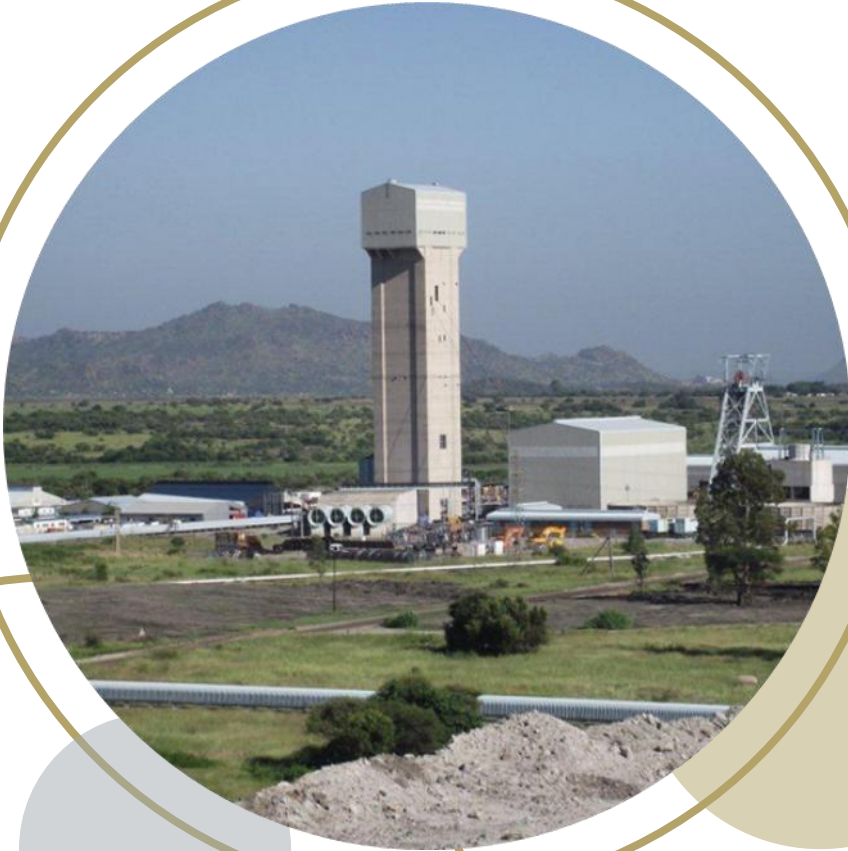


Implementation of GST SQL Loaders at Sibanye Stillwater Karee 4 Shaft

Billy de la Rey – Unit Manager Engineer



Since 2021, Sibanye Stillwater Marikana Operations recorded 16 Loader Related Injuries

The main causes for injury was:

- Slip, Trip and Fall while operating
- Derailments – Caught between loader and Sidewall
- Loader driving over operator's toes
- Struck by the loader bucket while cleaning
- Struck by foreign objects in the ore

Sibanye Stillwater Engineering Management launched the SQL project that will mitigate these risks.

