

## **LOAD AND REMOVE ROLLING STOCK INTO AND FROM A SHAFT CONVEYANCE**

### **TRANSPORTING MATERIAL IN A VERTICAL SHAFT**

When loading and removing rolling stock into and from a shaft conveyance you must ensure that all safety, legislative, environmental, equipment and production requirements are met at all times.

You must also be alert to potential consequences of incorrect working standards and must strictly adhere to legislation and all laid down workplace standards that will ensure your own safety and the safety of others, as well as the operation of equipment to comply with required safety standards.

Incorrect loading methods are hazardous and may lead to accidents and injuries to persons or damage to shaft equipment.

Correct loading methods are essential in avoiding accidents to persons and shaft equipment damage. In order to achieve this, loading and removing rolling stock into and from a shaft conveyance must be done with care and pro-active action by competent persons trained to load and unload rolling stock and give and receive special signals to and from the Winding Engine Driver. A person that knows, how to safely use and work with all the shaft and station safety devices

**Tools and equipment required to load and remove rolling stock into and from a shaft conveyance is made available, fit for purpose and operational in accordance with specified requirements.**

Slings of adequate size must be available and located at the bank in a suitable storage facility.

Shackles of the required sizes must be available at the bank.

Crowbars with a lug and manila rope attached must be available to enable workmen to lift and or move heavy loads.

An air winch must be available to assist in removing rolling stock from conveyance.

Short steel hook with 3m length of manila rope attached to remove rolling stock from conveyance.

### **Loading and removing rolling stock**

The banks man will inform the on setter on time of the amount of rolling stock to be lowered to the different underground levels. The onsetter is normally responsible to initiate clutching operations. The banksman will be able to follow the progress, destination and signals interchanged between the driver and onsetter on the tell-tail bell at the bank.

Clutching for the bank and different underground levels could be performed if required.

The banksman shall inform the onsetter in time to clutch for the required levels to safeguard the onsetter travelling against material.

#### **The banksman must: -**

Transmit a signal to position the conveyance at the bank.

Transmit the signal 1 to stop the conveyance.

The driver will clutch correctly as per site specific requirements to lower rolling stock. On completion the driver will transmit the clutching completed signal to the banksman.

#### **The banksman must: -**

Interchange the signal 8 with the driver.

The driver spontaneously transmits a signal 1 to the banksman. *(Persons may have access to conveyance for the purpose of loading or unloading mineral in trucks or material)*

The term "*Decking*" means raise or lower the cage so that the next deck is aligned with the level from which the loading or un-loading takes place.

An approved special signal may be used for decking. *(Approved in writing by the Principal Inspector of Mines).*

**The banksman must: -**

Check that the robot indication is green. (*winder brakes are locked in the on position*)  
Instruct the assistants to open the shaft gate and secure the cage door/s in open position; remove the conveyance rolling stock securing devices from the cage.  
Instruct the assistants to remove the mechanical safety devices on the bank to load rolling stock into the conveyance.  
Instruct the assistants to secure the rolling stock with securing devices inside the cage.  
Instruct the assistants to close the shaft gate, replace and secure the mechanical safety devices on the bank area.  
Ensure all tools, equipment, rolling stock and persons are clear from the shaft entrance.  
Transmit a decking signal to position the next deck to be loaded.  
Transmit the signal 1 to stop the driver when the next deck is aligned with the bank.  
Receive the signal 1 from the driver.  
Check that the robot indication is green.  
Instruct the assistants to open the shaft gate and secure the cage doors in open position; remove the rolling stock securing devices from the conveyance.  
Instruct the assistants to remove the mechanical safety devices on the bank to load rolling stock into the next deck of the conveyance.  
Instruct the assistants to secure the rolling stock with securing devices inside the cage.  
Instruct the assistants to close the shaft gate and replace the mechanical safety devices on the bank to secure the shaft entrance.  
Ensure that all tools, equipment, rolling stock and persons are clear from the shaft entrance.  
Interchange the onsetter destination signal with the driver.  
Transmit the signal 2 to lower the conveyance.

**The banksman must: -**

Remain at the lock bell until the conveyance moves clear from the bank position.  
Remove the lock bell key from the lock bell.

*The driver will lower the conveyance to the signalled destination.*

**The onsetter must: -**

Transmit a signal 1 to stop the conveyance when the bottom deck is level at the station landing.  
Interchange the signal 8 with the driver.  
Receive the signal 1 from the driver.  
Check that the robot indication is green.  
Instruct the assistants to remove the mechanical safety devices on the shaft station.  
Instruct the assistants to remove the rolling stock securing devices from the conveyance.  
Instruct the assistants to remove rolling stock from the conveyance in accordance with site specific requirements.  
Instruct the assistants to move the rolling stock clear of the shaft entrance.

**On some underground levels a winch is installed that may be used to remove the rolling stock from the conveyance.**

Lowering rolling stock to the lower levels in the shaft will cause excessive rope-stretch that could cause the shaft conveyance to lift to the extent that requires the onsetter to transmit the signal 4 pause 2 to reposition the conveyance before removing the rear-end of the rolling stock from the shaft conveyance.

