

How do you shut down an All-Electric Tree

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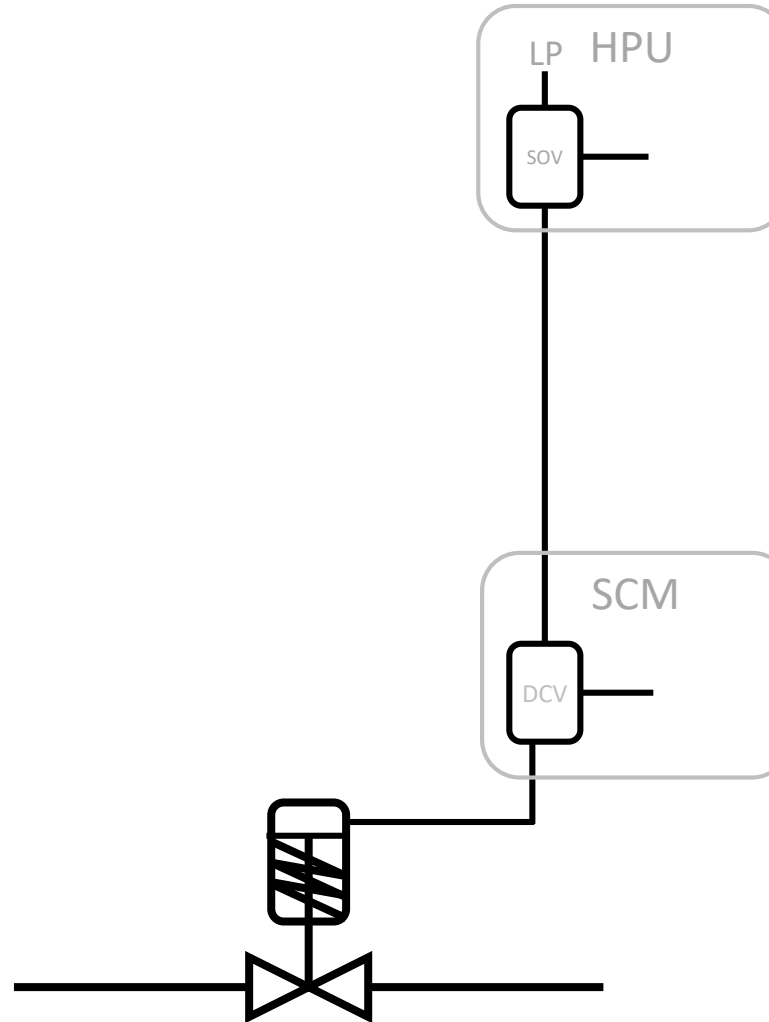
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MCEDD
DEEPWATER DEVELOPMENT

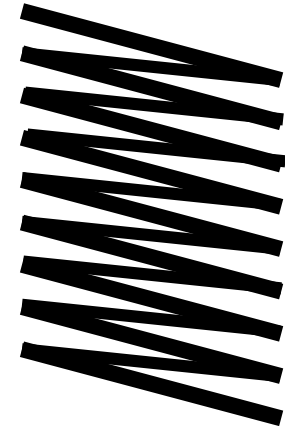
Current Approach to Subsea XT Shutdown

- Vent Hydraulics from a SOV topsides
 - Why
 - Inherent Simplicity
 - Avoids all electronics, software communications, DCVs
 - Reliable
 - Challenges
 - Time to vent
 - Orderly Shut down



Future Challenge

- Move to all electric and use of batteries
 - Why
 - Actuator size reduction
 - Copper section reduction
 - Using existing power infrastructure
 - Mechanically simpler ?
 - Challenge
 - Transition from simple mechanical to a more active system
 - Standards are developing
 - Regulatory view
 - Qualification



Conclusion

- Challenges
 - Demonstrating Reliability
 - Regulatory Requirement
 - Multiple Flavours
- Opportunities
 - Continuous Monitoring
 - Cost Savings
 - Improved field restarts