.Introduction of the GST SQL Loader at Karee 4 Shaft

Designed for loading ore after blasting in the
development end

Safety

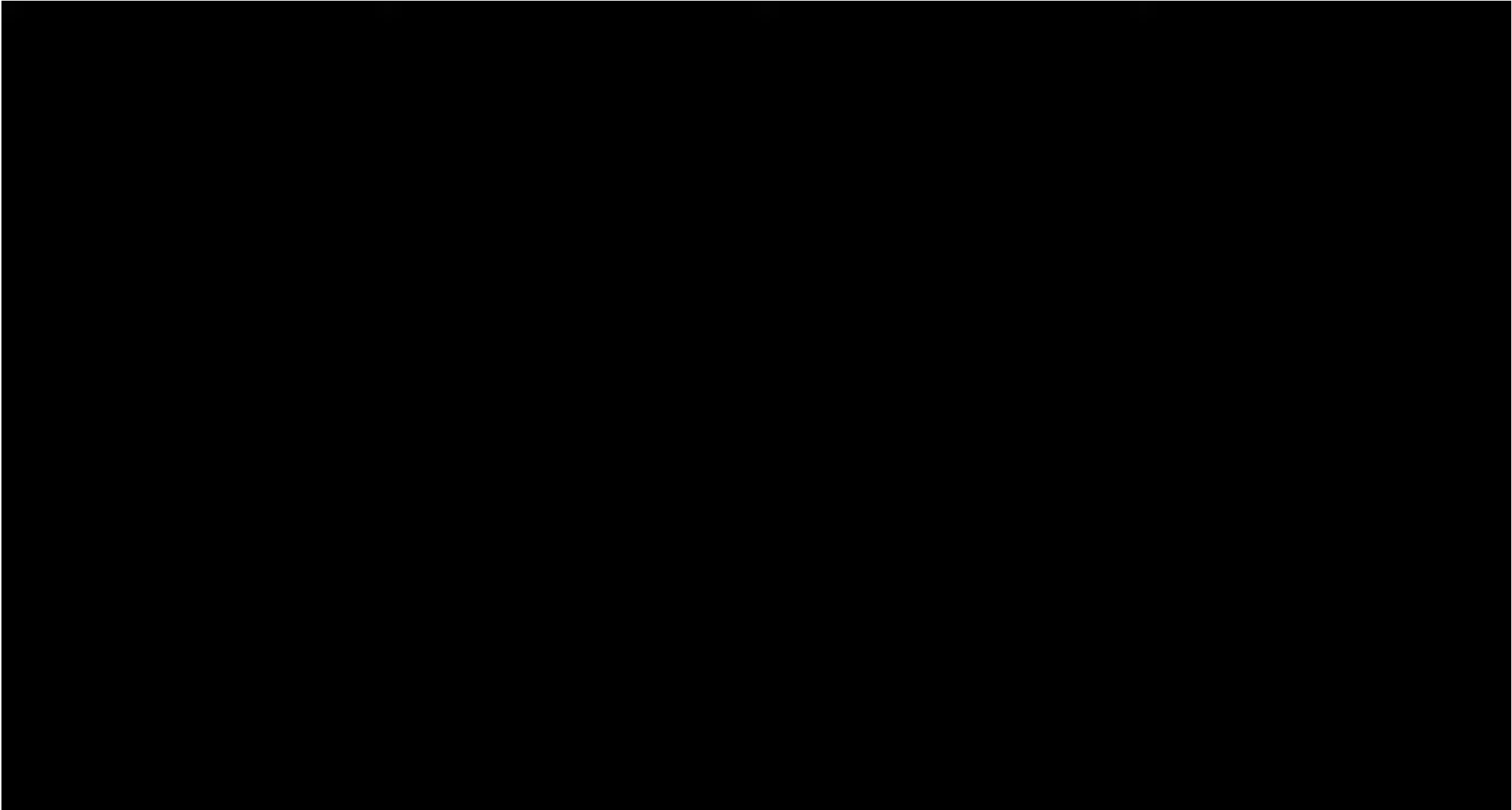
- Operator is removed from the working face, under a canopy
- Mechanical barring is done during cleaning operations

Quality

- Improved loading efficiencies
- Minimum derailments



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The SQL Loader:

- A full hydraulic system powered by an electric motor.
- Custom rail gauge
- The electro-hydraulic drive provides lower installation and energy cost.
- The mucking loader is controlled by hydraulic joysticks for easy operation
- No manual lashing required
- The traveling motor is equipped with a hydraulic brake.
- Double wing doors on loading platform ensures easy maintenance.
- Braking system on SQL Mucking Loader is a static hydraulic brake system
- The SQL is self propelled at the working face

