



VUL-SWP-026- Re-Load Bulk Operations

STANDARD WORK PROCEDURE (SWP)	
Description	Re-Load Bulk Operations
Site	Vulcan Mine
Department	Drill & Blast Department
Purpose	Provide a Standard Work Procedure for safe transfer of emulsion or emulsion blends from/to mobile road tankers, bulk explosive vehicles, static storage tanks, delivery tankers into the storage silos, mobile units from the emulsion silos, as required by Legislation.
PPE Required	Task Specific PPE
    	Head Protection as per site requirement Safety footwear Eye protection Rubber, chemical resistant gloves High Visibility clothing
Job Step Analysis Reference	
JHA Re-Load Bulk Operations dated	
Other Relevant Information - References	
Australian Code for the Transport of Explosives by Road and Rail (3rd Edition) (AEC3) Code of Practice: Segregation Barriers for Transporting Mixed Loads of Detonators and High Explosives Code of Practice Storage and Handling of Solid Ammonium Nitrate Code of Practice Storage and Handling Of UN3375 Explosives Information Bulletin 53 Storage requirements for security sensitive ammonium nitrate (SSAN) Explosives Act 1999 and Explosives Regulation 2017 VUL-PLN-035 – Emergency Planning and Response Plan VUL-FRM-16-19-Blast Crew Daily EOS Security Checklist VUL-TMP-013-WRAC-Emulsion Transfer and Storage Risk Assessment VUL-WRAC-Explosives In The Event of Lightningening (Auto Recovered) VUL-TMP-013-WRAC-AN Handling and Storage VUL-TMP-013-WRAC-Transport of Explosives Risk Assessment Vulcan Mine Traffic Management Plan(s)	
Compound Rules	
Only authorised personnel to enter Reload yard. All visitors must sign-in and by escorted by a Competent Person. Ensure to follow all Traffic Management Plans. Display an updated SSAN Licence on the front of the Reload. Immediately report any discrepancies or spillage to the Registered Mine Magazine. Ensure all corners of the Magazine is label with appropriate signages. No Smoking, Vaping or E-cigarettes allowed at any time. Always keep the outside of the Reload yard clear of any vegetation, rubbish, and fenced off. Ensure adequate lighting during night or darkness. Follow EPG during an emergency whilst inside the Reload yard.	



1. Handling of Explosives (AN)

1.1 Transporting of Explosives

All transportation of Explosives must adhere to VUL-SOP-116 (a,b,c,d,e,f) Transporting, Storage & Handling Explosives.

- Any person who is required to transport explosives and explosive ingredients shall have site authorisation which requires that:
- The persons conducting the emulsion transfer operations (e.g.:- Mobile Processing Unit Operator) must be present at all times during the transfer operation.
- Only competent and /or authorised persons will conduct any adjustments or repairs to the equipment used in the transfer operations of emulsion.
- Site TMP's to be adhered to
- Road rules

1.2 Explosive Vehicle Speciation's

- All vehicles carrying explosives onsite shall comply with the Australian Code for the Transport of Explosives by Road and Rail (3rd Edition) (AEC3).
- A Shot Firer's vehicle with correct signage displayed is required for the type(s) of product being transported and location of travel, i.e. Mine Site or Public Roads, is displayed as per site and AEC3 requirements:
- Signage and Labelling Requirements for Transport on Public Roads.
- Signage and Labelling Requirements for Transport on a Mine or Quarry Site.
- Operators shall ensure that any interior surface which packed explosives may be in contact with, is kept in a clean condition and free of any projections that are likely to cause damage.
- Have all explosives transported in a safe and secure manner either in securely attached containers or other fit for purpose means.

1.3 Safety and Security of Explosives while being transported

Operators shall ensure that:

- All Vehicles are prestart inspected, site compliant & registered.
- All vehicles and equipment are parked safely, in designated park up areas.
- There shall be no smoking or any naked flame allowable within 20 meters of any vehicle transporting explosives.
- Any ignition sources shall be carried in a sealed container in the cab of the vehicle.
- Electronic detonators shall not be transported in a vehicle fitted with a radio transmitter unless the radio is capable of being isolated and locked out.
- No portable radios, mobile phones shall be taken into the explosives carrying compartment where there are electronic detonators.
- All Explosives shall be loaded as per the VUL-SOP-116 (a,b,c,d,e,f)- Transport and Storage of Explosives and AEC3 requirements, with regard to:
 - Keep all products in original boxes;
 - Segregate detonators from boosters into separate lockable compartments/receptacles.
- All practicable precautions shall be taken during loading and unloading to ensure that packages are not dropped, thrown or otherwise mishandled.
- Before leaving the magazine, the vehicle operator shall ensure that all explosives are securely stowed.
- The transport route between the magazine and/or the mix area and the shot shall be pre-planned, using non-congested roads where possible.
- Mine traffic rules shall be strictly complied with and adherence to VUL-SOP-076 Using Mobile Plant shall be maintained, always.