Where a conveyance arresting device is in use the specific mine requirements must be followed.

**The onsetter must: -**

Instruct the assistants to replace the mechanical safety devices in the conveyance.  
Instruct the assistants to close the shaft gate, rolling stock securing devices to the shaft entrance.  
Transmit a decking signal to position the next deck.  
Transmit the signal 1 to stop the conveyance when the next deck is aligned with the station landing.  
Receive the signal 1 from the driver.  
Check that the robot indication is green.  
Instruct the assistants to remove the mechanical safety devices on the station and open the shaft gate.  
Instruct the assistants to remove the rolling stock securing devices from the conveyance.  
Instruct the assistants to remove the rolling stock from the conveyance.  
Instruct the assistants to replace the rolling stock securing devices and close the shaft gate.  
Instruct the assistants to replace the mechanical safety devices on the station.

Check that all tools, equipment and persons are clear from the shaft entrance.  
Transmit the clear signal 2 pause 2 to the driver.

**Candidate Notes** [YOU THE CANDIDATE CAN USE THIS SPACE TO MAKE NOTES IN CLASS]

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### **Simultaneous winding of men and material**

16.62 No person shall travel in a conveyance operated by a winding engine if such conveyance is loaded or partially loaded with mineral, and no person shall travel in a conveyance operated by a winding engine that is being used simultaneously for the winding of mineral: Provided that, if authorised by the manager or mine overseer, persons engaged in sinking operations in a vertical shaft or winze may decent such shaft or winze in a conveyance operated by a winding engine that is being used simultaneously for the raising of mineral.

### **Travelling with material**

16.63 Subject to the provisions of regulations 16.64 and 16.65, no person shall travel -

- (a) With material or explosives in a conveyance operated by a winding engine; and
- (b) In a conveyance operated by a winding engine that is being used simultaneously for the winding of material or explosives

### **List of permitted material**

16.64 Subject to the provisions of regulation 16.65 -

- (a) the manager, engineer or mine overseer may grant permission in writing for persons to travel with material if such material is not likely to endanger persons travelling in the conveyance; and
- (b) The manager shall -
  - (i) Cause a list to be kept of the material which is regularly conveyed in the shaft or winze for which permission has been granted in terms of paragraph (c) ;
  - (ii) Ensure that all persons authorised to give signals for the raising and lowering of persons are conversant with the material mentioned in the list; and
  - (iii) Make a copy of the list readily available to all persons concerned.

### **Persons authorised to travel with material**

16.65 The manager, engineer or mine overseer may authorised the following persons to travel in a shaft or winze with material or explosives prohibited in terms of regulation 16.63 if such travelling is necessary for the efficient carrying out of their duties: -

16.65.1 Onsetter and their gangs;

16.65.2 Deleted by G.N.R.2223, 7.8.1992

16.65.3 Persons engaged in sinking operations or in conducting an examination, effecting repairs or doing other work in the shaft or winze.

16.65.4 Persons required to ensure the safe passage through the shaft or winze of material, which cannot be conveyed inside a conveyance.

### **Who may travel with material?**

- Onsetter and his gang.
- Persons distributing explosives.
- Miner engaged in shaft sinking.
- Persons engage in shaft examination and repairs.
- Persons safeguard the passage through the shaft. (Piloting material)

### **Loading of explosives**

16.66 No persons shall place explosives in or remove them from a conveyance operated by a winding engine except under the immediate supervision of the banksman or onsetter or a competent person authorised thereto by the manager or mine overseer.

**Conveyance to be steadied**

16.69 No bucket or other means of conveyance that can sway shall be allowed to leave the top or bottom of the shaft or winze unless the workman in charge thereof has steadied it or caused it to be steadied.

**Overfilling of conveyance**

16.70 No bucket or other means of conveyance shall be filled with loose rock or ground above the level of the brim.

**Fastening projecting material**

**15.71.1** Tools or other material which project above the top of the cage, skip, bucket, kibble or other means of conveyance and which are raised or lowered in a shaft or winze shall be fastened securely and placed in such a manner that the operation of any arresting device is not affected.

