams per hour.
- Changed cycle time to 7 min. off. (12 sec. on and 40 sec purge)
- Now running at 251 grams per hour

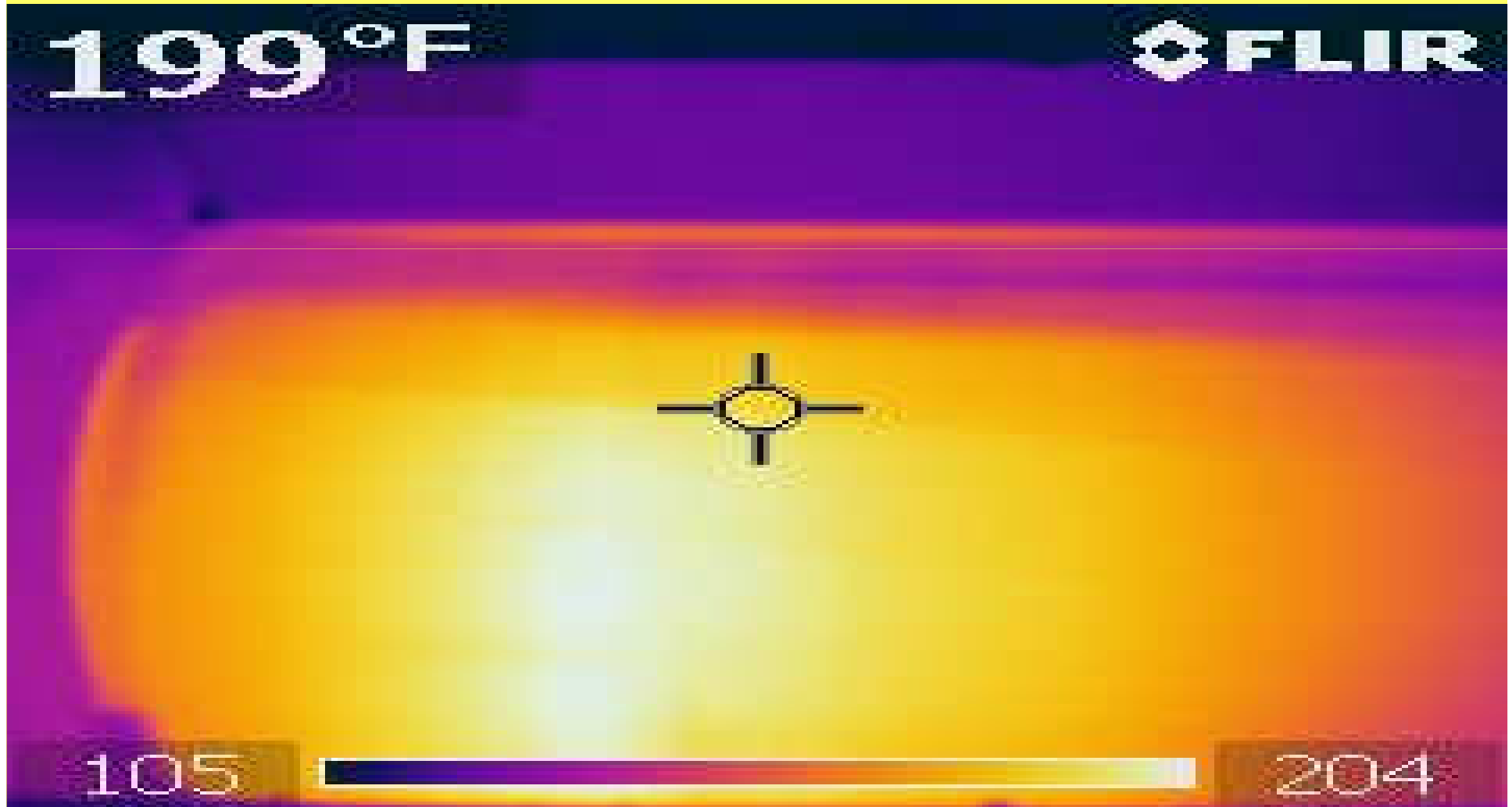


Ball Mill Pinion Competitors