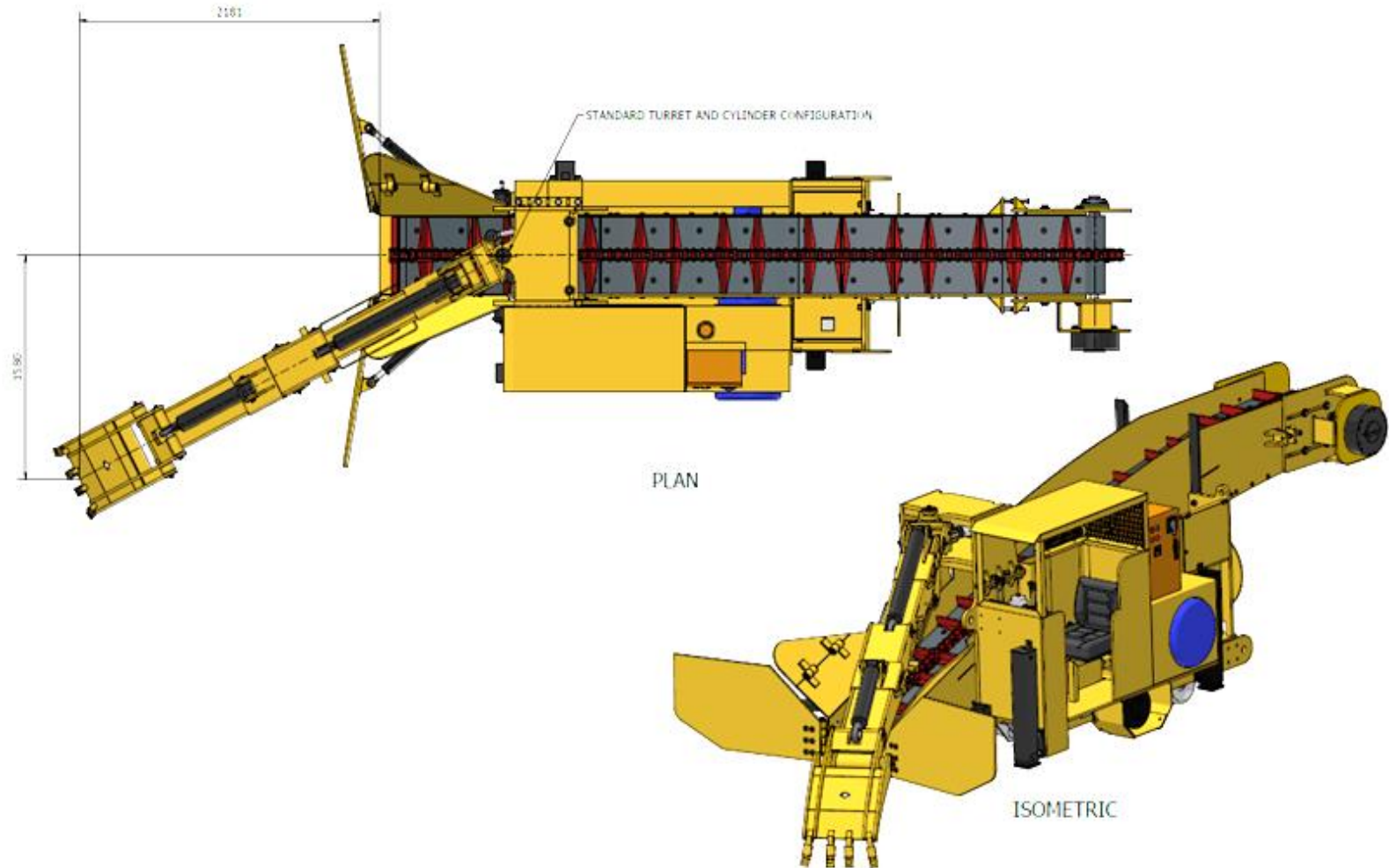
Dimensions

- Weight: 8 100 kg
- Conveyor chain: Single chain single motor
- Adaptive tunnel slope: 1:100
- Min. turning radius: $\geq 12\text{m}$
- Clearance from track: $\geq 150\text{mm}$
- Conveyor inner width: 518mm
- Maximum Boom angle: $\pm 36^\circ$
- Dimension (Transportation): L 6836mm | W 1783 mm | H 1986mm
- Dimension (Operating): L 7675mm | W 3033mm | H 2648mm



Performance

- Loading capacity: 80 tons/h
- Trimming speed: 0.37 / 0.75 m/sec
- Conveyor chain speed: 42 m/min
- Track gauge: as per mine standard
- Steering: Rail bound



The SQL Loader is equipped with the following safety devices:

- One Emergency stop button in operators compartment
- One Emergency stop at electrical panel
- 9kg DCP Fire extinguisher
- Trimming alarm in operator compartment
- Amber flashing light at back of SQL
- Dead-man switch
- Interlocking between outriggers, boom and conveyor