**The banksman is lowering material in cars to the onsetter at 65 level. The winding plant is clutched to serve the bank and 75 level.**

- a) Banksman signal 8 to the driver.
- b) Driver signal 8 to the banksman, select the man to the material position and signal 1 to the banksman.
- c) Banksman remove safety devices on the bank, open the shaft gates and cage doors, and load the first car into the cage and put sprags in place.
- d) Banksman close the shaft gates, replace safety devices on bank, and position the cage for the next deck. Can use a decking signal, 1 or 2 signal.
- e) Banksman stop driver with a signal 1.
- f) Driver signal 1 to the banksman.
- g) Banksman remove safety devices on bank, open the shaft gates and cage doors, and load the second car into the cage, and put sprags in place.
- h) Banksman close the shaft gates, replace the safety devices on the bank.
- i) Banksman signal 6 pause 5 to the driver.
- j) Driver acknowledges 6 pause 5 in full to the banksman.
- k) Banksman signal 2 to the driver.
- l) Driver lowers the cage to the onsetter on 65 level.
- m) Driver stop the cage on the correct station mark, or the onsetter can stop him with the signal 1.
- n) Onsetter signal 8 to the driver.
- o) Driver select the material switch to the man position and signal 8 to the onsetter, select the switch again to the material position and signal 1 to the onsetter.
- p) Onsetter open the shaft gates, remove the safety devices on the station and unload the first material car.
- q) Onsetter close the shaft gates and replace the safety devices on the station, and position the cage for the next deck, by means of a decking signal 1 or 2 signal.
- r) Onsetter remove safety devices and open the shaft gates to unload the second material car.
- s) Onsetter close the shaft gates and replace the safety devices on the station. Check that all persons are clear from the compartment and the cage.
- t) Onsetter signal 2 pause 2 to the driver and wait for the next load.
- u) On completion the onsetter signal 8 pause 8 to the driver as well as the banksman.
- v) **Only on the first trip it is necessary for the onsetter to signal 8 to the driver. The next trip arrived on the station the onsetter stop the driver with a signal 1, and the driver acknowledge with a signal 1.**

**Material is normally conveyed in a conveyance where it can be loaded without containers, or in material cars. The procedures and actions involving the hoisting of material in an incline shaft will be explained in model PCT.**

**When the material is too long, or bulky, to be conveyed in a conveyance, it is usually slung below the conveyance. Both methods when hoisting material will be explained below.**

**HOISTING MATERIAL CARS IN A VERTICAL SHAFT**

Assuming that material cars are to be hoisted from a certain level, the following procedure will be followed. To clutch and serve the banksman and the onsetter at the same time could result in accidents.

The safe way of clutching is to serve the banksman and onsetter separately.

After receiving the necessary signals position the top conveyance with the roof of the cage level at the bank.

Test both brakes separately and if satisfactory, Unclutch the top conveyance at the bank. Raise or lower the bottom conveyance to position the top deck of the cage level at the required station.

At all times clutch to serve the onsetter first. It will be necessary for the onsetter to ring the clear signal 2-2 to allow the driver to serve the banksman before signalling the conveyance to the bank. (Remember to comply with the requirement of regulation 16.86.2 and 16.86.6)

**Procedures to serve the banksman and onsetter simultaneously (Unsafe way).**

The driver must: -

Act on the clutching signal, material signal and a clear signal from the onsetter.

Receive a clear signal from the banksman. Heard the signals on the tell tale bell.

Position the top conveyance with the bottom deck level at the bank.

Test both brakes separately and if satisfactory, unclutch the top conveyance at the bank.

Position the bottom conveyance with the top deck level at station.

Clutch in and test both brakes separately and if satisfactory,

Signal the clutching completed signal 4-4-4 to the onsetter.

Acknowledge the signal 8 from the onsetter.

Pause a few seconds and signal 1 to the onsetter.

The signal 1 allows the onsetter and his gang to have access to the conveyance for the purpose of loading or unloading material. The onsetter and his helpers will then load the empty material cars into the conveyance.

The driver must: -

Receive the signal 4-1 or a signal 1 (position next deck or approved decking signal) from the onsetter.

Raise the conveyance until the next deck is level with the station.

Stop the winder on the signalled 1 from the onsetter.

Signal 1 to the onsetter.

The onsetter and his helpers will then load the material car/cars into the second deck. The same procedure will be followed until the conveyance has been loaded. (Multi deck conveyances)

The driver must: -

Reply the bank signal from the onsetter.

Await a signal 1 from the onsetter.

Apply sufficient power to raise the bottom conveyance to the bank, ease off the brake lever and check that the drums are moving in the required direction.

Stop on the signal 1 from the banksman, when the top deck of the ascending conveyance is level at the bank.

Stop and reply the signal 1 from the onsetter when the bottom deck of the descending conveyance is level at the station.

Acknowledge the signal 8, pause a few seconds and signal 1 to the banksman.

The banksman will now off-load the conveyance and the onsetter will load material cars into the bottom conveyance. It must be stressed that not all mines permit the simultaneous loading and unloading of material with the conveyances clutched top deck at the bank and the bottom deck level with the station. (Regulation 16.86.2 must be complied with at all times).

The driver must: -

***Receive the signal 1 from the banksman (or approved decking signal).***

Receive the signal 2 from the onsetter (or approved decking signal).

Position the conveyances "next deck" for the banksman and the onsetter.

Reply the signal 1 to the banksman and the onsetter respectively.

Continue to follow the above procedures until all the material cars have been hoisted from that level.

The driver must: -

Acknowledge the signal 8-8 from the banksman.

Acknowledge the signal 8-8 from the onsetter.

The driver will act on any further signals receive to continue winding.