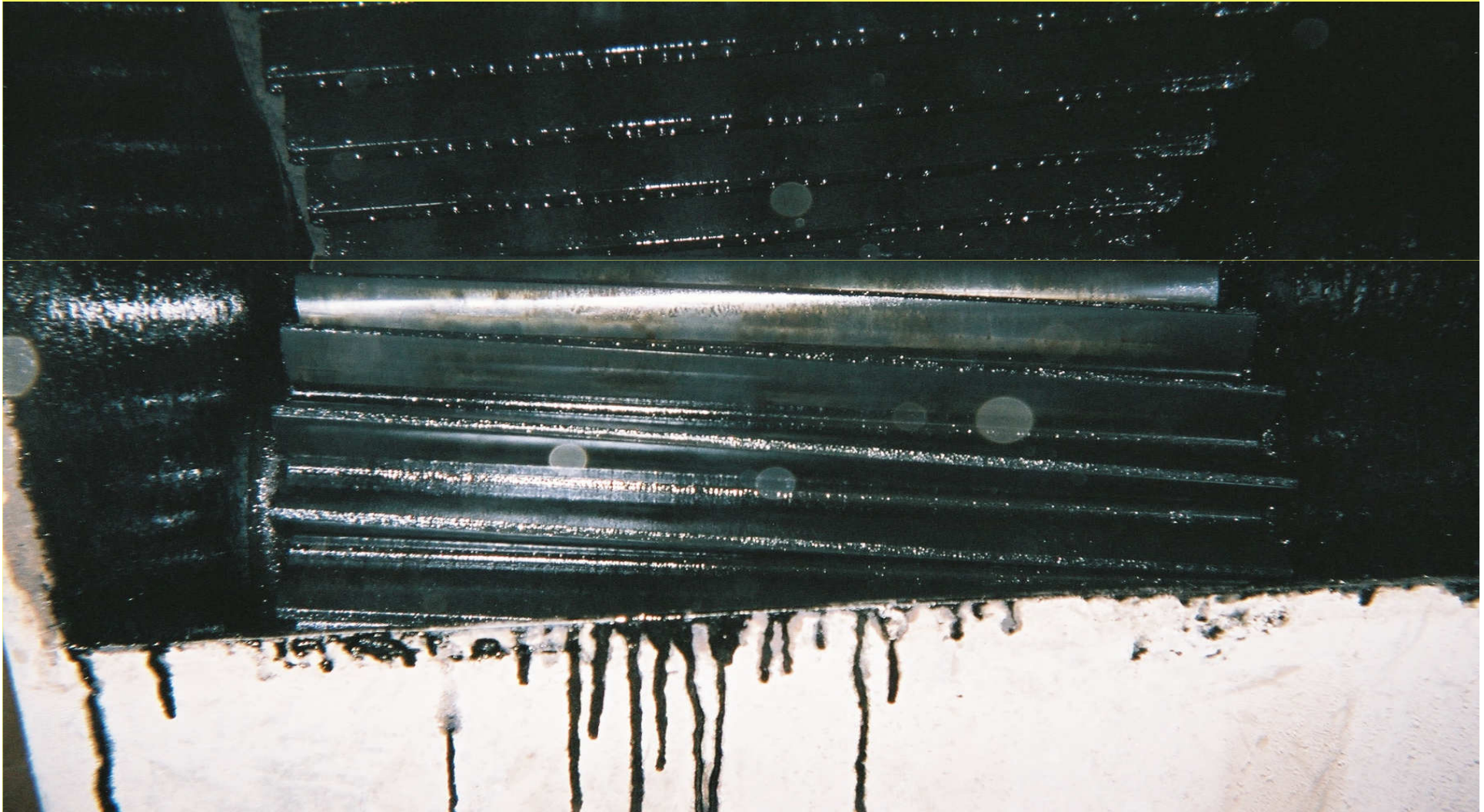
Ball Mill Before





Ball Mill

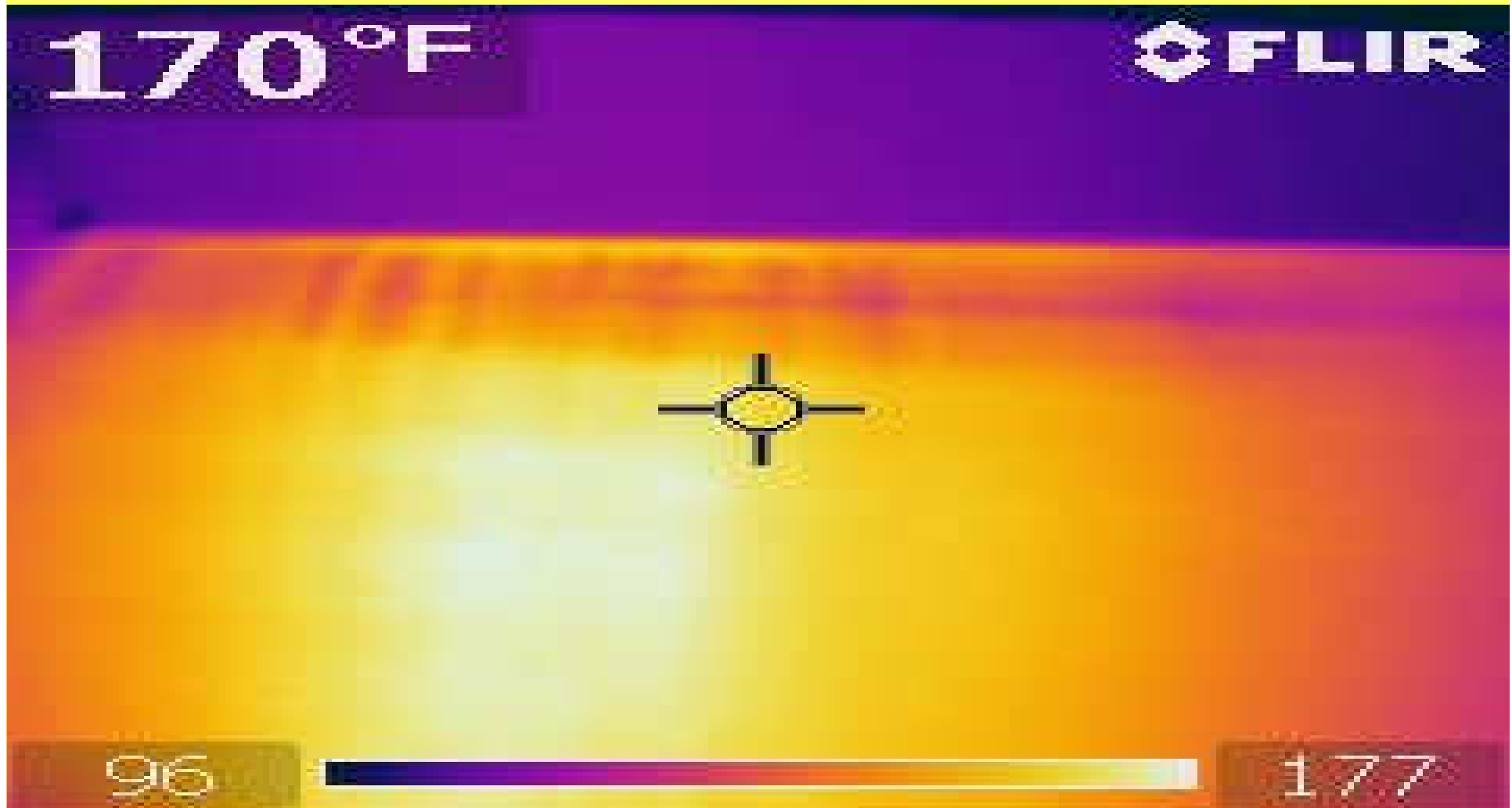
200S - 48 hours





Ball Mill

Silver Streak 48 hours





SAG Mill

26" Pinion (66cm)

Nozzle 1 ---- 17 grams

Nozzle 2 ---- 13 grams

Nozzle 3 ---- 9 grams

Nozzle 4 ---- 11 grams

Nozzle 5 ---- 12 grams

Total: 62 grams per cycle

Current settings: 18 min off

20 sec. on

30 sec purge.

