

WEFTEC

Operations Challenge

2005 – 2009 Maintenance Event

Introduction

The purpose of this event is to test the skills of a maintenance/operating team to respond to a lift station pumping outage. A Godwin Dri-Prime® model CD100M 4" diesel driven solids-handling trailer mounted pumpset will be used to respond to the need for an emergency back up pump at a lift station. The maintenance portion of the WEFTEC Operations Challenge is focused on the routine maintenance and operation of the CD100M 4" pump in preparation for use at a lift station.

Premise

Pump 1 at a duplex lift station has shut down due to excessive amp draw. Pump 2 is still operating properly, but the decision has been made to place the Godwin Dri-Prime® pump at the station as a back up to Pump 2, therefore allowing Pump 1 to be removed and repaired. The Godwin Dri-Prime® pump will be connected to the lift station and will be operated via two float controls in the wet well in the event of a failure to pump 2.

Prior to positioning the Dri-Prime® pump at the station, routine maintenance must be performed on the CD100M 4" pump to ensure proper operation while at the lift station.

The WEFTEC Operations Challenge will consist of performing routine maintenance on the Dri-Prime® pump, positioning it at the lift station and installing suction and discharge hoses from the pump to the lift station inlet manhole and flanged force main tie-in gate valve. Automatic float controls will be connected to the Godwin Dri-Prime® pump to allow for unattended operation (starting and stopping).

Important

Reliable running of portable pumping equipment is the goal, so caution must be exercised to avoid damage to the pump, engine or any parts associated with the challenge. Deductions will be made for damage to pump, engine parts, hoses, fittings or any other equipment used in the challenge.

A skid will be provided containing the wet well opening, discharge tie in point and lift station control panel.

NOTE:

A 20 minute time limit has been imposed for the completion of all required tasks. If at the 20 minute mark, teams have not progressed through at least task number 32, the event will be stopped and penalties assessed for all uncompleted tasks. This will include the completion of any required panel or worksheet tasks.

Introduction

During an initial 5-minute period, the team will have an opportunity to ask any questions, look over the unit and check the toolbox for its contents. The team will be allowed to pre-sort the tools and remove them from their individual pouch or tray, but the tools must stay within the toolbox until the event begins. Specific lockout locks and tags will be assigned to the team member designated as the Safety Supervisor during this 5-minute preview period. The event begins with all team members behind a designated starting line. Once the event has begun, the toolbox, tray, and various spare parts may be moved to the pump area. The electrical controls of lift station pump #1 must be tagged out before any team member may touch the discharge point of the station. Furthermore, the discharge tie in gate valve must be closed and locked via a bonnet and multiple lockout hasp prior to any team member touching the discharge tie in piping. Any tools used on the lift station must be removed prior to the completion of the event.

Other items to note are as follows:

- Appropriate safety attire such as steel toe boots, hardhats and safety glasses must be worn.
- Safety gloves must be worn (latex gloves are acceptable).
- Any reason to stop the event due to equipment failure could result in a restart from the beginning. Also, any reason to stop the event due to abuse or misuse of tools and equipment could result in a restart from that point or as decided by the head judge. Depending on the situation, penalty time could be added.
- Failure to perform any particular task will result in severe penalties.
- Upon finishing their event, all team members are asked to remain outside of the challenge curtain area until the judges have finished scoring and evaluating the team's performance. When finished, the judges will review the event and scoring results with the team captain.
- Judges are asked to supply the team captain with their raw time in minutes and seconds. The event scorekeeper will do actual tabulation, conversion and posting of the finished time.

Operations Challenge Maintenance Event Required Task Summary

Engine Servicing

1. Disconnect and clean battery terminals.
2. Reconnect positive and negative battery cables.
3. Check oil level in engine crankcase using dipstick.
4. Drain oil from diesel engine.
5. Replace oil filter on diesel engine.
6. Fill crankcase with engine oil.
7. Bleed primary fuel filter.
8. Replace fuel filter on diesel engine.
9. Verify fuel level in tank and dye check.
10. Replace air filter on diesel engine.
11. Bleed air from fuel system.

Pump Servicing

12. Check mechanical seal oil level on pumpend.
13. Grease pump bearing brackets (10 pumps).
14. Remove and inspect venturi assembly.
15. Remove braided air compressor outlet line.
16. Remove ejector housing on pumpend.
17. Inspect and clean ejector housing screen.
18. Check ejector ball in ejector housing.
19. Reassemble ejector housing.
20. Reinstall venture assembly.
21. Reattach air compressor outlet line.
22. Replace air compressor air filter.
23. Remove and inspect Non Return Valve (NRV) ball and seat.
24. Inspect volute and NRV drain valves; ensure both are in closed position.

Trailer Inspection

25. Inspect trailer hitch and safety chains.
26. Check wheel bearings and lug nuts.
27. Check air pressure in tires.
28. Check operation of jack stand.

Vacuum pad test

29. Perform vacuum test on pump

Pump hookup at lift station

30. Lock out Pump 1 at lift station.
31. Lock out 4" gate valve at force main tie-in.
32. Position Dri-Prime® pump at lift station and lower rear jack stand.
33. Install discharge hose from pump to tie in point.
34. Install suction hose from pumpend to tie in point.
35. Position automatic control floats.
36. Plug float control panel wire into portable pump control panel and test.
37. Remove lock bonnet on lift station discharge tie in point and open valve.
38. Place safety tape around manhole opening.
39. Communicate to team that task has been completed.
40. Return to designated start line and signal completion.