BELT CONVEYOR MANUAL

SECTION 1 – PLANT DESCRIPTION

1.1.5 It is of the utmost importance that the Operation of all Mechanical Systems, Equipment and Components is at all times strictly in accordance with the Design Capacities and Duties.

1.2 PROCESS DESIGN CRITERIA

Feed Material:

- URANIUM ORE

Site Temperature min/max:	18/45 °C
Material Bulk Density:	1.60 t/m^3
Required throughput:	60,000 t/day
Agglomeration throughput:	500 t/hr
Conveyor System throughput:	3,500 t/hr
Feed top size:	38mm (P80 30mm)
Moisture Feed to Agglomeration Drum:	3%
Moisture Discharge from Agglomeration Drum:	8%
Agglomeration Water:	55.96m^3/hr
Power Voltage:	550 V

1.3 PROCESS DESCRIPTION

1.3.1.1 Ore is mined from the shallow open pit, either by digging the 'soft' rock or by blasting when required. The ore is picked up by large excavators and loaded into dump trucks.

1.3.1.2 The Run of Mine ore is transported to the primary tip area where first phase crushing on the ore is done, reducing the ore to a particle size which may be transported by means of a troughed conveyor belt.

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1.3.1.3 The crushed ore is then conveyed to the secondary crushing phase where the ore will be reduced to 38mm and less, suitable for the heap leaching process.

1.3.1.4 The minus 38mm material is conveyed and stockpiled, creating a 1500 ton live buffer.

1.3.1.5 Pan feeders withdrawal ore from beneath the stockpile and feed onto a conveyor at a rate of 500 t/hr.

1.3.1.6 This conveyor feeds the Agglomeration Drum (SP360-S100).

1.3.1.7 The Drum discharges onto a complete mobile stacking conveyor system, including Grasshopper conveyors, Transverse conveyor, Stacker Feed conveyor and Stacker conveyor complete with an on board Stinger conveyor.

1.4 AUXILIARY SERVICE

The Ø2,7 x 9m long Agglomeration Drum. Operating at 500 t/hr of -38mm ore between retention times of 30 to 60m seconds. Reference drawing number SP360-S100.

1.5 DESCRIPTION OF CONVEYORS:

The two Trekkopje Grasshopper Stacking Systems are each 1350mm wide, sized for conveying 3500 MTPH at 3 m/s and stacking -38mm ore up to 12 meters high.

The system is fully interlocked with start up commencing with the Stacker / Stinger then stacker feed then Transverse followed by each Grasshopper in sequence.

Power is by 11kV H.T flexible cable feeder to each conveyor on board 11kV / 550V transformer which then powers the drive motors. Each machine has H.T couplers to facilitate moving each machine when required. The conveyors have to be stopped when decoupling and the H.T cable and coupler have a "pilot" core which in the case of attempting to decouple under power trips the 11kV supply.

Each of the two Stacking Systems consists of:-

- 17 off 1350mm wide belt Grasshoppers – CV 101
- 1 off 1350mm wide belt Transverse – CV 201
- 1 off 1350mm wide belt Stacker Feed – CV 300/CV 301
- 1 off 1350mm wide belt Stacker – CV 400/CV 401 c/w
  1350mm wide belt Stinger – CV 402

1.5.1 GRASSHOPPER CONVEYORS:

These are 1350mm wide, 38 meters long wheel mounted towable conveyors each powered by 2 x 75kW drives.

Each Grasshopper has to be positioned so that it receives ore centrally in its feed hopper and discharges centrally into the next conveyor feed hopper.

Each Grasshopper has its own MCC mounted on the conveyor and has the following safety switches:-

- Pull wire.
- Underspeed.
- Belt alignment.

1.5.2 TRANSVERSE CONVEYORS:

These are 1350mm wide, 29 meters long wheel mounted towable conveyors each powered by 2 x 75kW drives.

Each Transverse has to be positioned so that it receives ore centrally in its feed hopper from the last Grasshopper and discharges centrally into the Stacker Feed conveyor feed hopper.

Each Transverse has its own MCC mounted on the conveyor and has the following safety switches:-

- Pull wire.
- Underspeed.
- Belt alignment.

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1.5.3 STACKER FEED CONVEYORS:

These are 1350mm wide, 44 meters long wheel mounted and powered crawler mounted conveyors each powered by 1 x 90kW drive.

Each Stacker Feed has to be positioned so that it receives ore centrally in its feed hopper from the transverse and discharges centrally into the stacker conveyor feed hopper.

Each Stacker Feed has its own MCC mounted on the conveyor and has the following safety switches:-

- Pull wire.
- Underspeed.
- Belt alignment.

The crawler power unit is hydraulically powered and is manually operated on the machine. As the heap is built, the Stacker Feed indexes back up the leach pad towing the stacker with it.

1.5.4 STACKER / STINGER CONVEYORS:

These are 1350mm wide, 40 meters long Stackers each with a 10 meter extendable Stinger wheel mounted towable conveyors. Each Stacker conveyor is powered by 2 x 75kW drives. The Stacker / Stinger has hydraulically powered slewing utilising wheel drive motors and the stinger extend operation is hydraulically powered at the machine.

When being towed up the leach pad, the slew wheels are hydraulically retracted allowing the tow wheels to sit on the leach pad.

Each Stacker / Stinger has to be positioned so that it receives ore centrally in its feed hopper and discharges centrally into the next conveyor feed hopper.