

Competency Session

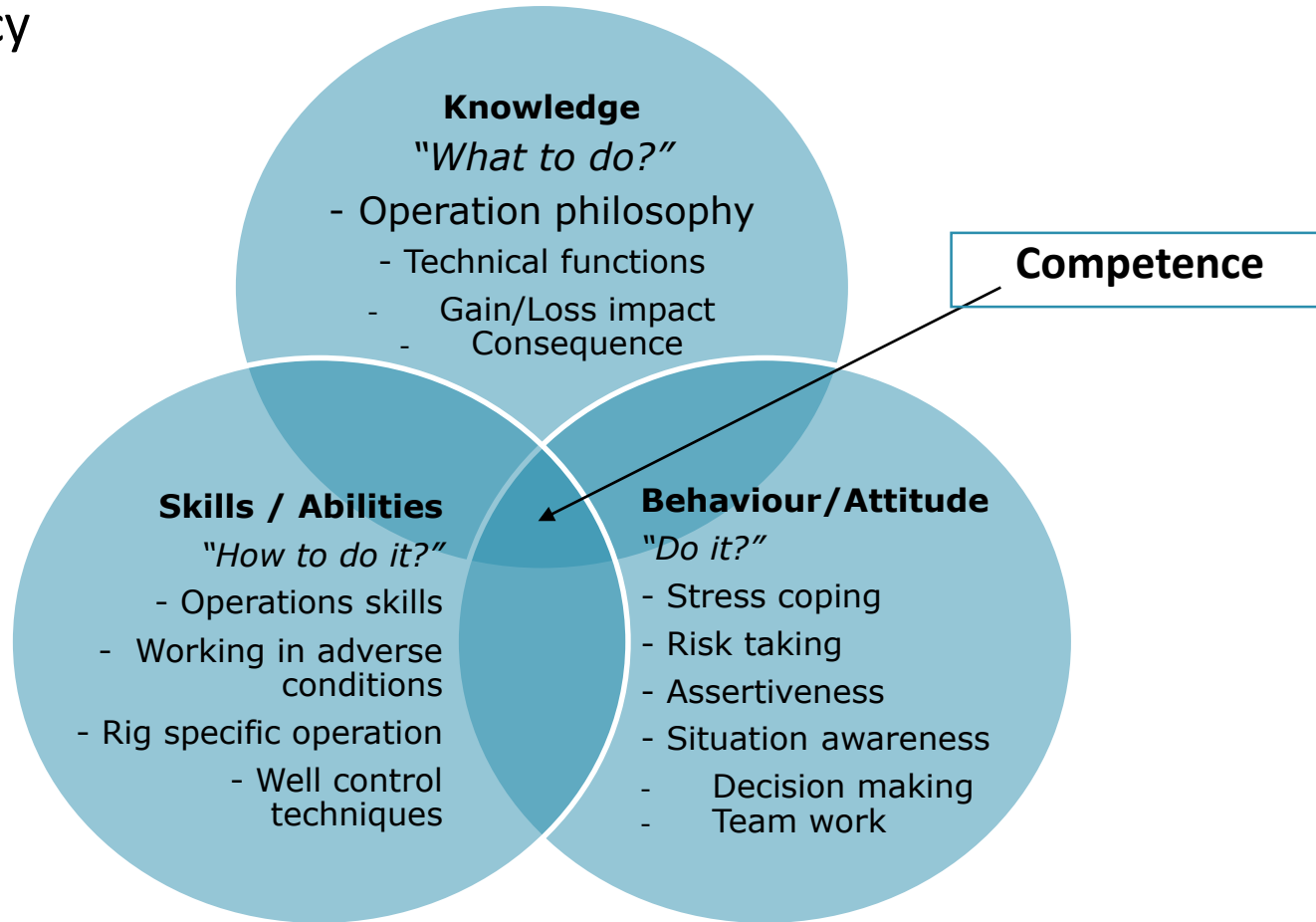
October 9-10, 2018



Competence Building while Migrating Technology and Operations

Ralph Benham and Klaus Hovesen

Competency



Migrating Technology

- An established technology is attempted to be utilized in a different industry
- No guarantee these will be compatible
- High risk of incidents and accidents during the transition period
- Incidents caused by the technology itself
- Incidents caused by lack of competence
- What eventually happens?
 - The technology is adapted and improved upon to fit the industry's needs
 - Regulations or guidelines are written
 - Policies and procedures are adjusted
 - Training methods are changed
- Examples in the DP industry
 - Shuttle Tankers and DP systems
 - Wind Turbine Installation Operations and DP Systems

Background

Shuttle Tankers Becoming DP Vessels

- First DP system on shuttle tankers around 1982
- Used existing shuttle tankers
- Unique operational and design challenges became apparent
- Improvements in DP software and vessel technology continued to be applied
- Advanced DP Class 2 shuttle tankers were created with custom DP functionality
- Guidelines and regulations were written
- Training deficiencies were identified
- New DP training scheme created for DPOs on shuttle tankers
- It took time but shuttle tankers are now part of an established operation in the European Sector

