VIET NAM OIL AND GAS GROUP
BIEN DONG PETROLEUM OPERATING COMPANY

OPERATIONS PROCEDURE

CRITICAL FUNCTION TEST FOR DELUGE SYSTEM

Procedure No: BD-OPS-PRO-P-1017-0

Rev	Date	Revision Description	Originator	Reviewed by		Approved by
0	17 May 13	Issued for implementation	N T Nghia	D.OIM	OIM	L.V.Dao

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1. PURPOSE

The purpose of this Operating Procedure is to explain the deluge valve operation and describe how to test the deluge valve's operation.

2. SCOPE

This document covers the state of readiness and manual operation of deluge skid on PQP-HT and WHP-MT1

3. REFERENCES

1. BD-HSE-X-P-0001	HSE Management System
2. BD-HSE-X-P-0901	PTW
3. BD1-20-205-R01-IOM	Deluge skid & DIFFS System
4. PQP-20-205-M09-DV-PID	P&ID Deluge Valve Skid.

4. DEFINITIONS

1. CCR	Centre Control Room.
2. FGS	Fire and Gas System

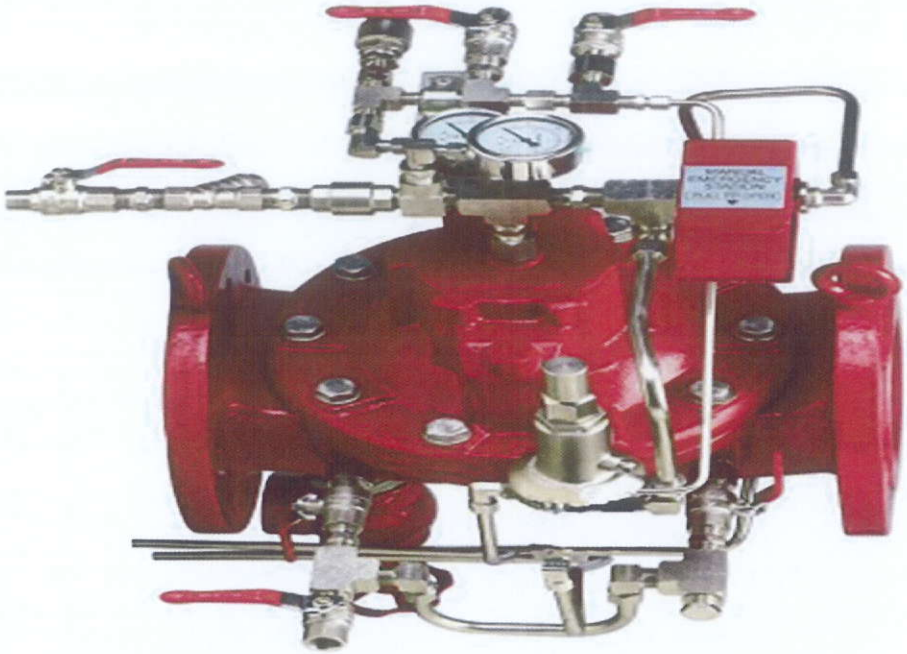
5. SAFETY AND/OR ENVIRONMENTAL REQUIREMENTS

5.1 The Safety Management System is a part of Safety Case for Bien Dong POC
5.2 The Operating Procedures are put in place to ensure safety on the Bien Dong Offshore
5.3 Work Permit system shall be strictly adhered to for any maintenance work

