

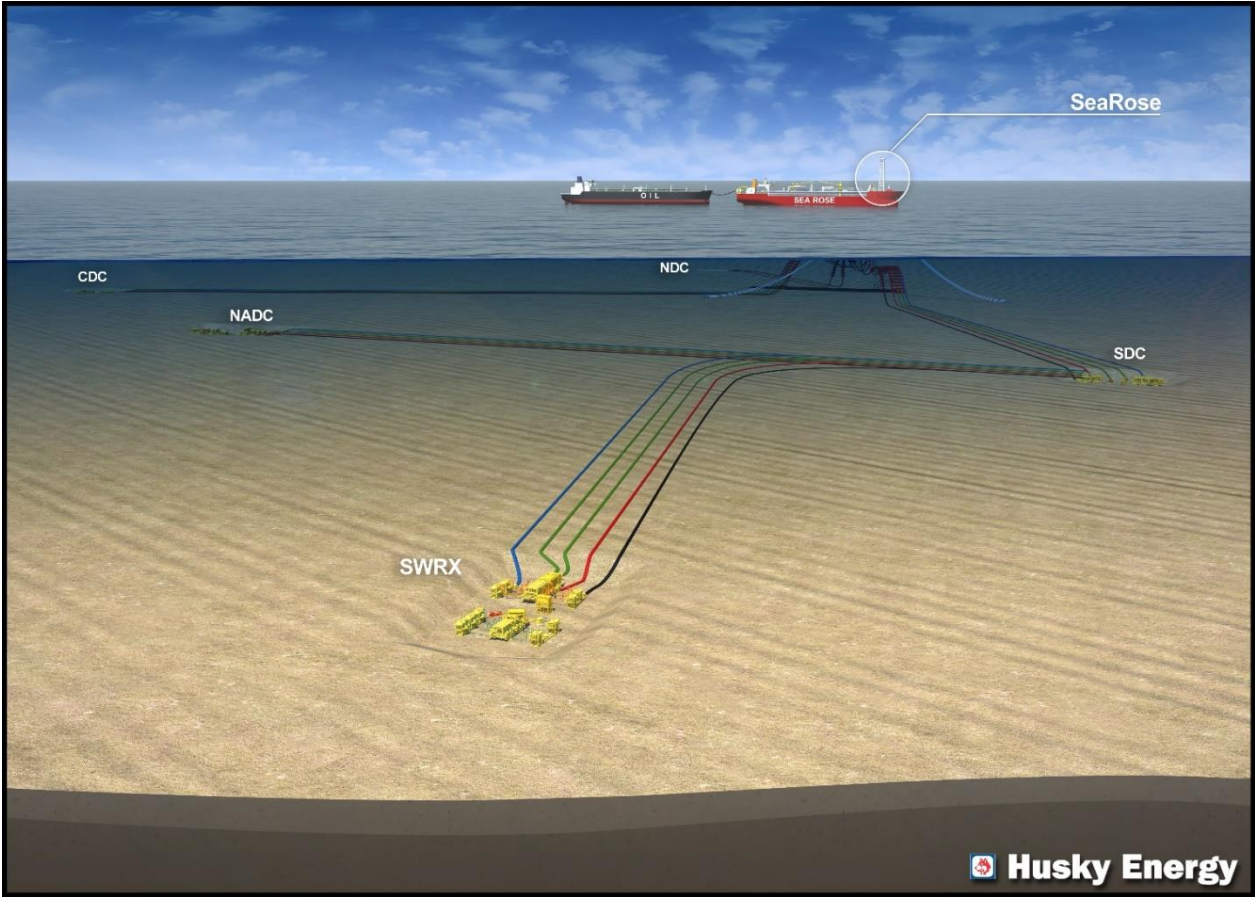


# Using Digital Data to Reduce Subsea Risks

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January 13, 2021



# The White Rose Field



# Background

November 16, 2018 – spill occurred near the South White Rose Extension (SWRX) Drill Centre