Total of 207 grams per hour.



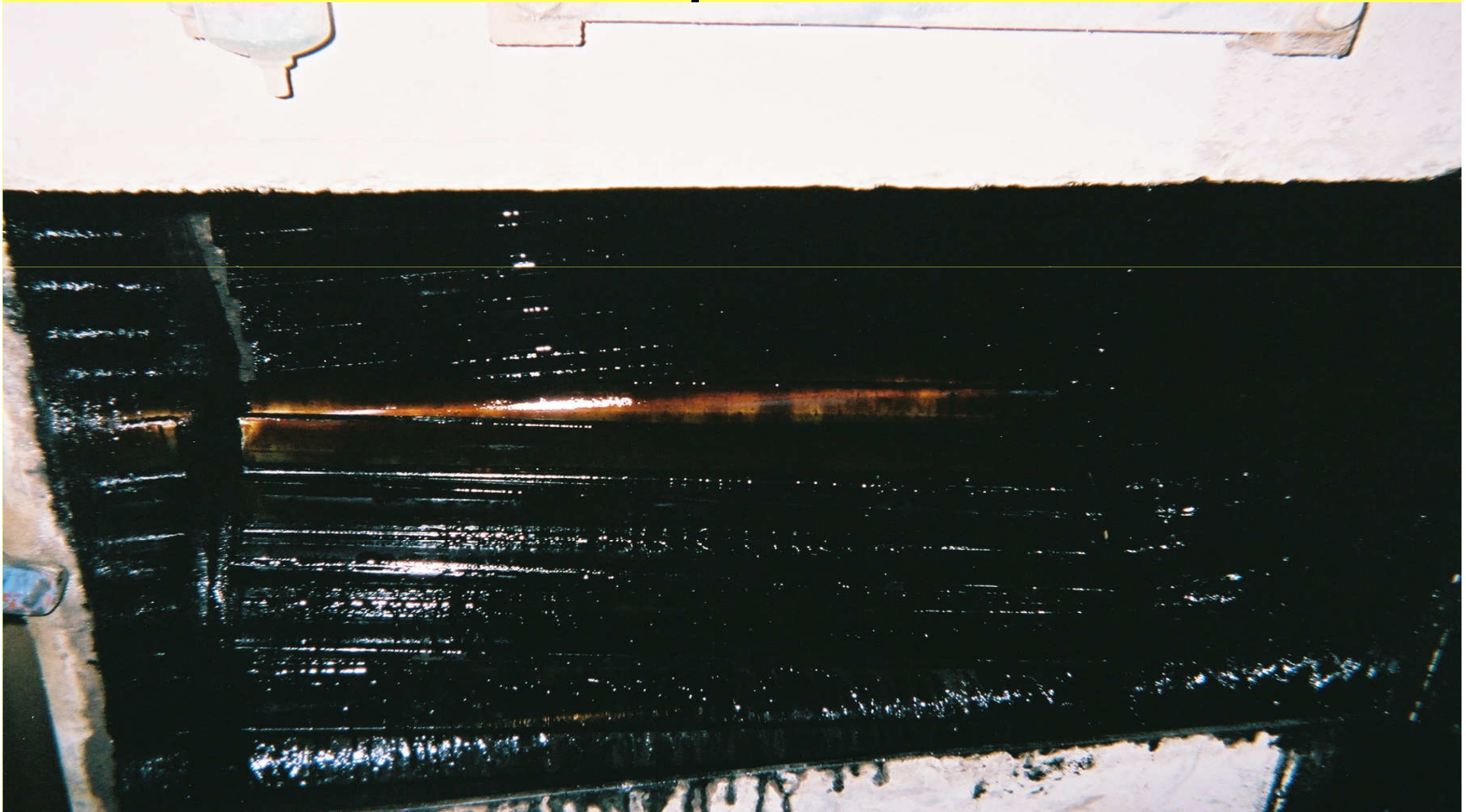
SAG Mill Cont.

