Dynamic Positioning Committee
Marine Technology Society

Guidance from Techop

Main Elements

DESIGN
OPERATIONS
PEOPLE
PROCESS

INCIDENT DATA
LFI

PATHWAY

DESIGN
OPERATIONS
PEOPLE
PROCESS

Operations

Causal and Contributory Factors

RESULTS OF INVESTIGATION

| | Process (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Process** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 1 | Verification and Validation | Activities that have been put in place to identify gaps of existing documents/processes against a defined performance standard | DP FMEAs (minimum performance standard DNV RP D102, MTS tools for FMEA and proving trials gap analysis, Annual Trials to IMCA M190 / M191 etc. | Yes | Demo | | ETO / Electrician, Junior DPO, |
| 2 | DP FMEA | Sub element of V and V | Minimum DNV RP D102 | No | | Demo | |
| 3 | FMEA and proving trials gap analysis | Sub element of V and V | MTS tools available | No | | Demo | |
| 4 | Annual trials | Sub element of V and V | Minimum IMCA M190/191 | Yes | Demo | | |
| 5 | Annual trials gap analysis | Sub element of V and V | MTS tools available | Yes | Demo | | |
| 6 | DP Operations manual | Sub element of V and V | Minimum MTS DP Committee guidance document | No | | Demo | |
| 7 | DP Operations Manual Gap Analysis | Sub element of V and V | MTS tools available | No | | Demo | Screenshots, Relevant drawings, |
| 8 | Documented evidence of closure and closure path of identified gaps | Sub element of V and V | PM work orders | No | | Demo | |
| 9 | Closure of findings and observations from audits | Sub element of V and V | Vendor support, PM work orders | No | | Demo | |
| 10 | Implementation of applicable technical guidance from Vendors | Sub element of V and V Operations | Routine review of processes | No | | Demo | |
| 11 | Implementation of actions from lessons learned | Sub element of V and V | Post action summaries | No | | Demo | |
| 12 | Adherence to original equipment manufacturer's recommendation for IRM, Performance testing, Post failure testing and testing following extensive intrusive maintenance | Sub element of V and V | Verification and validation should extent to planned maintenance routines and testing procedures | No | | Demo | |
| 13 | Hazard recognition | Application of Hazards and Effects Management Processes (HEMP) to manage risks and associated consequences due to a loss of position incident on a DP vessel | To determine whether vessel should be configured as CAM / TAM, all activities within defined boundary conditions, potential need of specialist support should be recognised and catered to | No | | Demo | |
| 14 | CAM/TAM operation of the vessel | Sub element of hazard recognition | Risk assessment carried out to quantify the consequences of a position excursion | Yes | Demo | | |
| 15 | HEMP processes used | Sub element of hazard recognition | Field decisions to be made with HEMP processes utilized | Yes | Demo | | |

| | Process (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Process** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 16 | Activity | Sub element of hazard recognition. Routine or non-routine activities, departure from established procedures due to extenuating circumstances | Risks of both routine and non routine activities should be clearly assessed | Yes | Demo | | |
| 17 | Roles and responsibilities clearly defined | Sub element of hazard recognition. Roles and responsibilities of personnel clearly defined | If an incident occurs, the right personnel should be at the right stations to restrict the severity of the consequences | No | | Demo | |
| 18 | Hazard recognition and management | Sub element of hazard recognition. Clear recognition of the hazards and an appreciation for the consequences of a loss of position incident | Proper HEMP procedures followed | No | | Demo | |
| 19 | Controls | Tools, processes or barriers that are used to enhance robustness of mitigations to prevent the potential for causal and contributory factors to manifest themselves and result in a loss of position | PTW, tool box talks, task risk assessments etc. as enumerated below | Yes | Demo | | |
| 20 | Requirements for permit to work | Sub element of controls | Cold work/ hot work / working at height | Yes | Demo | | |
| 21 | Tool box talks conducted | Sub element of controls | All jobs discussed | Yes | Demo | | |
| 22 | Job safety analysis conducted | Sub element of controls | As part of related tasks | No | | Demo | |
| 23 | Task risk assessments performed | Sub element of controls | As part of related tasks | No | | Demo | |
| 24 | Imposition of positioning standby? | Sub element of controls | If deemed by operational guidance | No | | Demo | |
| 25 | Imposition of requirements to assess impacts of IRM and reassessment of post failure capability | Sub element of controls | If deemed by operational guidance | No | | Demo | |
| 26 | Management of permitted operations | Sub element of controls | If deemed by operational guidance | Yes | Demo | | |
| 27 | Simultaneous Operations | Sub element of controls | As per title | Yes | Demo | | |
| 28 | 500m entry checklists | Sub element of controls | Engine room / bridge checklists | No | | Demo | |
| 29 | Harsh weather precautions and checklists | Sub element of controls | Capability analysis to be referred to | No | | Demo | |
| 30 | Checklists validating configuration of vessel in accordance with the ASOG / WSOG | Sub element of controls | As per title | No | | Demo | |