The source was a separated subsea flowline connector

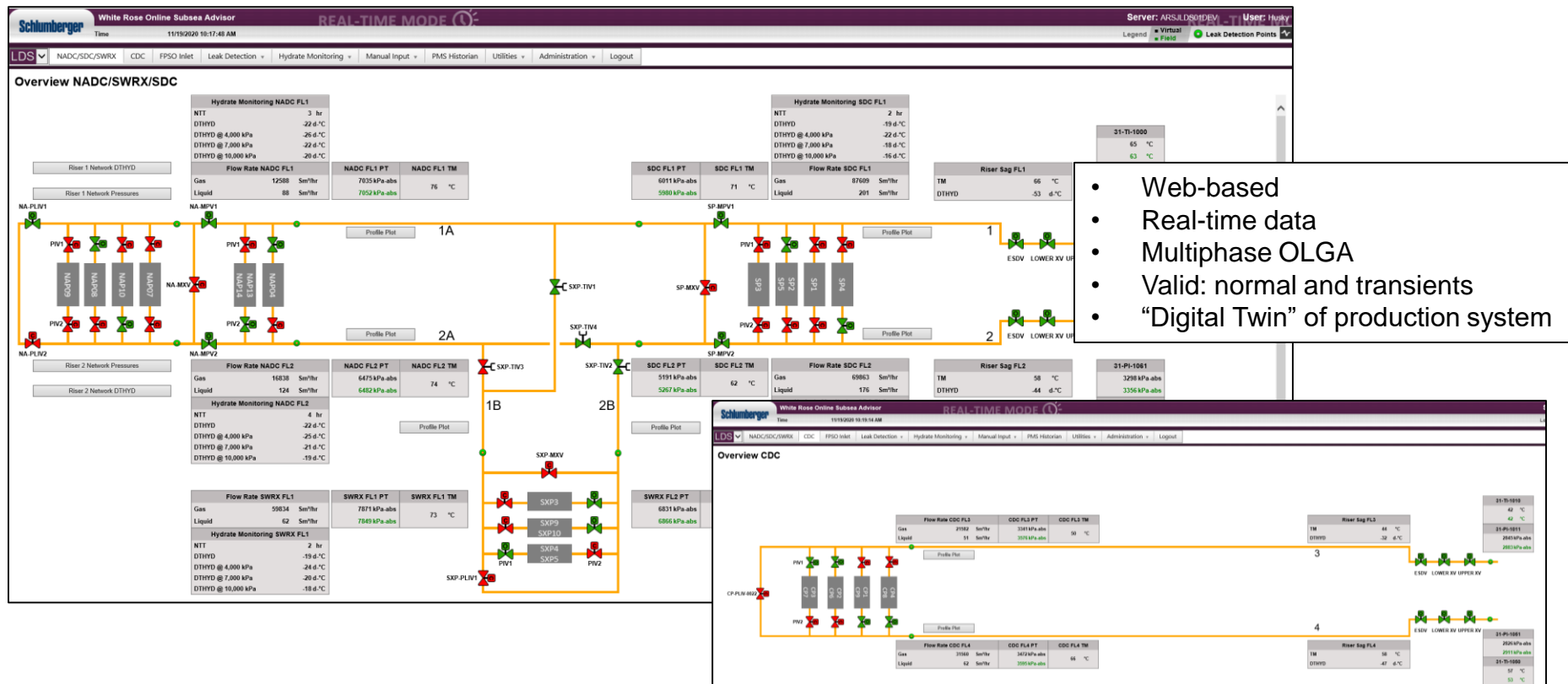
Our investigation determined the primary cause was due to hydrate development in the flowline connector