Advantages

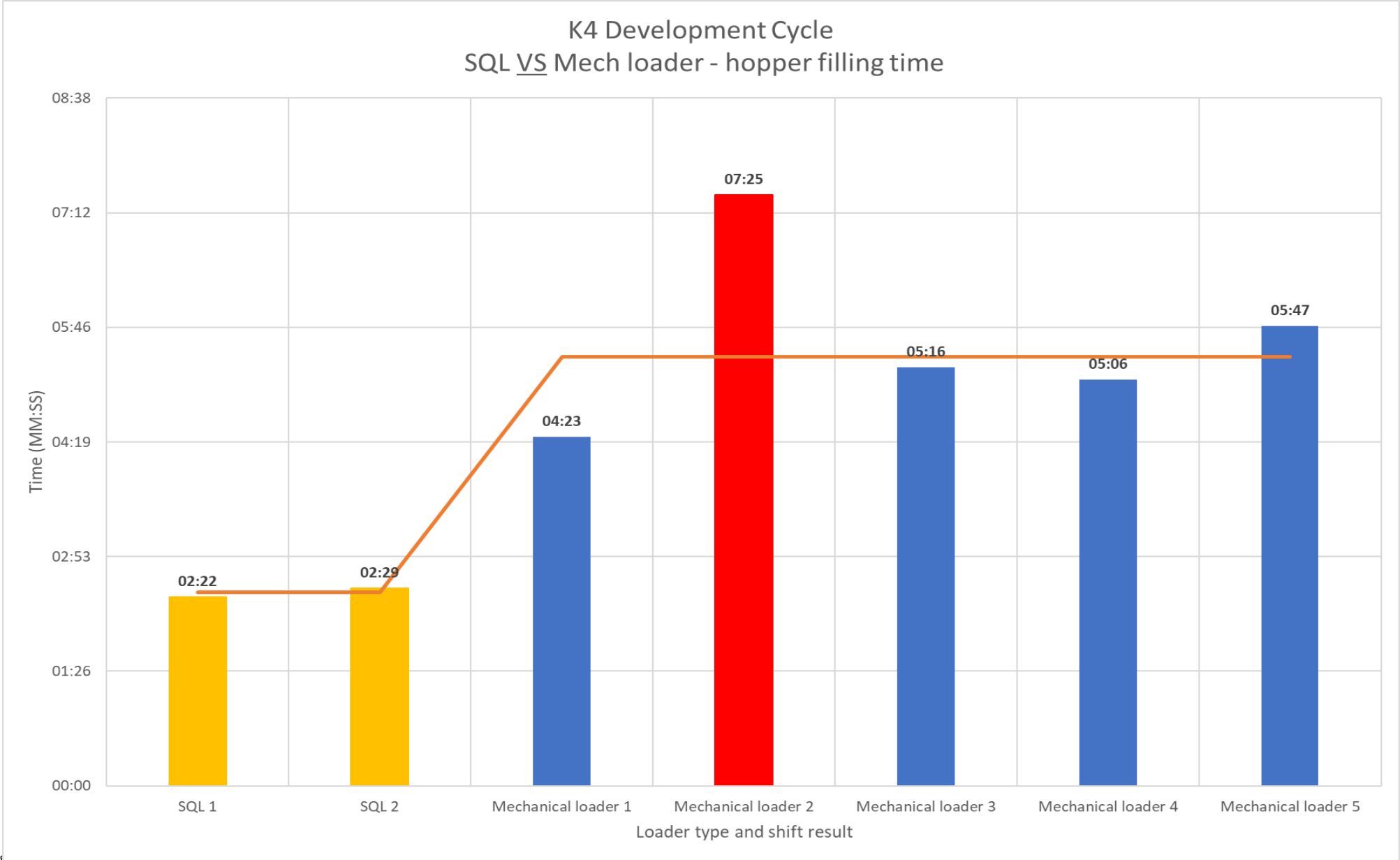
- Overall reduction in all associated risk.
- The operator is protected by a fixed canopy
- The operator is operating 3-6 meters from the working face
- Reduced noise exposure compared to an air loader
- One loader can clean two development ends
- Improved loading control
- Ore is equally distributed in the hoppers