| | Process (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Process** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 31 | Checklists validation appropriate values for configurable settings | Sub element of controls | DP Gain values, Position reference rejection limits etc. | No | | Demo | |
| 32 | Any additional comments | Use this space to fill in any other relevant information | Any point that is not covered above | No | | Demo | |

| | People (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of People** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 1 | Training and competence | Are minimum training and competence requirements met? | Industry standards, company standards, client stipulated requirements | Yes | Demo | | Chief Engineer, OIM, |
| 2 | On the job training | Provision for structured on the job training. Provision of drills and exercises including contingency planning | Periodic partial and complete blackout recovery carried out by the crew | No | | Demo | Physical evidence / damage reports, Relevant drawings, |
| 3 | Communication of expectations | Have expectations of adherence to requirements been clearly and unambiguously communicated? | Adherence to ASOG / WSOG, defending the redundancy concept, addressing IRM, looking for and guarding against biases both personal and experience based | Yes | Demo | | |
| 4 | Mode of communication of expectations | The mode of communicating expectations as defined above | Guided / unguided, reflective methods like using known incidents to develop and emphasize messages and have personnel consciously reflect how such a situation can manifest itself in their area of responsibility | No | | Demo | |
| 5 | Availability of coaching and mentoring | Is there time and resources devoted to coaching and mentoring of crew? | More addressable techniques for coaching and mentoring used instead of just following normal handover procedures | Yes | Demo | | |
| 6 | Cultural factors | Having mixed cultural crewing | Ability to exercise stop work authority, ability to be comfortable with chronic unease, ability to feel empowered to challenge unsafe practices | Yes | Demo | | |
| 7 | Fatigue | impacts of ongoing activities and demands placed on individuals, duty cycles, crew change rotations | Prolonged duration of positioning standby | Yes | Demo | | |
| 8 | Pressure to perform | Pressure may be real or perceived and result in temptation to breach established boundaries | Client pressure on approaching deadlines | No | | Demo | |
| 9 | Performance under pressure | Capability to demonstrate consistency and focus on delivery of incident free DP operations all the time irrespective of pressure induced by ongoing activities | E.g. quick response by master to control vessel using alternative control means when the DP control system fails | No | | Demo | |
| 10 | Any additional comments | Use this space to fill in any other relevant information Operations | Any point that is not covered above | No | | Demo | |

| | Operations (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Operations** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 1 | Vessel configuration (CAM/TAM) | Choice of configuration taking into account the consequences of a loss of position | CAM when operating within the 500m zone and TAM when operating without any structures in the vicinity | Yes | Demo | | Investigation reports, ASOG / WSOG, |
| 2 | CAM/TAM validation | Validation that the vessel is operating in the identified configuration | Checking operating guidance to ensure all aspects of the DP system are configured correctly | No | | Demo | Trends (T-30 min), Incident related information, |
| 3 | PRS configurations | PRSs to be configured according to the job being performed | Redundancy requirements in principle followed even without structures in the vicinity | No | | Demo | |
| 4 | Modes and features for DP | Vessel is to be operated in the appropriate mode | Auto position, follow track, follow target etc. | Yes | Demo | | |
| 5 | Industrial mission specific modes and features | IM specific modes should be validated then followed | External force compensation, heavy lift mode | No | | Demo | |
| 6 | Management of external interfaces | Third party equipment having an effect over the DP system should be checked | ESD systems, F & G shutdowns, tensioner inputs | No | | Demo | |
| 7 | Post failure capability | All DP operations should be undertaken within the identified and validated post failure capability of the vessels. | Alternate failure criteria should not be used for CAM. For TAM risk assessments should be conducted | No | | Demo | |
| 8 | IRM and reassessment of post failure capability | Inspection, repair and maintenance activities may render equipment temporarily unavailable for use | Redundant equipment may not be available and this post failure capability should be reassessed | Yes | Demo | | Witness statements, , Chief Engineer, , OIM, Captain, |
| 9 | Protective functions and restoration of same if disabled for IRM | Defending protective functions and restoration of same if disabled for IRM | Disabling or reinstating protective functions can compound the effects of any subsequent failure. E.g. disabling generator protection modules during DP operations | No | | Demo | |
| 10 | Reinstatement of equipment post failure | Reinstatement of equipment post intrusive maintenance or post failure comes with an increase in vulnerability to the potential for a subsequent failure. Due consideration should be given to this potential and additional mitigations should be put in place Operations | Choose an optimum time to reinstate equipment, suspend operations and move out of the 500m zone, bringing vessel activities to a safe position, configuring vessel in CAM prior to reinstating equipment | Yes | Demo | | |
| 11 | Automatic change overs / automatic reinstatement of failed equipment | Automatic changeover of input supplies to UPSs or Thrusters or automatic reinstatement of failed equipment | Algorithms like Thruster automatic recovery logic (TARL) | No | | Demo | |
| 12 | Erroneous operator configurable settings | Operator settings containing illegal inputs should be alarmed / not used | User suppressed alarms , settings etc. should be identifiable | Yes | Demo | | |