Separated flowline connector near SWRX

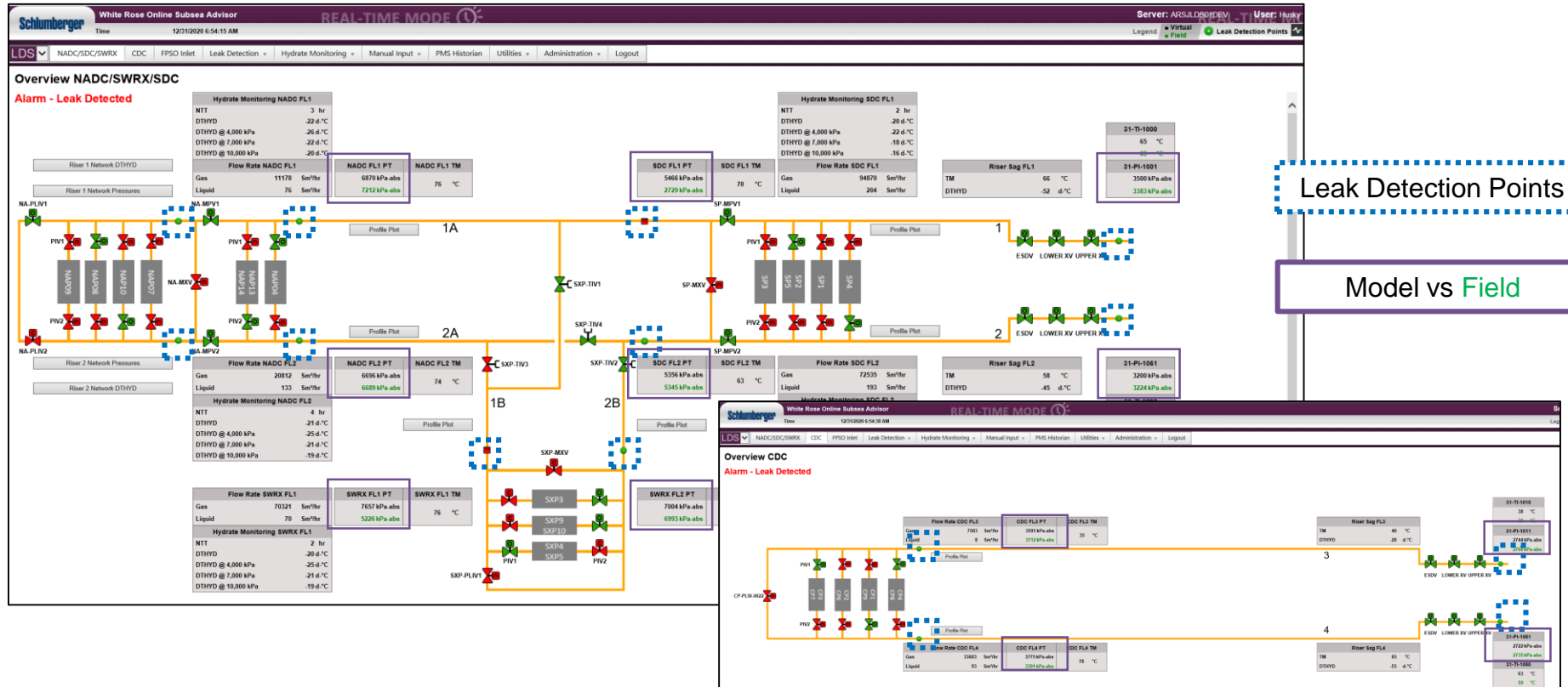
# Online Subsea Advisor

## Enhanced Monitoring and