- Optimum setting for a 66 cm gear is 2.5 to 3 grams per centimeter length.
- 165 to 198 grams per hour.
- Main concern is the current 3 cycles per hour on the gear
- Changed settings to 6 cycles per hour
- Recommended change: 10 min off
 - 10 sec. on
 - 30 sec purge
- Total of 31 grams per cycle
- Total: 186 grams per hour
- Approximately 30% reduction of product usage.

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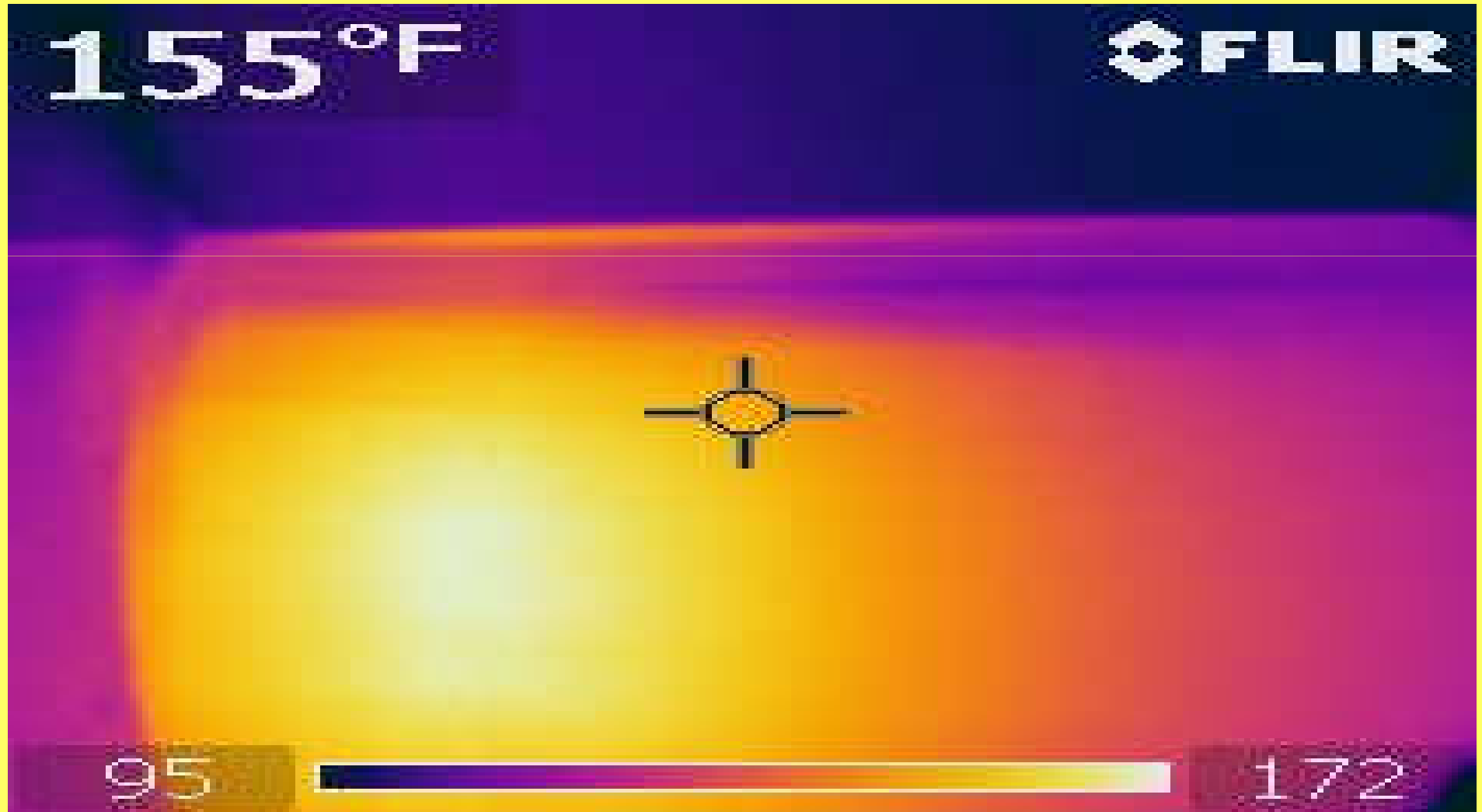


