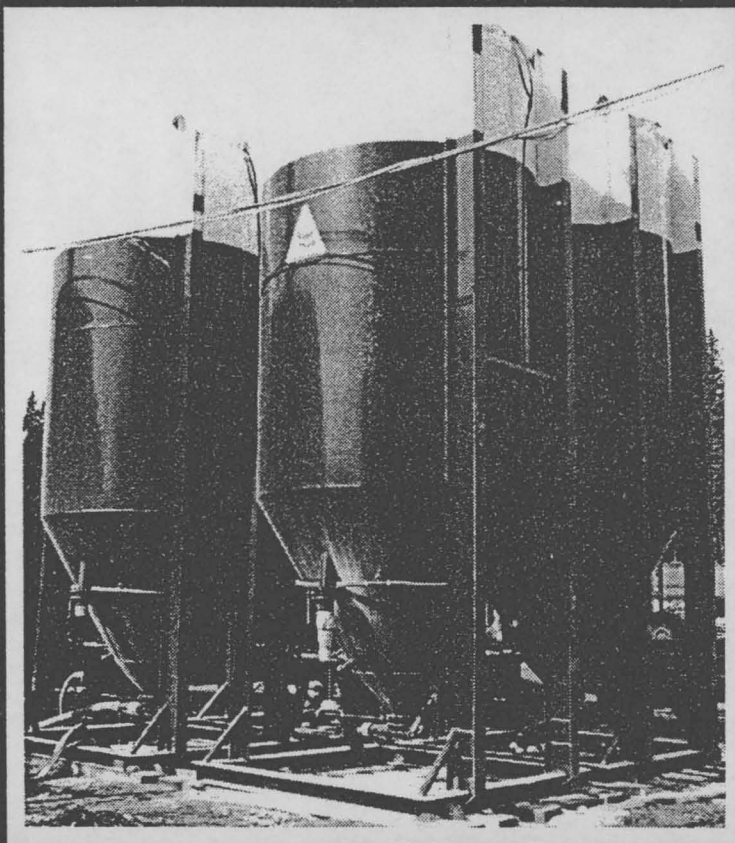


Bulk Barite Systems

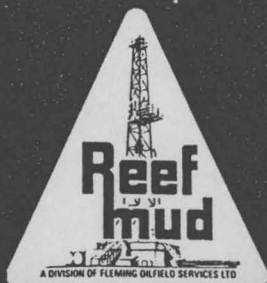


Reef Mud is pleased to offer a field proven pneumatic Bulk Barite system which can deliver material at controlled rates up to 800 lbs. (360 kg) per minute.

The system has been used on several deep, sour critical wells, on well kill operations, and on wells where fluid densities in excess of 1900 kg/m have been formulated.

A metering pod is incorporated into the system for fast accurate additions of Bulk Barite.

A Normix hopper/high pressure pumping unit has been used in conjunction with this system on well kill operations (see Figure #2).



REEF MUD

DIVISION OF
FLEMING OILFIELD SERVICES LTD.