Visibility (Steady state example)



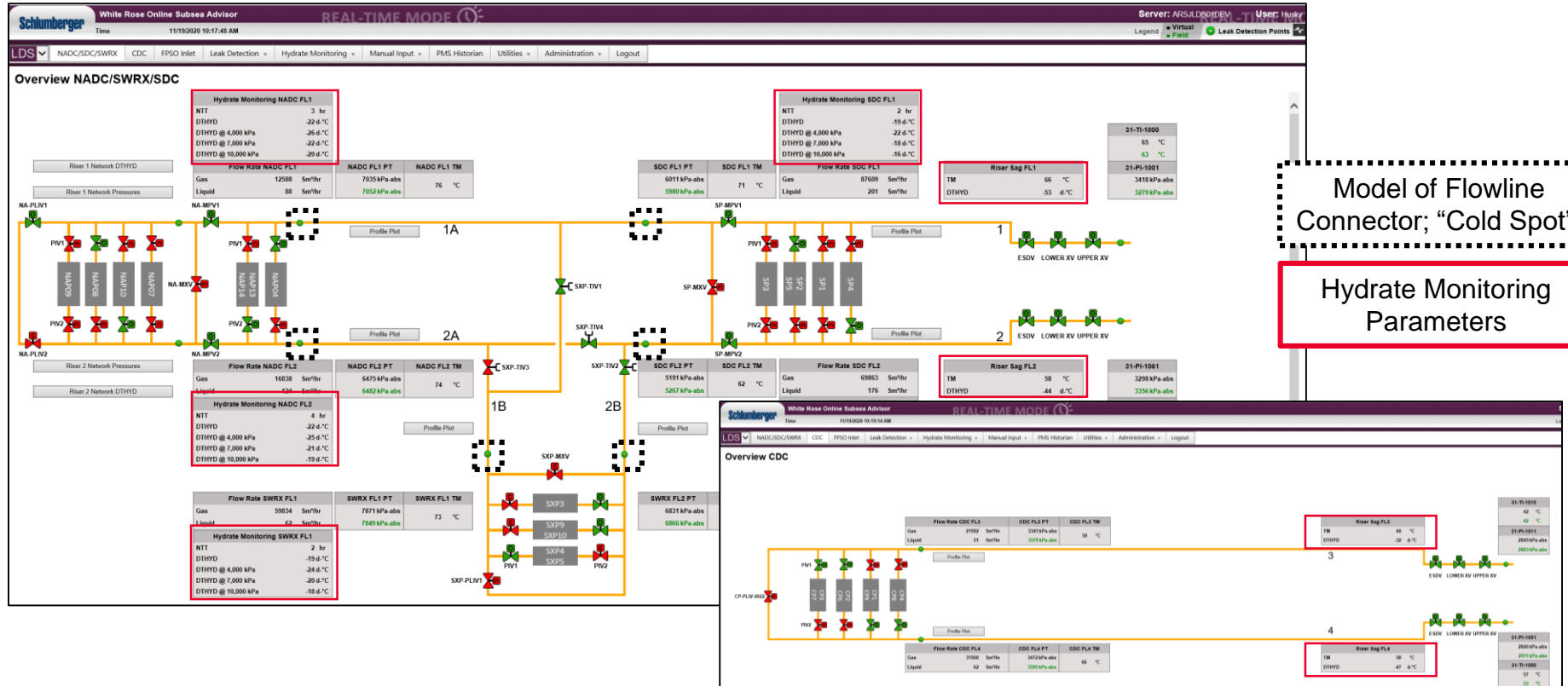
# Online Subsea Advisor

## Leak Detection (Simulation)



# Online