Universitetet i Sørøst-Norge

TechnipFMC

INTERNABROAD AT TECHNIPFMC

Helena Jazwik Tveraabak

VII November Conferance 2019

ABOUT ME

- Bachelors degree in subsea engineering from Bergen University Collage
- Worked with subsea operations and maintenance
- Master in Systems Engineering and industrial economy at USN
- Exchange student to the PUC in Rio de Janeiro (2018-2019)
- InternAbroad program in Rio de Janeiro at TechnipFMC
- Currently working as an engineer at TechnipFMC in Rio de Janeiro

INTERNSHIP – INTERNABROAD

- Internship at TechnipFMC for half a year
- Contact with people in the industry both in Norway and Brazil
- Help from engineers at the TechnipFMC office for my research
- Portuguese language course at the PUC
- Subjects in innovation and finance at PUC

WHAT I LEARNT

- Cultural exposure
- Learning Portuguese
- Technical terms
- The Brazilian scenario related to Completion workover systems

MASTER THESIS

- **Title "A Systems Engineering approach to risk management and assessment of Completion Workover riser systems in offshore Brazil"**
- The phenomenological research approach was applied to achieve a Systems Engineering approach.
- Better understand regulations and practices in Brazil with respect to structural integrity assessment and the risk management for C/WO riser systems.
- Literature review of the ANP SGSS (Operational Safety of Sub- marine Systems) technical regulations (2015), ISO 13628-7 (2005) and API 17G1 (2019) standard.

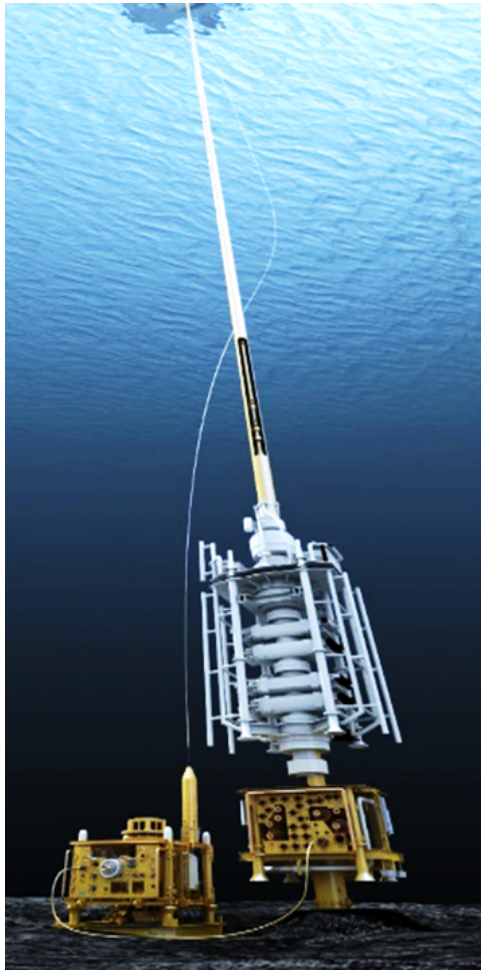
OFFSHORE DRILLING COMPLETION AND WORKOVER SYSTEMS

Direct access to the well throughout the entire life cycle

Installation, completion, maintenance, plugging and abandonment

A loss of the structural integrity of the riser system may cause loss of well barriers

Worst-case scenario leads to catastrophic failure of the system



PROBLEM STATEMENT

- A key objective was to describe the concerns and issues related to structural integrity for C/WO riser systems in Brazil.
- Map out what legislations/technical regulations that ensure structural integrity and how service and operating companies are dealing with the issue of risk management.