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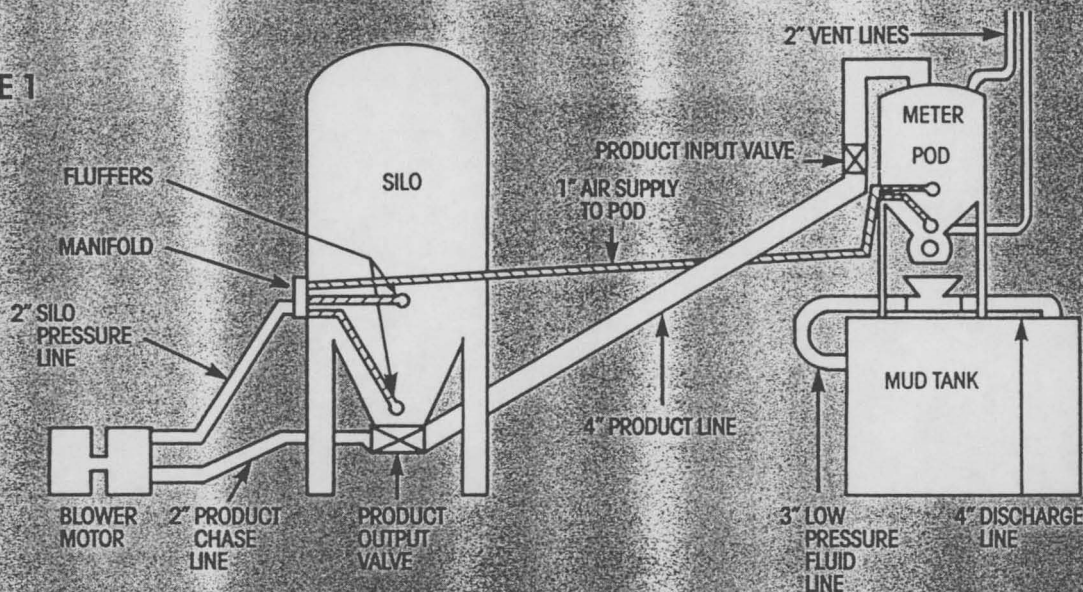
Operating Procedures

BEFORE STARTING TRANSFER

Make sure the following items are checked:

- Fluffer valves are opened on the silo
- Vent lines are closed on silo
- Product valve is closed on silo
- All hoses are properly coupled
- 4" input on pod is open
- Vent lines on pod are open
- 2" chase line is closed
- 2" fluffer line is open

FIGURE 1



When Meter Pod is able to be placed on top of Mud Tank, a low pressure (40 - 70 psi) 3" fluid line is used to transfer product from Meter Pod to Suction Tank. A 1" choke bean is used in the Meter Pod hopper.

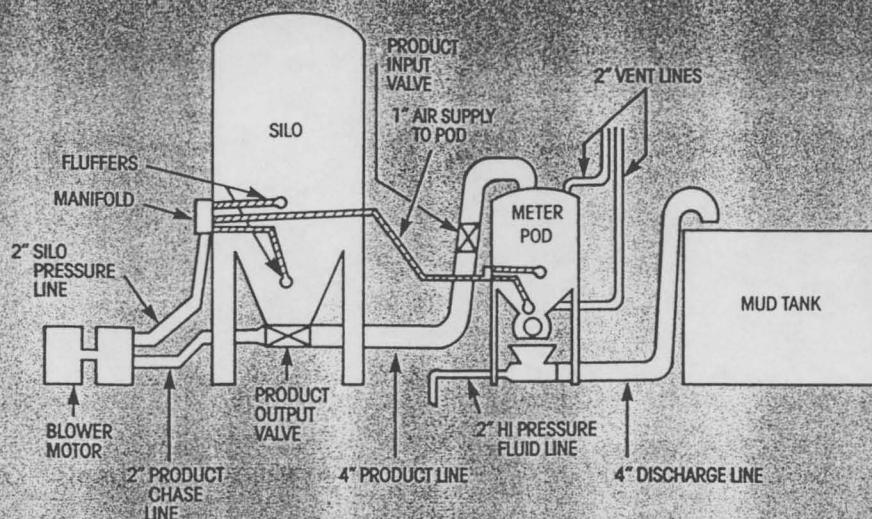
** High mixing rates require a high volume mixing hopper.*

STARTING TRANSFER

Follow this procedure in the order that the steps are listed:

- Start the blower motor
- Engage the blower and increase the RPM to 2500
- Pressure the silo up to 14 - 15 PSI (through the fluffers)
- Open 2" chase line on the silo to 75%
- Open 4" product line on the silo to the full open position (slowly)
- Start the rotary metering valve when the pod is approximately $\frac{1}{2}$ full. Set the speed to desired rate of delivery.