6. TASK/ACTIVITY

6.1 Deluge Valve General Description

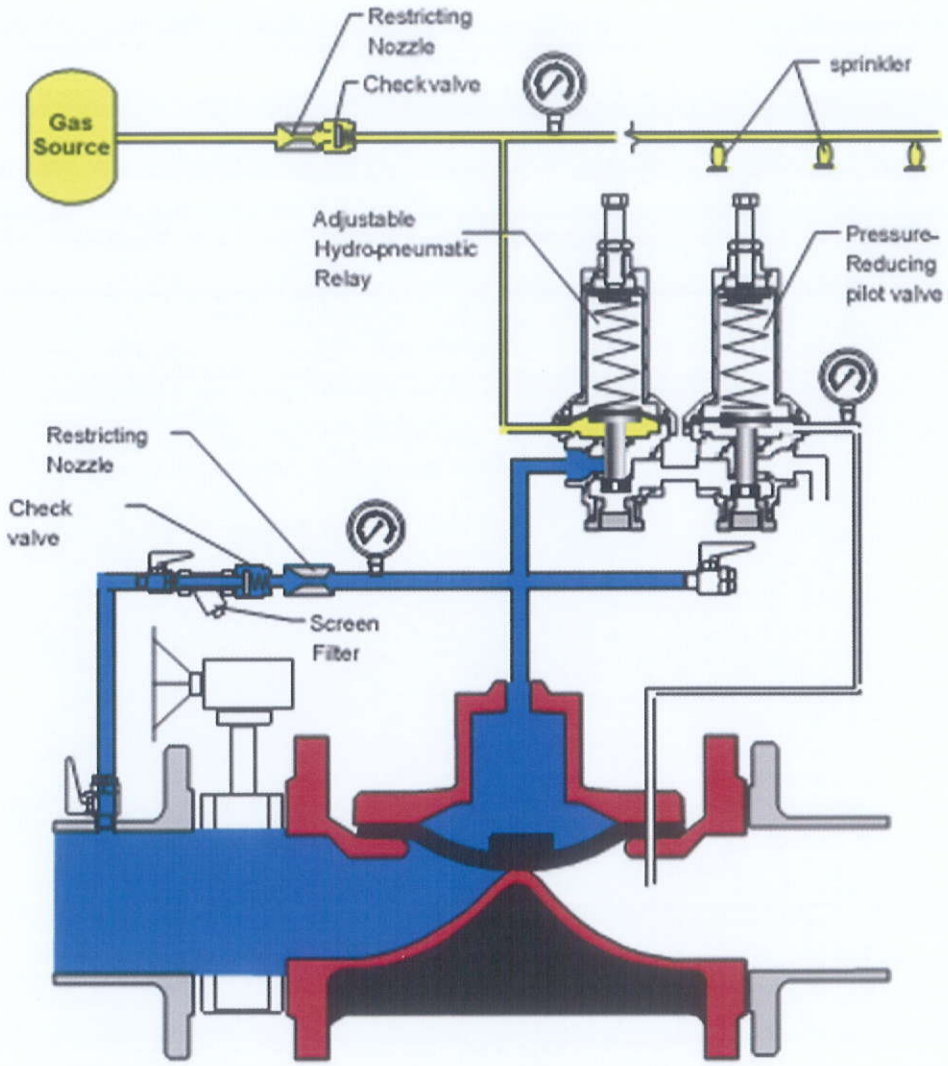
Deluge valve model DE/PORV is a weir globe type hydraulic valve, activated automatically or manually. The valve is mounted on the upstream side of a fire extinguishing sprinkler system, preventing flow into the system at its "Ready" position.



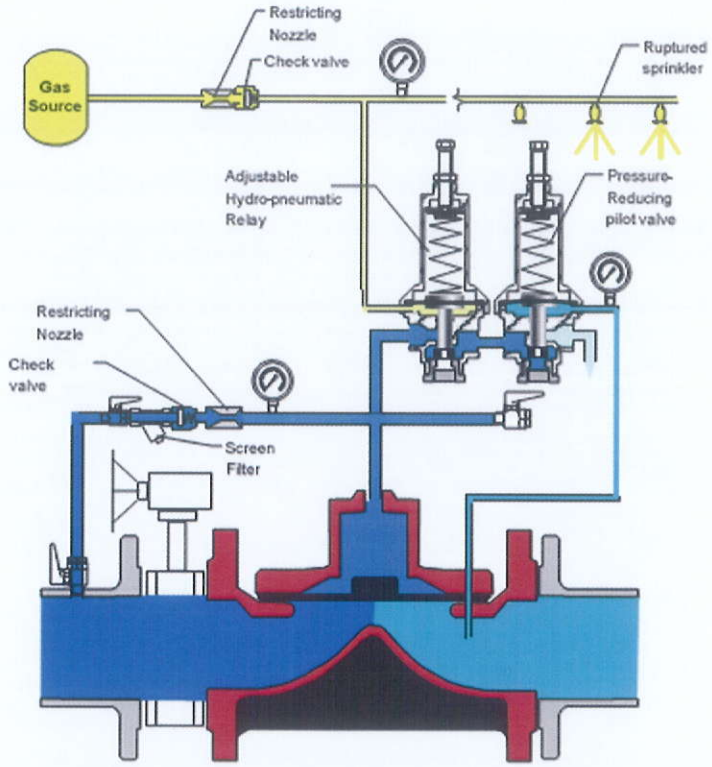
- The valve opens instantly on when a pressure drop in an air pressurized system, sensed by the relay valve.
- Resume of the detection line pressure will cause re-closure of the valve.
- In the case of failure of the automatic activation system, manual emergency activation is possible.
- A downstream outlet, which is an integral part of the main valve control trim, can be connected to a hydraulic alarm bell or pressure transmitter.
- A 2" outlet on the upstream side of the main valve, enables draining of the valve inlet side.
- A ½" low pressure relief valve is mounted on the downstream side of the valve to prevent the filling of the sprinkler system as a safety precaution against faulty sealing of the main valve. This relief valve closes instantly when the main valve is activated by the energized the solenoid valve or manual command
- A 1/2" screen filter is assembled on the pressure line which supplies the main valve control trim, to ensure clean operating water preventing clogging

