



Shell Mine Technology

Collision Avoidance



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- **Safety is the number one** priority at Albian

- The Collision Avoidance System is an exciting new ***safety enhancement*** to help accomplish our goal of zero major incidents and zero near misses in the Albian mines

- Business drivers for change
 - 2009 Fatality
 - Improve safety performance across MRM & JPM mines
 - Improve mine efficiencies and productivity



What is the new Collision Avoidance System?

Vehicle Type	Base Unit (GPS)	Scope Screen	Safety Center	Radar
Primary LVs, secondary HVs (graders, wheeled loaders, tailings dozers)	√			
Mining dozers, fuel & lube, maintenance leads	√	√		
Haul Trucks	√		√	
Shovels	√		√	√



Base Unit (GPS)



Scope Screen



Safety Center



Radar System

How does it work?



- Traffic Awareness
- Collision Avoidance
- Tailgating
- Shovel



Project Scope

288 Shell Heavy Duty

257 Contractor Heavy Duty *****

282 Shell Light Vehicles

228 Contractor Light Vehicles *****

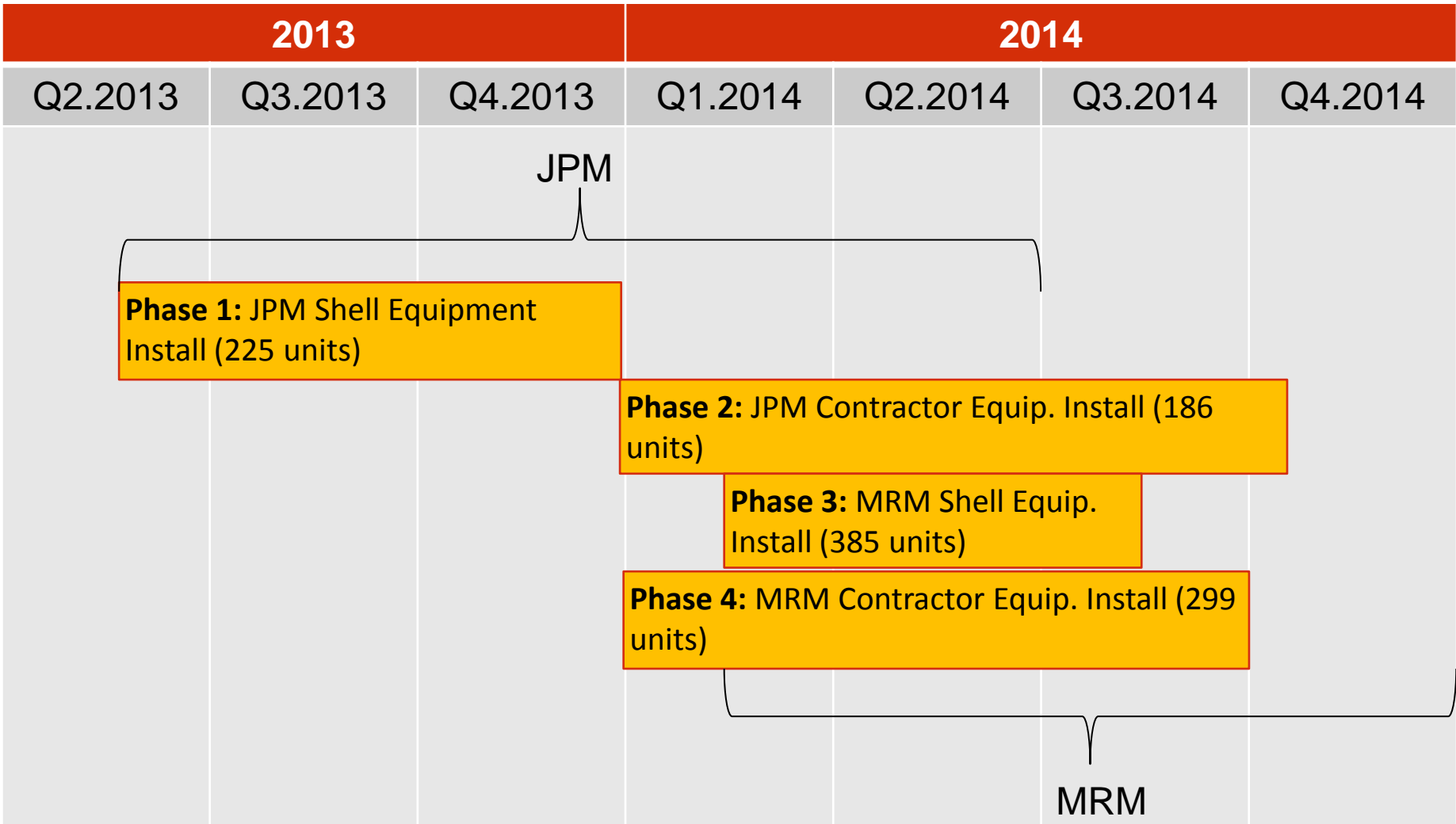
40 Visitor Vehicles

10 Test and Sync Stations

8 Mine Pit Entry Gates (both MRM and JPM)



Where and when is CAS being implemented?





- All heavy and light vehicle operators will be trained on the system
- The cab and exteriors of vehicles will have new equipment installed that operators will be responsible to know how to use properly
- All vehicles will be required to check-in through one of two gates before entering the mine
- The system will provide support for location monitoring and incident reporting
- ***The Collision Avoidance System is a safety enhancement which will supplement existing safety policies and procedures***



Who is responsible for this project?

- Executive Sponsor – Peter Zebedee, Manager Mining
 - Championed by Mining Technology – Jason Wood, Manager Mine Technology
 - Installed by Tridon, with supervision from Dispatch and Comm's
 - Implemented by Mine Operations
- Project Team
 - Mine Operations
 - Mine Maintenance
 - Shovels
 - Mine Production Excellence (incl. Training, Dispatch and Contracts and Procurement)
 - Safety
 - IT Operations Optimization
 - Security



- Success on this project was highly tied to a rigorous communications plan and effective field level planning activities.
- Have your contractor policies clearly defined.....who needs the system?, temporary mine access, costing structures.
- Unlock the value.....a wireless network would allow Shell to take a proactive approach to mine design.
- Take the time to walk through your most dynamic interactions in the mine to minimize false positives.
- Build an external capability in the region.....
- There is very little that Shell will not share with respect to this safety system.....Please contact Jason Wood for additional details.