Sag Mill Competitors





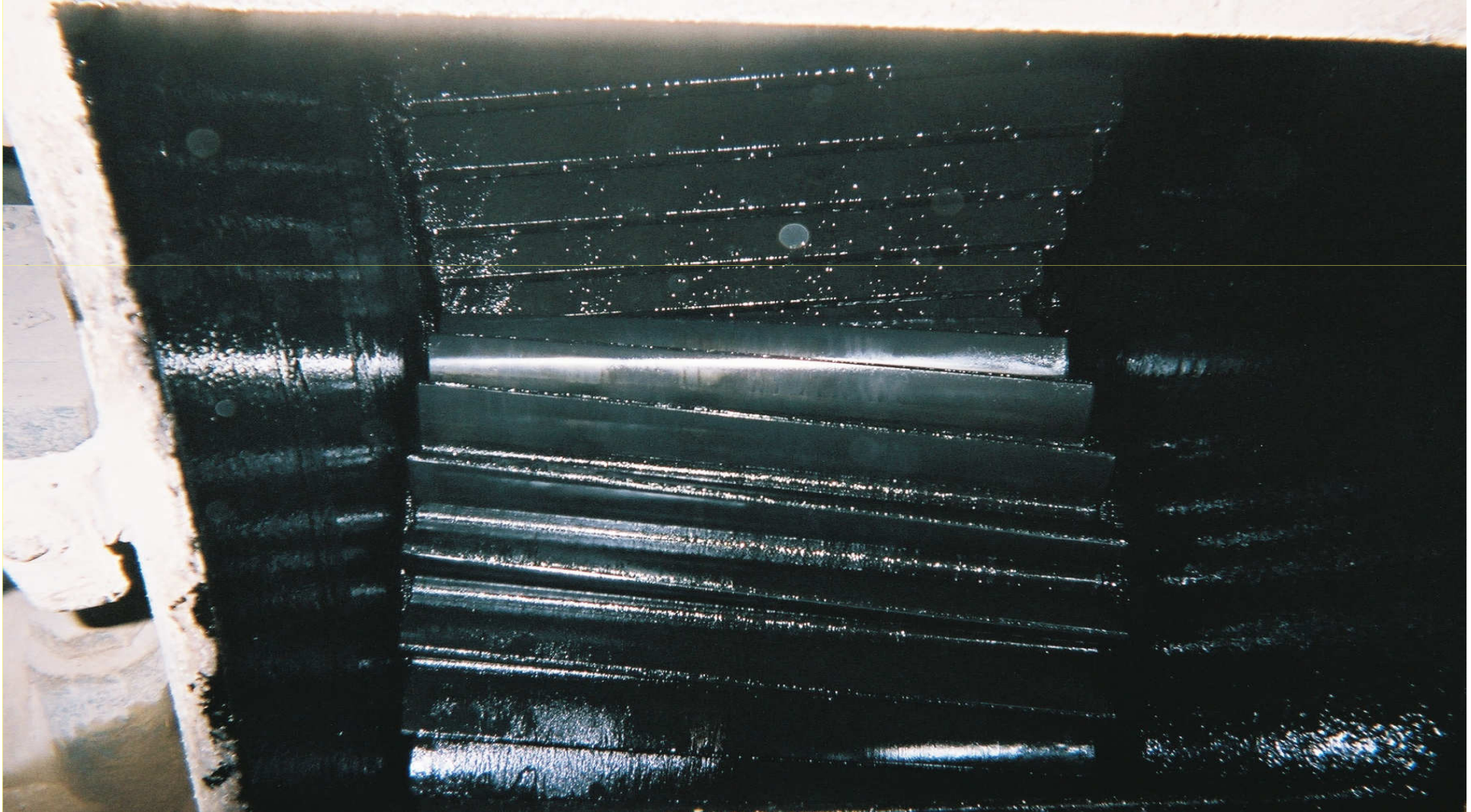
Sag Mill Before





Sag Mill