6.2 Deluge Valve Principle Operation Modes

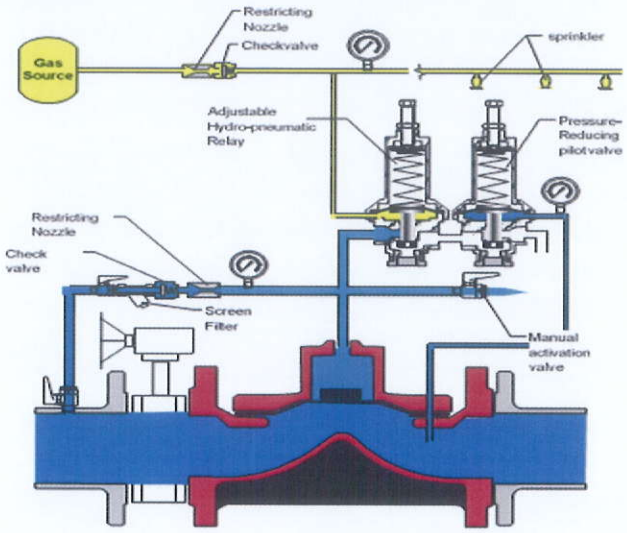
- **Valve Ready**

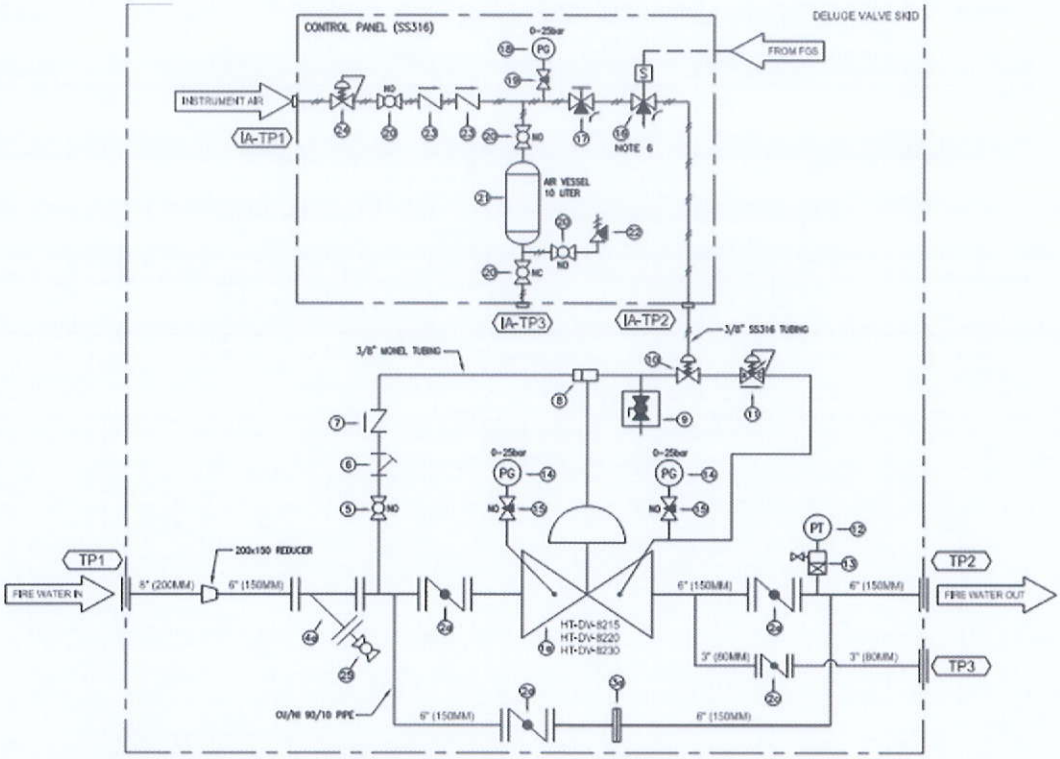


- **Valve Activation by FGS**



- **Valve Manual Activation**





6.3 Monthly dry testing for Deluge Valve.

The deluge skids on PQP-HT and MT1 are tested monthly one by one to ensure they are ready in service. Any defective equipment must be report to production supervisor and replace new one immediately.

6.3.1 Testing the valve on site at deluge valve skid.

- Raise a cold work permit for the Deluge valve testing
- Switch the fire pump to off position to avoid unwanted running of fire pump.
- Inform CCR the deluge skid will be tested so the fire pump will be running
- Close 6" outlet butterfly valve of deluge valve (2a or b)
- Make sure 3" overboard valve fully close (2c)
- Open deluge valve manually from deluge valve skid by two ways:
  - Close valve on instrument air supply from manifold and top of 10 liter air bottle. Push button on manual operated instrument air valve (17) to release instrument air pressure to open operated relief valve number 10 slowly and allow water in side diaphragm chamber is slowly released and opening the deluge valve
  - Close valve on water supply to Deluge Valve (5). Open manual emergency release valve (9) to release water from diaphragm chamber to open deluge valve.
- Confirm the deluge valve opening by pressure gauge (14) downstream of valve; pressure gauge must reach to fire water ring main pressure. Once confirmed valve is working proper then proceed to next step below to reinstate the valve.
- Close 6" inlet butterfly isolation valve (2a or b) for stopping flowing via deluge valve.

- Close deluge valve by closing manual operated air valve or manual emergency release valve and open two instrument air supply valve (20) or open water supply valve (5).
- Open 3" overboard valve (2c) to drain water to sea then deluge valve will slowly to closing.
- After drain all water to sea – pressure gauge (14) reading 0, Close 3" overboard valve