- Prior to transport, or if at any time the loaded vehicle is to be left unattended ensure that the load(s) is securely stowed and that all lockable compartments/ receptacles are locked.
- All servicing and refueling of the light vehicle shall be done prior to it being loaded with explosives.
- In the event where there are two or more vehicles transporting explosives, drivers shall take practical actions to avoid being in proximity.

1.4 Emergency Response

1. An explosives emergency procedure guide shall be displayed within the cab of all designated explosive transport vehicles.
2. In the event of a vehicle fire, immediate actions shall be taken to extinguish it with the on-board extinguisher.
3. If it is not immediately extinguished and there is a real threat of the explosives igniting, then persons shall immediately evacuate the area to a safe minimum distance of 1000 meters.
4. The outbreak of fire and any subsequent evacuation and cordoning off shall be immediately reported by two-way radio to warn other personnel in the area.
5. If the explosives transport vehicle is involved in an accident, an immediate inspection shall be made to ensure that no danger exists from fuel spillage, dislodged or spilt explosives.

Guidelines including action to take for explosives emergency scenarios can be found in VUL-PLN-035–Emergency Planning and Response Plan.

Bulk explosives delivery records by truck and shift should be kept, that allow reconciliation of actual and design densities and quantities, of explosive products used, and identification of which holes were loaded by which truck. The manifests carried on any vehicles carrying initiating explosives should enable reconciliation of explosives stock.

2. AN Handling & Storage

2.1 Unloading of Bulka Bags

1. The nominated person will meet the delivery and escort the truck to the reload to be unloaded, only personnel directly involved in the task shall be within the area.
2. The truck will stop at the designated AN storage area at which unloading is to be performed and be parked fundamentally stable before unloading commences, if required to reverse a spotter shall be in position prior to reversing.
3. When the truck stops the ground crew will place two bollards on each side at the front and rear of the truck prior to removal of the restraint straps. Unloading will not commence until all straps have been removed and stored.
4. Verify products ordered and products being received against the delivery docket, visually inspect and count the amount of product.
 - The person receiving the goods shall verify the load has the correct:
 - Product Type
 - Product Quantity
 - Delivery documentation (Vulcan Mine Management order, SDS information and shipping document) prior to signing for receipt of the product.
 - If a delivery of security sensitive product is incorrect the delivery must be immediately isolated. Report the matter to your Supervisor.
5. The delivery driver and vehicle must comply with the Australian Dangerous Goods Code (current edition) as it applies to the product being carried.
6. The Truck Driver shall remain out of the cab whilst unloading is conducted.
7. The Forklift will be positioned so that the lifting loop of a single bag may be placed on the forklift tyne, this is achieved by using a ladder at the rear of the truck, on the driver's side, to lift the loop at the tailgate.
8. The Forklift Operator lifts this bag off the truck and transports it to the designated AN storage area.



9. The ladder is moved to the side of the truck where the one bag was removed and the loop lifting person climbs up the ladder onto the truck deck. The loop person then assists with the loops for the remaining bags two at a time in a zigzag manner moving in a forward direction. In the case of Multi Trailer trucks, the ladder may not be used for the front trailer element and the person assisting with the loops will have to use the platform between the trailer elements while removing the first bag of the front trailer element.
10. The loop lifting person should briefly examine the bag top for damage as should the forklift operator and if damage is found, put the bag aside while completing the unloading. If the damaged bag is leaking, then the damaged bag must be placed in a spill bag as soon as the damage is identified, any spills shall be contained as per **VUL-SOP-056-Hazardous Substances**.
11. Once the delivery is complete and the loop lifting person has alighted from the truck/trailer the truck driver can re-enter the cab and await instruction from the loop lifting person that all personnel and equipment are clear from the area prior to operating the truck.

