

Romar Magnoveyor System Process

System Objective

The objective of the Magnoveyor Swarf Handling System is to remove 100% of metal swarf contamination from milling fluids during casing section milling operations and return it to the installations mud system to be re-used.

This objective is achieved using a combination of magnetic and mechanical technology.

Basic Outline

The Milling Fluid c/w Swarf is diverted from the riser via a “T” spool which is inserted by the rig crew prior to the start of milling operations.

The fluid stream then flows via a temporary flowline (Hose or Open Fibreglass) to the entry point in the Magnoveyor system.

The fluid then passes through a 3 stage cleaning process before exiting the system and returning to the installations mud system. This will be achieved either by gravity back to the mud flowlines or by using the Romar Zone 1 Electric pump units.

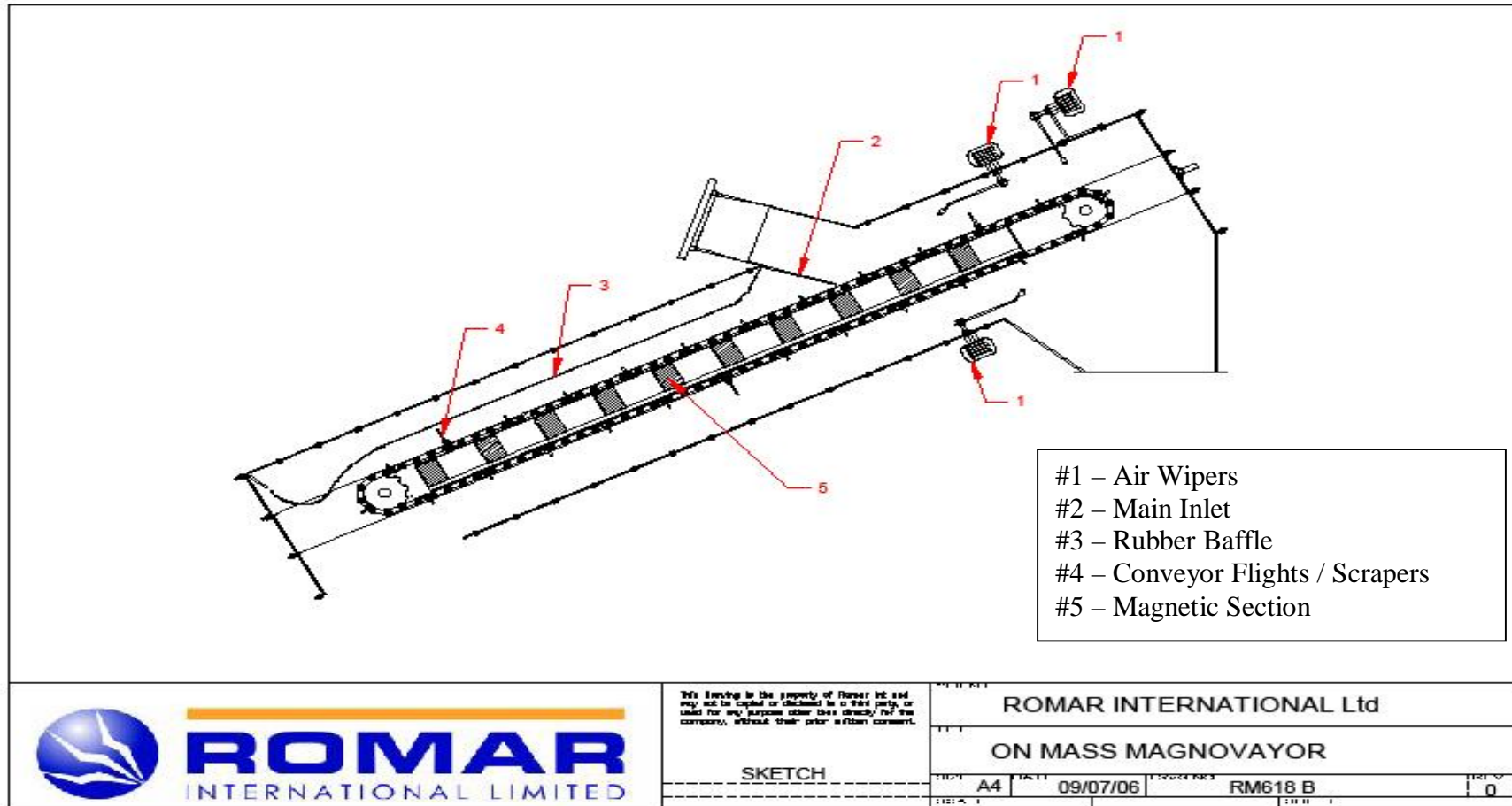
Cleaning Phases Breakdown

Phase 1 – When the milling fluid c/w swarf enters the system it enters the On-Mass Magnoveyor. The On-Mass Magnoveyor has been designed to remove the largest pieces of swarf as well as any cement, Well bore formation or pieces of large metal such as casing collars or pieces of centralizer.