- Open 6" inlet butterfly isolation valve (2a or b), check any passing via deluge valve by pressure gauge (reading 0).
- Open 6" outlet butterfly valve of deluge valve (2a or b).

6.3.2 Testing the valve by manual remote from CCR.

- Close 6" outlet butterfly valve of deluge valve (2a or b)
- Make sure 3" overboard valve fully close (2c)
- From CCR select the switch of deluge valve to be tested which is normal is in OFF position then switches it to on position valve will be opened.
- Once confirm the pressure gauge downstream of deluge valve reading equally with upstream pressure then move to next step to close the valve.
- Close the upstream isolation valve of deluge valve
- Put the above mentioned switch to OFF position then reset fire and gas (hold for 5 second) valve will be closed.
- Open 3" drain valve downstream of deluge valve to drain down remaining water.
- Once confirm the deluge valve is fully close (by crack open inlet isolation valve to see is there any water coming out from 3" drain valve) then move to next step to normalize the valve and make sure following valve correct position:
  - Upstream and downstream valves (2a and 2b) are open.
  - Drain valve 2c and bypass valve 2a are closed.

IMPORTANT NOTE: MAKE SURE FIRE PUMPS ARE IN AUTO AFTER FINISHED WORK.

6.4 Six monthly wet testing.

- Raise PTW for this task.
- Inform CCR deluge skid to be tested.
- Make announcement to notice everybody.
- Production technician to be standing by on the deluge skid to be tested.
- Make sure the fire water pumps are in auto mode.
- Select deluge skid to be tested from CCR and switch the hand switch from CCR to ON position. (fire pump supposed to be running due to fire ring main pressure drop when deluge valve open)
- Check the pressure up/downstream to make sure they are equally (make sure deluge valve fully open).
- Out site production tech to check to see is any sprinkle is blockage (consider to wear the raincoat).
- Wash down all process equipment where is affected by spraying salt water with fresh water