Disadvantages

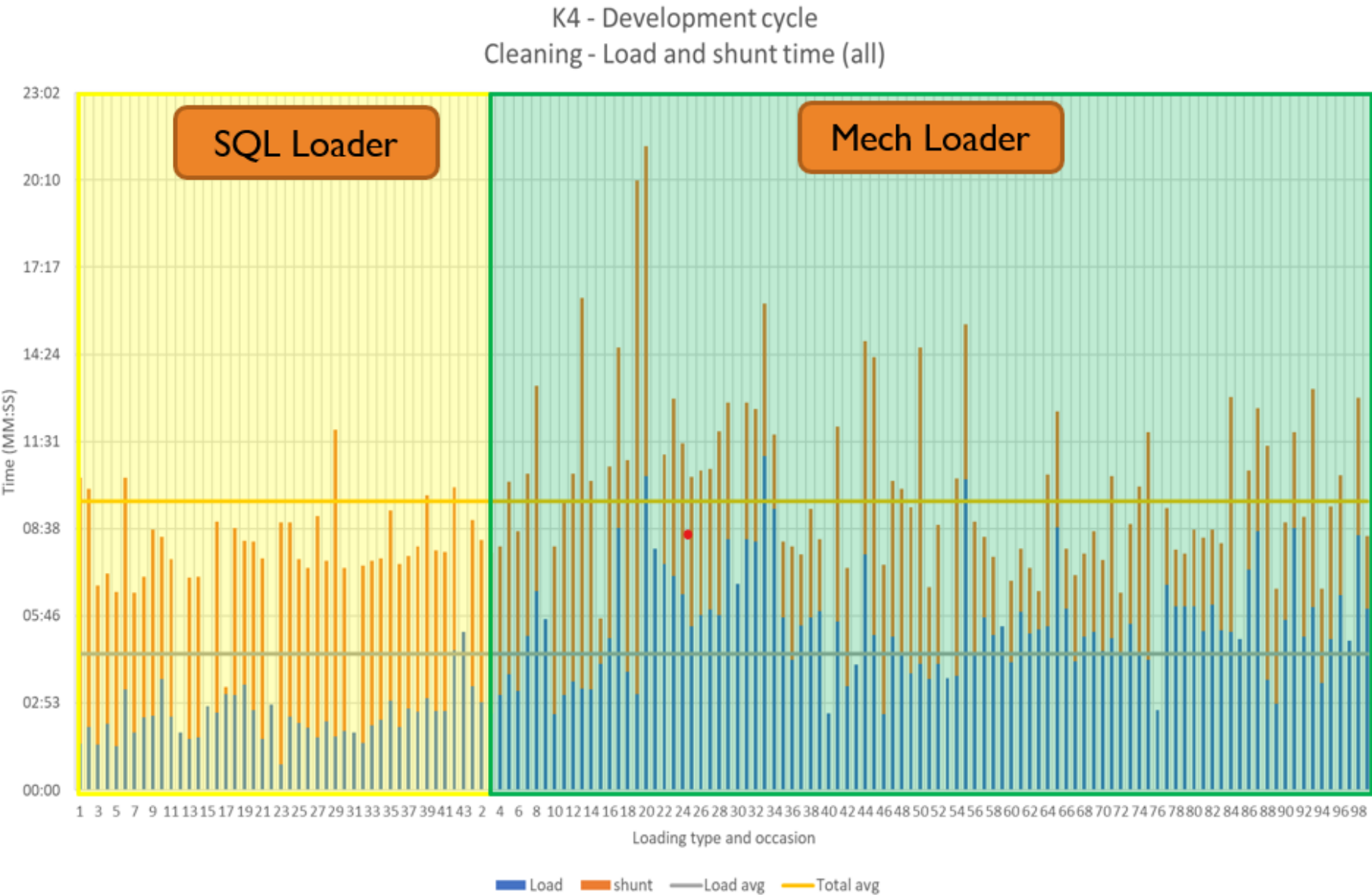
- Power required close to the development end
- More moving parts = more maintenance
- Sliding in vertical shafts
- Initial and maintenance capital requirements



Loading Times: SQL vs Mechanical Loader



Loading and Shunting Times: SQL vs Mechanical Loader



Since the introduction of the SQL Loaders in 2023, there was no injury recorded relating to the operation or maintenance of the SQL Loaders

The SQL loaders are adding value to the operation and keeping our loader operators safe.



SAFETY AND FAMILY FIRST!!!!!!



Think about this!!!

When Tomorrow Starts Without Me

What will happen to my Family?
Who is going to look after them?
Is it fair to them?

So why would I look the other way and allow someone to lose a LIFE?

Have a safe shift!

Just because you always did it
that way, doesn't make it right!



we are one
**Sibanye
Stillwater**

**Make it your mission to Hunt
for Risk and address unsafe
conditions!!**