The On-Mass Magnoveyor has a central core of static magnet which attracts the swarf when it enters the chamber. The moving conveyor flights then scrape the swarf (and any other large particles) to the top of the chamber which has no magnets at the exit point so that the swarf is then discharged into a skip via an adjustable chute.

The On-Mass Magnoveyor is positioned at an angle so that while the swarf travels upwards to exit into a skip, the milling fluid flows down the chamber and exits at the bottom of the On-Mass Magnoveyor. The milling fluid then enters the integrated mud tank for the 2nd stage of cleaning.

Phase 1 of the process will remove approximately 90% of the contamination in the drilling fluid.



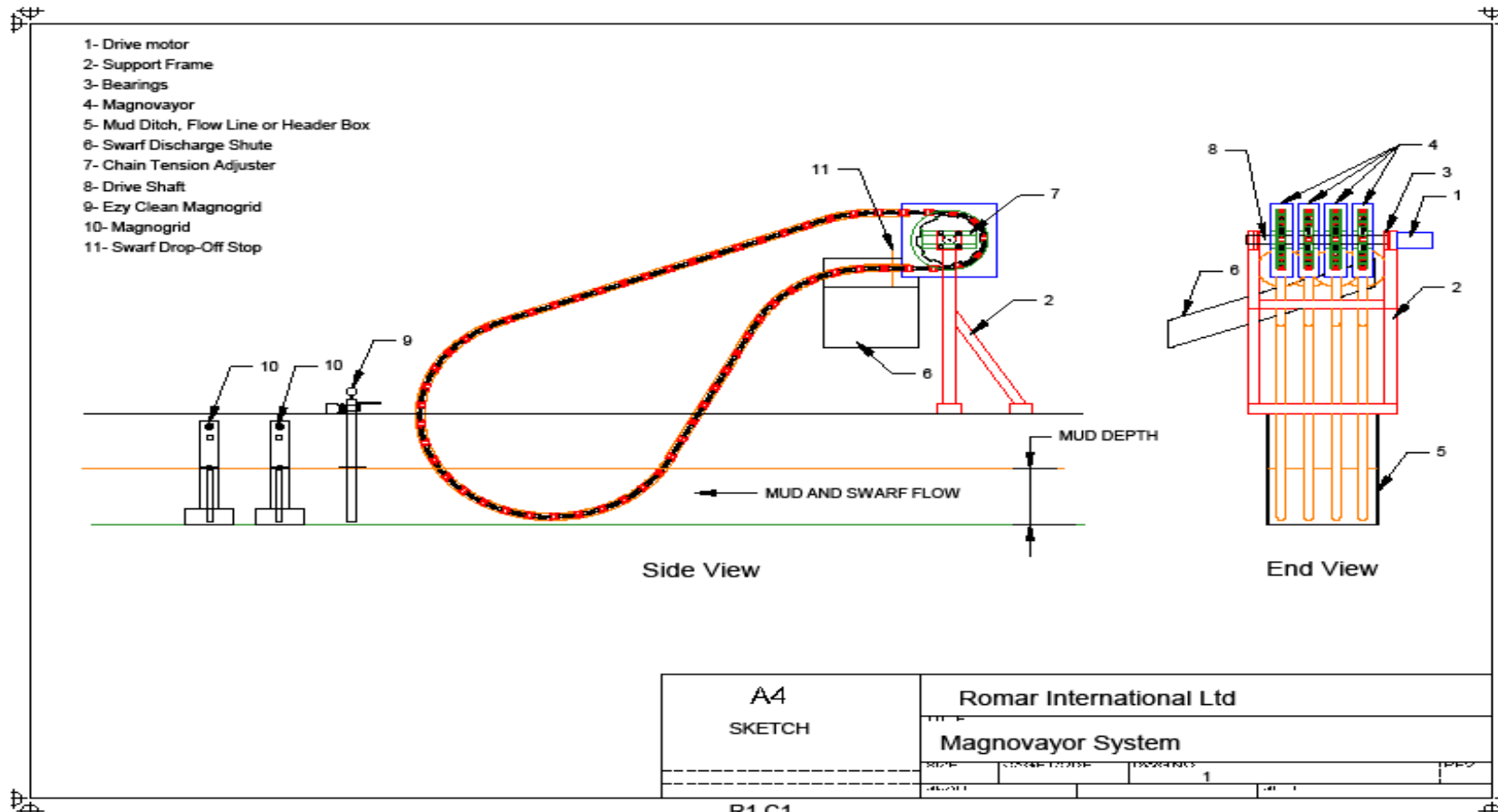
Phase 2 – Once the milling fluid exits the On-Mass Magnoveyor it enters the mud tank which contains the Chain Link Magnoveyors (6). The Chain Link Magnoveyors form a magnetic barrier which covers the full depth and width of the mud flow which must pass by them to exit this tank.

