

On the Weston disposal well pad there are six 1,000bbls tanks and 1 over flow pit with the capacity of holding 3,000bbls.

On December 29th @3:26pm the Weston 24-23 WD sent out an alarm reading 89.77ft which was a defective alarm with the tanks only being 30ft tall. A lease operator was dispatched to the Weston 24-23WD to verify that the tanks were not overflowing. Lease operator verified the tanks were at 6ft and the alarm was false.

On December 31th @ 12:52am the Weston 24-23WD started sending out alarms again at 89.77ft. It sent out a total of 6 alarms. An electrician was sent out to location to look over alarms and verify tank levels. Tanks were again at 6ft. The electrician replaced bad fuse and sensors were reading correctly. Later the fuse shorted out and put the pump into recirculation mode and shut the valve going to the injection well causing the tanks to start to fill. After the fuse shorted it did not send out any high level alarms.

The Weston 24-23WD normally disposes an average of 4,000bbls per 24hr period. At 6ft that would be 199.8bbls in each tank 1,198bbls total in all six tanks. With 4,000bbls going into the tanks and not being disposed this would fill the tanks 20ft bringing the tanks to 26ft in a 24hr period with the 6ft that was already in the tanks. The tanks overflow at 29ft. this would give us 599.4 bbls and about 3.5hrs more before they start to overflow into overflow pit.

With overflow pit being capable of holding 3,000bbls it would take an additional 18hrs.to fill before it overflowed.

On January 2nd @8:30am the lease operator arrived at the Weston disposal and discovered the overflow pit had ran over. He isolated the tanks and opened the injection well and called for water trucks. After getting the well lineout he contacted Production and reported the spill. With the time line that was available we calculated 500bbls of produced water with sheen.

After investigating on how the sheen got into the tanks we discovered that a new drip truck driver that was not properly informed had pulled 120 gallons of seal fluid from wellhead compression and then the driver unloaded into the Weston 24-23 WD tanks.

PREVENTATIVE MEASURES:

- Redundant sensors:
 - There is a capability to install a secondary high level sensor and wire it into the PLC in a configuration that would allow it to switch to a secondary circuit in the event of a failure on one or the other.
 - Installation of a pit monitor for the secondary pit. This will put in place another system which can alarm in the event of an overflow.
 - Training of multiple techs on the operation, electronics and sensing systems of the automated WD. This will ensure timely and better troubleshooting.

- Communication with water truck drivers:
 - Production foremen informed all water truck drivers of the proper locations and protocols for oily water. A quarterly meeting with the water truck drivers will take place as a reminder. Water truck companies are asked to inform production foremen of personnel changes so that communications can be made with new or new-to-job drivers for proper locations and protocols.

- Labeling, schematic diagrams, SOP:
 - Increase the amount and type of labeling on the process valves, fuses (what amperage, etc.), flow, etc. This will allow personnel to visually see what each component does and specific instructions for various situations.

 - There is a schematic diagram inside the injection pump building, a better “user-friendly” version will be made and installed inside the building in a prominent place. This will allow personnel to see how the operation works and have a ready reference as needed.

 - There is an existing Standard Operating Procedure in place for the Weston 24-23 WD and the San Pablo WD.

 - Install locks on all lines capable of dumping into with serialized keys. Only given out to the 5 water truck drivers and 2 lease operators.