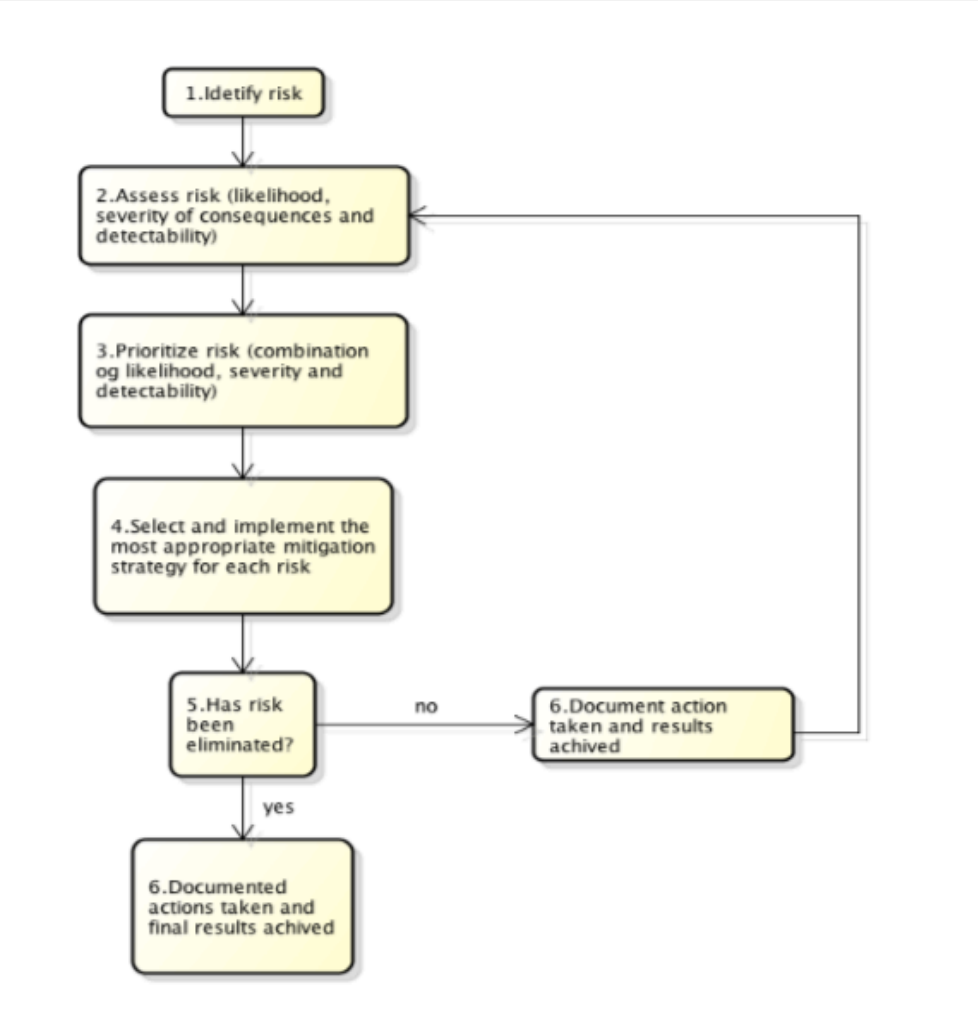
FINDINGS STRUCTURAL INTEGRITY

Description	ISO13628-7	API 17G1	ANP SGSS
System approach	x	x	x
Prescriptive approach	x	x	
System requirements	x	x	x
Load and load effect	x	x	x
Inspection, maintenance, monitoring and refurbish-ment	x	x	x
Fatigue analysis and as-sessment /check	x	x	x
Weak link assessment	x	x	