Again this system is fully automated and works on the principle that the magnets are on the inside of the pipe and linked by chain, this assembly is then driven by a small hydraulic motor which rotates the magnets inside the pipe. The swarf is attracted to the magnets and is then moved round to the discharge point at the top of the pipe. Once it reaches this point it will drop of and fall into the skip via an adjustable chute.

This phase of the process is designed to remove any pieces of swarf that have not been removed by the On-Mass Magnoveyor as well as very small particles of metal that are suspended in the milling fluid.

Phase 2 of the process will remove approximately 8% of the initial contamination, leaving the fluid with only very small particles of metal suspended in the Milling Fluid.

The Milling Fluid then exits this tank and flows over a weir to an integrated flowline to the next phase of cleaning



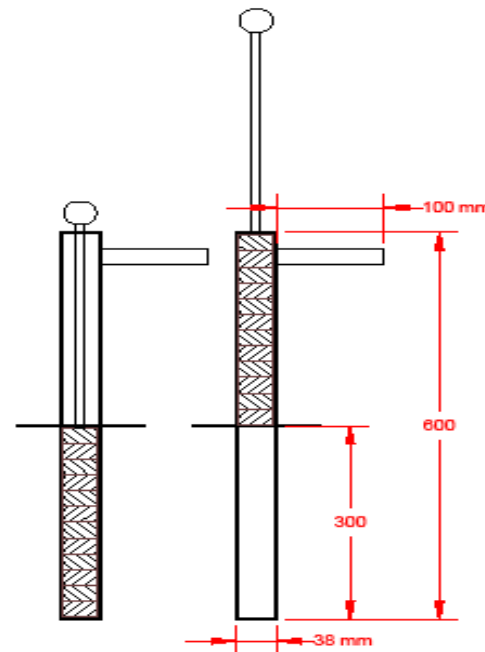
Phase 3 – Once the Milling Fluid enters the integrated flowline section of the system it has to pass by 3 rows of Ez-Clean ditch magnets. Once again the full depth and width of the mud flow is covered by a magnetic barrier.

At this stage the fluid only has a very small percentage of metal contamination left suspended in it and the Ez-Clean Units provide a final polish to the fluid prior to the Milling Fluid exiting the Magnoveyor System. The metal recovered at this stage will resemble a paste rather than swarf.

The Romar Engineers monitor the Ez-Cleans and remove them and discharge the metal by pulling a handle which slides the magnets inside the Ez-Clean tube so that the contamination drops into a bucket. In standard operations the Ez-Cleans will require to be cleaned approximately every 30 minutes.

Phase 3 of the process has now completed the recovery of all metal contamination from the Milling Fluid and the fluid exits the system. When the drilling fluid leaves the system it can either flow by gravity back into the installations mud system or if required be pumped using the Romar Electric Pump units.

As a final check on the quality of the Milling Fluid a set of Magnogrids should be located in the installations flowlines so that the Rig Crew and Mud Engineers can monitor the quality of the fluid as it is returned to the pits.



A4	Romar International			
	38mm Quick Clean Rod			
"Confidential"	SIZE	QUANTITY	DATE	BY