2.2 Loading MPU's

Loading bags into the auger/hopper

- In preparation to load the MPU, the forklift operator lifts one bag and positions the bag over the auger hopper.
- The MPU operator will guide the forklift operator if required until the bag is lowered onto the bag cutter.
- When the hopper has sufficient product the MPU operator will start the auger.
- The forklift operator controls the flow of product by raising or lowering the bag to as required to manage the flow of product from the bag to prevent the hopper overflowing.
- The forklift operator will then reverse away from the hopper with the MPU operator holding the empty bag to remove from the tyne.
- The MPU operator will place the empty bag in the waste bundle bag.
- The forklift operator will continue to collect more bags until the required quantity has been loaded into the MPU.
- Only full bags are loaded into the MPU, no part bags or unused AN is left in the hopper.

3 Emulsion Transfer & Storage

3.1 Preparation & Positioning of the MPU

- Only competent and / or authorised personnel shall be permitted to operate the emulsion pumping equipment.
- The persons conducting the emulsion transfer operations (e.g.:- Mobile Processing Unit Operator) must be present at all times during the transfer operation.
- Only competent and /or authorised persons will conduct any adjustments or repairs to the equipment used in the transfer operations of emulsion.
- Position the MPU in a suitable position, fundamentally stable, so that the pump and hoses can be connected with relative ease.

3.2 Filing the MPU Tank with Emulsion from Tank

Isolated the MPU via the battery isolator.

Check the level (volume) of the Emulsion Phase Tank (EP-Tank), by dipping the tank, to ensure that there is enough space remaining to add the amount being delivered without overfilling the EP-Tank.

Transfer of product from EP-Tank to MPU:

1. Connect the EP-Tank transfer pump (transfer pumps) delivery hose to the MPU Inlet by removing end cap from the delivery hose of the transfer pump & cam lock on the MPU inlet valve.
2. Open the valves on the MPU and the EP-Tank, ensure that all required valves are open to allow flow.
3. Deisolate the MPU and start the engine (as the power is required for monitoring tank levels via the onboard operator's interactive information screen during the transfer to prevent overfilling).
4. Start the air compressor.
5. Open air compressor hose valves (from air compressor to transfer pumps).

The operator transferring the product shall maintain awareness of the pump operation throughout the process by listening for inconsistencies in the flow of the pumps i.e. pump rhythm ceasing - signifying 'deadheading', or pump



rhythm increasing - signifying an empty tank. Continue monitoring EP-Tank level via the onboard operator's interactive information screen.

Once tank is full:

1. Close off transfer pumps air supply valve
2. close the EP-Tank outlet valve
3. Re-open transfer pumps air supply valve
4. Commence Purging lines – SLOWLY open the purge valve(s) to release air pressure.
5. Close off transfer pumps air supply valve
6. Close all valves on the MPU & EP-Tank
7. Disconnect the delivery hose from the MPU
8. Replace end cap on hose & cam lock on MPU
9. Shut down air compressor

3.4 Transfer of Emulsion from Mobile Road Tankers to EP-Tank

Once the Mobile Road Tanker has been escorted to Reload and parked up as per TMP;

1. Connect the EP-Tank transfer pump (transfer pumps) receival hose to the Mobile Road Tanker (MRT) outlet by removing end cap from the delivery hose of the transfer pump.
2. Open the valves on the MRT and the EP-Tank inlet, ensure that all required valves are open to allow flow.
3. Start the air compressor.
4. Open Pump air supply valve
5. Visually monitoring EP-Tank levels to prevent overfilling

Once product delivery is complete:

1. Close off transfer pumps air supply valve
2. Close the EP-Tank inlet valve
3. Close the valves on the MRT
4. Dis connect the EP-Tank transfer pump delivery hose
5. Replace the end cap of the delivery hose
6. Shut down air compressor

3.5 Product Spills and Housekeeping

- All spills will be immediately cleaned up and contained in the waste AN bins before being disposed of in accordance with the site procedures.
- All major spills (20 Litres /Kilograms) will be reported to the Supervisor and a suitable recovery plan will be implemented with any residual product to be disposed of in accordance with the site procedures.
- All ammonium nitrate bags will be collected and retained on site before being disposed of.

3.6 End of Shift Requirements

- Ensure that a high standard of housekeeping is always maintained.
- Ensure that the VUL-FRM-16-19-Blast Crew Daily EOS Security Checklist, product delivery and loading documentation from the day has been completed correctly, is legible, is signed and handed to the Supervisor.
- Any outstanding defects and/or hazards are to be reported immediately to the Supervisor