| | Operations (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Operations** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 13 | Any additional comments | Use this space to fill in any other relevant information | Any point that is not covered above | Yes | Demo | | |

| | Design (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Design** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 1 | Autonomy | Control of main machinery should be decentralised to the point where it makes itself ready for DP control | Thruster control systems with UPS support and independent auxiliaries | Yes | Demo | | Logged alarms - Machinery, Logged alarms DP, Position reference sensor logs, |
| 2 | Independence | Services for main machinery should be designed to limit the effects of single failures to one generator or thruster | Separate control, protection and monitoring systems for generators | No | | Demo | Screenshots, Relevant drawings, |
| 3 | Segregation | Redundant systems should have as few common points as possible to prevent fault propagation | Thruster input supply, DC supplies coupled through diodes, common battery charger supplies | Yes | Demo | | Local controller logs for drives, thrusters and engines, Vendor reports, |
| 4 | Differentiation | Where redundancy depends on multiple data sources create diversity in the measurement methods to reduce the potential for common mode failures | Position reference sensors, vessel sensors | No | | Demo | Task within industrial mission, Ongoing IRM, |
| 5 | Fault tolerance | Ensure systems are single fault tolerant based on the principles of protection, detection and performance. Redundancy means more than just duplication | Each system to have tolerance and means to provide functionality through a single fault or in some cases a hidden fault and a single fault | Yes | Demo | | DP System FMEA , DP System FMEA Proving Trials, |
| 6 | Fault resistance | Select high reliability equipment that is resistant to internal and external influences and suitable for the harsh marine environment | Fire retardant cables to be used in high risk areas | Yes | Demo | | |
| 7 | Fault ride through | Equipment must be able to tolerate the effects of failures in other equipment to which it may be connected – voltage dips, network storms | Voltage dip ride through capabilities for electronics | No | | Demo | |
| 8 | Ergonomics | The design of the operator control functions should be intuitive and not provide avenues for maloperation | Thruster deselections should be double push and covered, DP mode selection should be covered to prevent maloperation. PRS monitors should be within view of the DP control station | Yes | Demo | | |
| 9 | Configurations / Configurable Settings | Operator controlled settings | Configurations should be changed only after a clear review of its repercussions | Yes | Demo | | |
| 10 | Commonality | Commonality or cross connections between redundant equipment groups should be reviewed | Common FW cooling systems, Isolation boxes for sensors etc. should be carefully considered | No | | Demo | |
| | Operations | | | | | | |
| 11 | External Interfaces | External interfaces having an indirect impact on DP equipment and controls should be reviewed | ESD systems, fire & gas controlled stops, riser angle warnings etc. | No | | Demo | |

| | Design (Main elements) | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Sub elements of Design** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **If yes, description of failure** | **If no, short description of basis for ruling it out** | **Link to evidence (Ctrl to select multiple)** |
| 12 | Potential for Hidden Failures, Alarm capability and alarm monitoring | Hidden failure is the term used to describe undetected, pre-existing faults in redundant systems which have the potential to defeat the redundancy concept when a subsequent fault occurs. The possibility that a system was already in a partially failed condition before the incident occurred should be considered | Alarms should be checked, time delays should be sufficient for the failure effects | Yes | Demo | | |
| 13 | Any additional comments | Use this space to fill in any other relevant information | Any point that is not covered above | No | | Demo | |

Note: Where cross connections are identified, additional emphasis should be placed on fault tolerance, fault resistance, fault ride through and protective functions.