FIGURE 2

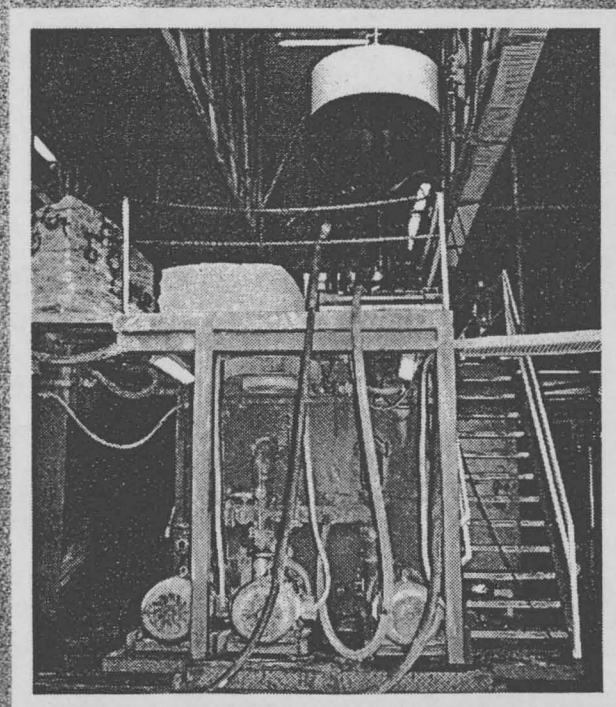


When Meter Pod is on ground a Hi-pressure (750 - 1000 psi) 2" fluid line is required to move product from Meter Pod to top of Mud Tank. A $\frac{7}{8}$ " choke bean is then used in the Meter Pod hopper.

STOPPING TRANSFER

Follow this procedure in the order also:

- Close 4" product line
- Let the blower clear the product line
- Idle down the blower motor and disengage the clutch
- Relieve the air pressure in silo
- Empty the metering pod
- Shut off the metering valve on the pod.



NOTES:

- When starting to transfer: Open the air line first then open the product line.
- When shutting down the system: Close the product line first then close the air line.
- Some adjustment will be needed to maintain constant air and product levels once desired rate of transfer is established.
- When system is shut down, do not leave the silo pressurized for long periods of time.

System Mixing Capacities

- With pod 15 - 20 feet high (if pod is on top of mud tank) 70 - 80 feet of 4" product line with constant slope from silo to pod (with 15 psi line and silo pressure). Approximate transfer rate 550 - 600 lbs./min.
- When distances and height become shorter transfer rates will increase.
ie: If pod is 15 - 20 feet high with 35 - 40 feet of product line transfer rate will be 700 - 800 lbs./min.
- Maximum output of meter pod is 800 lbs./min. at present sprocket ratio on setting 10.
- System without pod and 4" product line set directly into hopper can transfer 1000 - 2500 lbs./min depending on length of hose. A high-pressure hopper or connection to a Normix system is required for adequate mixing of the Barite into the mud system at these elevated rates

Mobilization Requirements

For delivery of the Bulk Barite system to a lease, a picker truck and "gooseneck" trailer are required to transport and set up the following:

- Two bulk storage silos
- One metering/mixing pod
- One blower & motor
- Matting

For additional silos a tractor/trailer unit is required.

An operator is required for initial set up.

The operator is also available for actual operation and maintenance of the system upon request.



Equipment Profiles

METERING POD:

Weight: 1000 lbs. (450 kg)
Capacity: 4950 lbs. (2250 kg)
with Deckerweigh scale
Rotary Valve: 110 electric with variable speed
Input Line: 4"
Vent Lines: Two 2"
Dimensions: 10' high, 4' wide, 4' long approximately

STORAGE SILOS:

Capacity: 4600 kg (1150 sacks Barite)
Dimensions: 20' high, 7' wide, 7' long approximately
Output Line: 4"
Vent Lines: 4"
Fill Lines: 4"
Air Supply: 2"
6 Units Available

BULKERS: (Transport Trailers)

Capacity: 23000 kg
Weight: 14900 kg
GVW: 38000 kg
Blowers: Gardner Denver-290 cfm
Engines: Duetz diesels with rig savers
2 Units Available

PORTABLE BLOWER MOTOR:

Weight: 450 kg
Engine: Duetz diesels with rig savers
Blower: VMS 320 cfm at 2500 RPM
Air Outlets: Two 2"
3 Units Available