Current Transition in Progress

Wind Turbine Installation Vessels

- First custom built DP wind turbine installation vessel (WTIV) was built about 8 years ago
- Knowledge from existing DP vessels and operations were utilized
- However, unique operational and design challenges still manifested themselves
- Modifications were made to the DP control system to correct some of the problems
- Guidelines were written
- Companies sent DPOs to custom made WTIV classes to ensure competency
 - Had to learn how to utilize the modifications and how to safely operate a WTIV during jacking operations
- WTIVs are now part of the renewable energy industry in the European sector

Migrating Operations

Geographic Regions

- Established technology and operational excellence in one geographic region does not guarantee a successful implementation in another geographic region
- Shuttle tankers in the Gulf of Mexico (GOM)
 - Approval to use Floating Production Storage and Offloading (FPSO) vessels granted in 2001
 - Currently only 2 in operation
- What went wrong?
 - European shuttle tanker operators founded companies in USA to build Jones Act Vessels
 - The risk that the skills, knowledge, and behaviors of the European crews may not be passed on to the new region was not addressed
 - Studies showed that FPSOs were not financially viable when compared to using pipelines
 - By 2004 it was realized that FPSOs would not be heavily utilized in the GOM
 - No building spree of DP shuttle tankers took place, so competent crews were not needed

Migrating Operations

Geographic Regions

- The offshore wind turbine industry has a potential for rapid global growth
- The USA is currently building offshore wind farms off the coast of New England
- Numerous studies have been performed
 - Economic impact on local communities as well as tourism and recreation
 - A study on the economic viability of a Jones Act WTIV has also been written
 - The vessel design was based upon a European WTIV, so the technology and design challenge might be mitigated
- Other countries have also commissioned studies on the viability of offshore wind farms.
 - Some of these studies are favorable to building them
 - The likelihood of an increased demand for WTIVs is extremely high
- None of these studies discuss how the vessels utilized will be crewed up – that is the burden of the WTIV company.
- The studies appear to assume vessels and crews will be available when needed

Crewing Up WTIVs

An example of the challenges faced

- A wind turbine installation company that currently utilizes self-elevating barges wants to build a DP WTIV to meet the potential new demand
- How will they obtain a competent crew?
- They can either hire certified DPOs or train up their current watchstanders
- Hiring a certified DPO is not a guarantee for success
 - Knowledge gaps - WTIV specific issues
 - Will only be able to be of value when vessel is on DP unless additional training is received
- Training up current watchstanders is costly and takes time
 - Watchstander will need to enroll in an industry recognized DP certification scheme

Crewing Up a WTIV

Training Up From Within

- Current industry recognized training schemes do not address WTIVs
- DP seatime is only obtained while at the DP console in DP operations
 - Not very frequently on WTIVs
- On board training generally involves routine operations
- Even after gaining necessary seatime and getting certified, the DPO will not be fully competent in WTIV DP operations
- This has the potential to create crewing and competency problems for WTIV operators
- Company specific WTIV DP classes were created to address training gaps
- There are training gaps in the current schemes similar to the ones that were faced by shuttle tanker DPOs
- A new training scheme for WTIV could reduce the risk of competent crew shortages

Regional Competency Gaps

- WTIVs are unique vessels
- When arriving in a new region it is unlikely the area authority and local pilots are familiar with them
- The local personnel may not have any knowledge of DP operations
- Neither vessel's crew or local pilots can be said to be competent in the new operation
- Training on a full mission bridge simulator with the vessel's model and the ports involved will help
- All personnel involved – local authorities, local pilots, and the bridge crew need to be involved

Using Training and Simulators

Bridging Knowledge Gaps

- Benefits to having everybody come together in a simulator have been proven
- Maersk Training was used to help initiate a company's WTIV operation in the USA
- Local pilots had expressed concerns regarding the vessel transiting the pilotage
- The WTIV crew, local authorities, representatives from the local pilot commission and active pilots came to the facility
- WTIV and DP operations were discussed to align the knowledge levels
- The crew and pilots transited the actual vessel through the actual pilotage area on the simulator
- The local authority was reassured the crew was competent and the WTIV would be operated in a safe manner
- The local pilots and the crew were able to determine the best way to transit the pilotage waters, in particular the hurricane barrier passage

In Conclusion

- The risk of introducing an established technology into a different industry is hard to determine
- This risk is still not fully understood with WTIVs
- Deficiencies in current training schemes can result in a DPO being unfamiliar with WTIV operations
- A dedicated WTIV training scheme will benefit both the DPOs and the WTIV operators
- There is a lot to consider when introducing an established industry into a new region
- A workshop at a training center with all the relevant personnel in attendance can ensure everyone has the same knowledge about the operation
- The use of simulators can allow potential problems and solutions to be identified prior to the operation ever taking place