| | | | | | Process (Causal and contributory factors)<br>Extracted from main pathway | |
|---|---|---|---|---|---|---|
| | **Sub elements of Process** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **Description of failure** | **Link to evidence** |
| 1 | Verification and Validation | Activities that have been put in place to identify gaps of existing documents/processes against a defined performance standard | DP FMEAs (minimum performance standard DNV RP D102, MTS tools for FMEA and proving trials gap analysis, Annual Trials to IMCA M190 / M191 etc. | Yes | Demo | ETO / Electrician, Junior DPO, |
| 4 | Annual trials | Sub element of V and V | Minimum IMCA M190/191 | Yes | Demo | |
| 5 | Annual trials gap analysis | Sub element of V and V | MTS tools available | Yes | Demo | |
| 14 | CAM/TAM operation of the vessel | Sub element of hazard recognition | Risk assessment carried out to quantify the consequences of a position excursion | Yes | Demo | |
| 15 | HEMP processes used | Sub element of hazard recognition | Field decisions to be made with HEMP processes utilized | Yes | Demo | |
| 16 | Activity | Sub element of hazard recognition. Routine or non-routine activities, departure from established procedures due to extenuating circumstances | Risks of both routine and non routine activities should be clearly assessed | Yes | Demo | |
| 19 | Controls | Tools, processes or barriers that are used to enhance robustness of mitigations to prevent the potential for causal and contributory factors to manifest themselves and result in a loss of position | PTW, tool box talks, task risk assessments etc. as enumerated below | Yes | Demo | |
| 20 | Requirements for permit to work | Sub element of controls | Cold work/ hot work / working at height | Yes | Demo | |
| 21 | Tool box talks conducted | Sub element of controls | All jobs discussed | Yes | Demo | |

| | | | | | Process (Causal and contributory factors)<br>Extracted from main pathway | |
|---|---|---|---|---|---|---|
| | **Sub elements of Process** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **Description of failure** | **Link to evidence** |
| 26 | Management of permitted operations | Sub element of controls | If deemed by operational guidance | Yes | Demo | |
| 27 | Simultaneous Operations | Operations<br>Sub element of controls | As per title | Yes | Demo | |

| | | | | People (Causal and contributory factors)<br>Extracted from main pathway | |
|---|---|---|---|---|---|
| Sub elements of People | Element definition | Examples of defined principles | Causal or contributory factor (Yes/No) | Description of failure | Link to evidence |

| | | | | | Operations (Causal and contributory factors)<br>Extracted from main pathway | |
|---|---|---|---|---|---|---|
| | **Sub elements of Operations** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **Description of failure** | **Link to evidence** |
| 1 | Vessel configuration (CAM/TAM) | Choice of configuration taking into account the consequences of a loss of position | CAM when operating within the 500m zone and TAM when operating without any structures in the vicinity | Yes | Demo | Investigation reports, ASOG / WSOG, |
| 4 | Modes and features for DP | Vessel is to be operated in the appropriate mode | Auto position, follow track, follow target etc. | Yes | Demo | |
| 8 | IRM and reassessment of post failure capability | Inspection, repair and maintenance activities may render equipment temporarily unavailable for use | Redundant equipment may not be available and this post failure capability should be reassessed | Yes | Demo | Witness statements, , Chief Engineer, , OIM, Captain, |
| 10 | Reinstatement of equipment post failure | Reinstatement of equipment post intrusive maintenance or post failure comes with an increase in vulnerability to the potential for a subsequent failure. Due consideration should be given to this potential and additional mitigations should be put in place | Choose an optimum time to reinstate equipment, suspend operations and move out of the 500m zone, bringing vessel activities to a safe position, configuring vessel in CAM prior to reinstating equipment | Yes | Demo | |
| 12 | Erroneous operator configurable settings | Operator settings containing illegal inputs should be alarmed / not used | User suppressed alarms , settings etc. should be identifiable | Yes | Demo | |
| 13 | Any additional comments | Use this space to fill in any other relevant information | Any point that is not covered above | Yes | Demo | |

| | | | Operations (Causal and contributory factors)<br>Extracted from main pathway | | |
|---|---|---|---|---|---|
| **Sub elements of Operations** | **Element definition** | **Examples of defined principles** | **Causal or contributory factor (Yes/No)** | **Description of failure** | **Link to evidence** |
| | Operations | | | | |