Subsea Advisor

## Hydrate Monitoring (Sample)

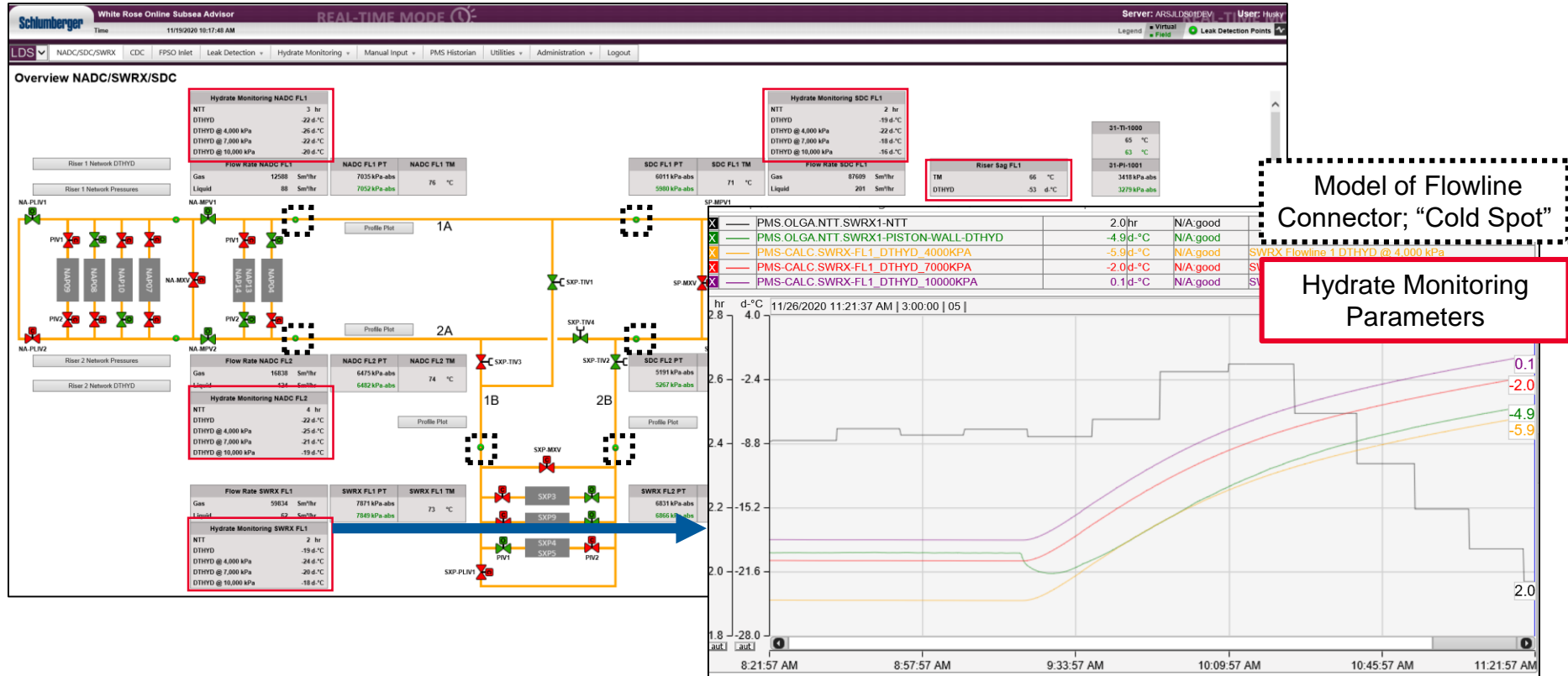


Model of Flowline Connector, "Cold Spot"