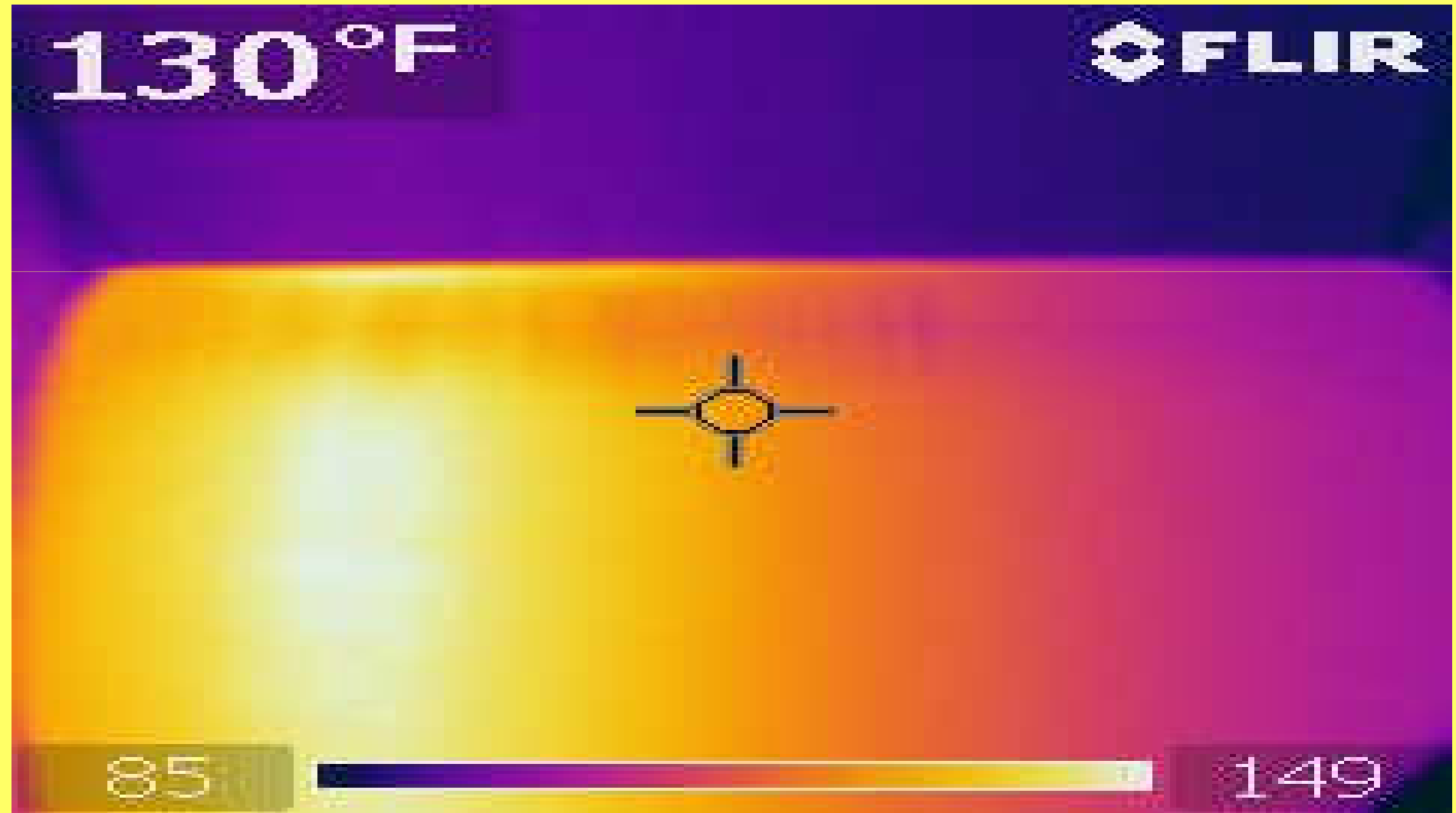
200S – 48 Hours





Sag Mill

Silver Streak 48 hours





Drum Band Heater