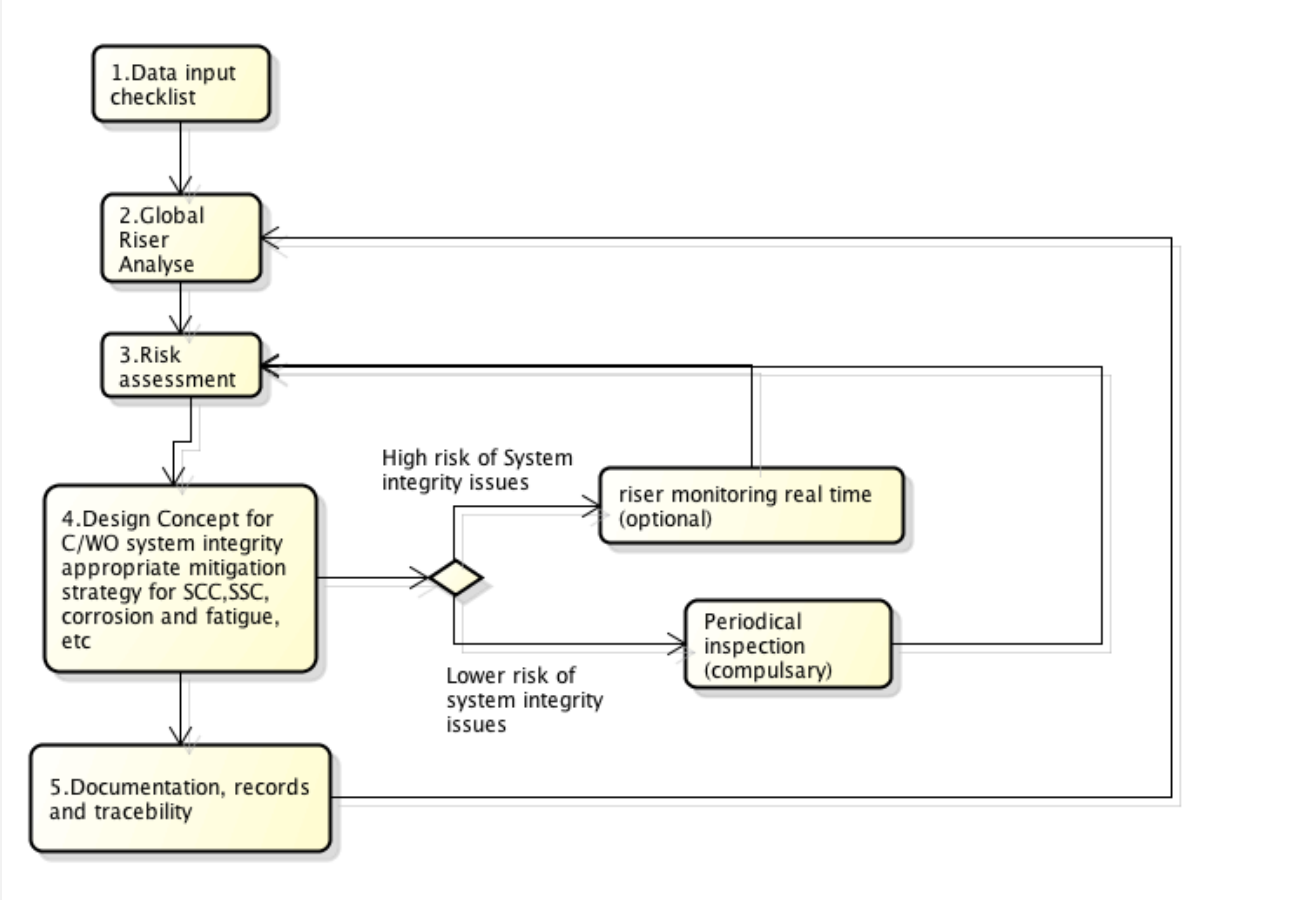
FINDINGS RISK MANAGEMENT

Description	ISO13628-7	API 17G1	ANP SGSS
System approach	x	x	x
Prescriptive approach	x	x	
Safety principles	x	x	x
Personnel qualifications	x	x	x
Documentation, records and traceability	x	x	x
Risk assessment	x	x	x
Drive-off and drift-off	x		

Risk management process (sols,2014)



A systematic model for risk management process of structural integrity



KEY FINDINGS

- Structural Integrity has received a higher focus in Brazil, through the ANP legislations.
- The main challenges seem to be the implementation and adaptation.
- The management practices applied by the Operators have been improved consistently last years.

CONCLUSION

- Intern abroad facilitated to achieve my objectives for my master thesis
- Cultural exposure personally and professionally
- Key importance for the industry relation between Norway and Brazil
- Foundation to build a carrier as an engineer in Brazil
- Valuable for TechnipFMC Norway and Brazil