Hydrate Monitoring Parameters

# Online Subsea Advisor

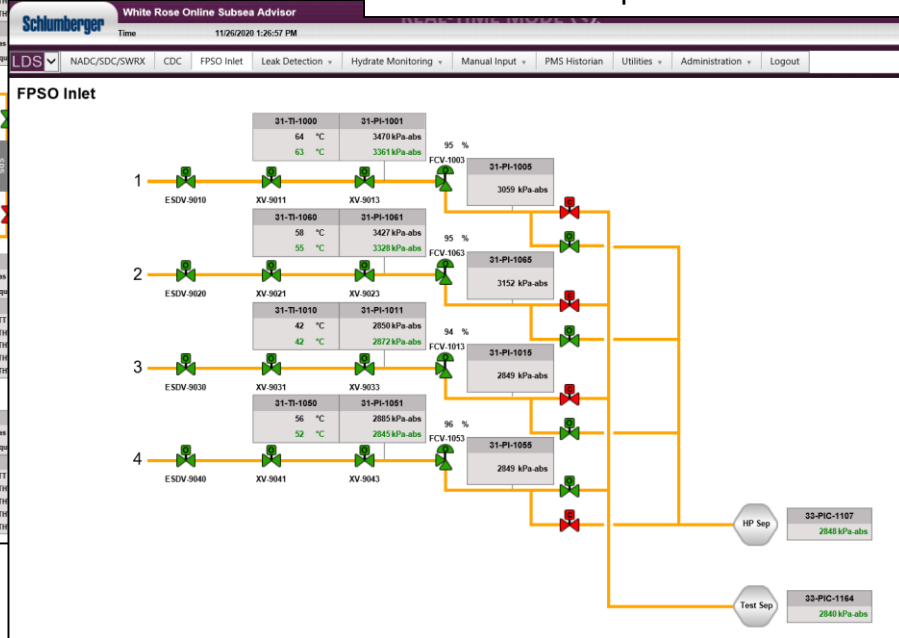
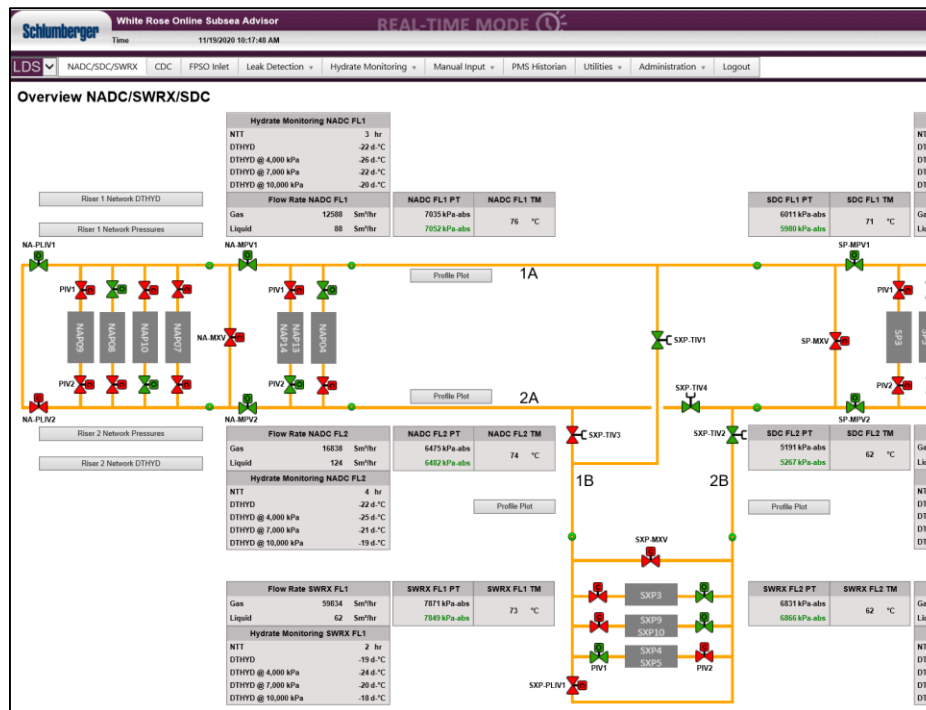
## Hydrate Monitoring (Sample)



# Online Subsea Advisor

## Enhanced Monitoring and Visibility: Subsea System (Sample)

- Valve status subsea and Topsides
- Rates, pressures, temperatures along flowpath
- Profile plots
- Circulation operations



# Summary

- Digital Twin of the production network; real-time data
- Implemented in 2019; hydrate monitoring added in 2020
- Continuous calculation of hydrate margin for flowline connectors and other areas of interest
- Technological changes supported by training; emphasizes formality and questioning attitude
- Enhanced monitoring and decision making ability