| | | | | Design (Causal and contributory factors) Extracted from main pathway | | |
|---|---|---|---|---|---|---|
| | Sub elements of Design | Element definition | Examples of defined principles | Causal or contributory factor (Yes/No) | Description of failure | Link to evidence |
| 1 | Autonomy | Control of main machinery should be decentralised to the point where it makes itself ready for DP control | Thruster control systems with UPS support and independent auxiliaries | Yes | Demo | Logged alarms - Machinery, Logged alarms DP, Position reference sensor logs, |
| 3 | Segregation | Redundant systems should have as few common points as possible to prevent fault propagation | Thruster input supply, DC supplies coupled through diodes, common battery charger supplies | Yes | Demo | Local controller logs for drives, thrusters and engines, Vendor reports, |
| 5 | Fault tolerance | Ensure systems are single fault tolerant based on the principles of protection, detection and performance. Redundancy means more than just duplication | Each system to have tolerance and means to provide functionality through a single fault or in some cases a hidden fault and a single fault | Yes | Demo | DP System FMEA , DP System FMEA Proving Trials, |
| 6 | Fault resistance | Select high reliability equipment that is resistant to internal and external influences and suitable for the harsh marine environment | Fire retardant cables to be used in high risk areas | Yes | Demo | |
| 8 | Ergonomics | The design of the operator control functions should be intuitive and not provide avenues for maloperation | Thruster deselections should be double push and covered, DP mode selection should be covered to prevent maloperation. PRS monitors should be within view of the DP control station | Yes | Demo | |
| 9 | Configurations / Configurable Settings | Operator controlled settings | Configurations should be changed only after a clear review of its repercussions | Yes | Demo | |

| | | | | | Design (Causal and contributory factors)<br>Extracted from main pathway | |
|---|---|---|---|---|---|---|
| | Sub elements of Design | Element definition | Examples of defined principles | Causal or contributory factor (Yes/No) | Description of failure | Link to evidence |
| 12 | Potential for Hidden Failures, Alarm capability and alarm monitoring | Hidden failure is the term used to describe undetected, pre-existing faults in redundant systems which have the potential to defeat the redundancy concept when a subsequent fault occurs. The possibility that a system was already in a partially failed condition before the incident occurred should be considered | Alarms should be checked, time delays should be sufficient for the failure effects | Yes | Demo | |

Operations

## Incident investigation support data tracking sheet

| | Attached data checklist | Brief description of attachment | Description of data used | Link to attachment |
|---|---|---|---|---|
| 1 | Logged alarms - Machinery | Alarm logs - Note there are limited logging facilities | | |
| 2 | Logged alarms DP | DP logs for covering at least 30 mins before the incident | | |
| 3 | Position reference sensor logs | PRS logs and positioning / error data | | |
| 4 | Field Station logs | Controller logs of data through field stations | | |
| 5 | Local controller logs for drives, thrusters and engines | Controller logs for equipment like drives, thrusters and engines | | |
| 6 | Vendor reports | Vendor investigation reports | | |
| 7 | Physical evidence / damage reports | Reports made by shit staff on any physical damage | | |
| 8 | Relevant drawings | Relevant wiring diagrams, P and ID schematics etc. | | |
| 9 | Screenshots | Screenshots of DP operator stations, IAS operator stations, Generator monitoring etc. | | |
| 10 | Industrial mission information | Information about IM being undertaken during the incident, configuration for the IM, risk analysis etc.<br>Operations | | |
| 11 | Task within industrial mission | Information about specific tasks being undertaken during the incident e.g.. Transferring riser, FO transfer, running casing etc. | | |
| 12 | Ongoing IRM | Information on any ongoing inspection, repair and maintenance processes | | |
| 13 | Failed equipment | When was last IRM carried out, is this the first use after IRM? | | |
| 14 | Peripheral or adjacent equipment | Was IRM being carried out on any adjacent or peripheral equipment? | | |
| 15 | Incident related information | Observations made during the incident, environment conditions, report of what happened with reference to the vessel itself | | |
| 16 | Trends (T-30 min) | Any trends on the generators and thrusters to be captured | | |
| 17 | DP System FMEA | DP systems FMEA report | | |
| 18 | DP System FMEA Proving Trials | FMEA proving trials report | | |
| 19 | Investigation reports | IMCA incident report, third party investigation reports etc. | | |
| 20 | ASOG / WSOG | IM configuration tools and other DST records | | |

Incident investigation support data tracking sheet

| | Attached data checklist | Brief description of attachment | Description of data used | Link to attachment |
|---|---|---|---|---|
| 21 | Witness statements | Witness statements from the vessel crew to describe the incident | | |
| 21 a) | Captain | | | |
| 21 b) | OIM | | | |
| 21 c) | Chief Engineer | | | |
| 21 d) | Chief Mate | | | |
| 21 e) | Senior DPO | | | |
| 21 f) | Junior DPO | | | |
| 21 g) | ETO / Electrician | | | |

Note: Data should be captured and preserved to cover a period of the incident as well as for a period of a minimum of up to 30 minutes before the incident

## LEARNING FROM INCIDENT

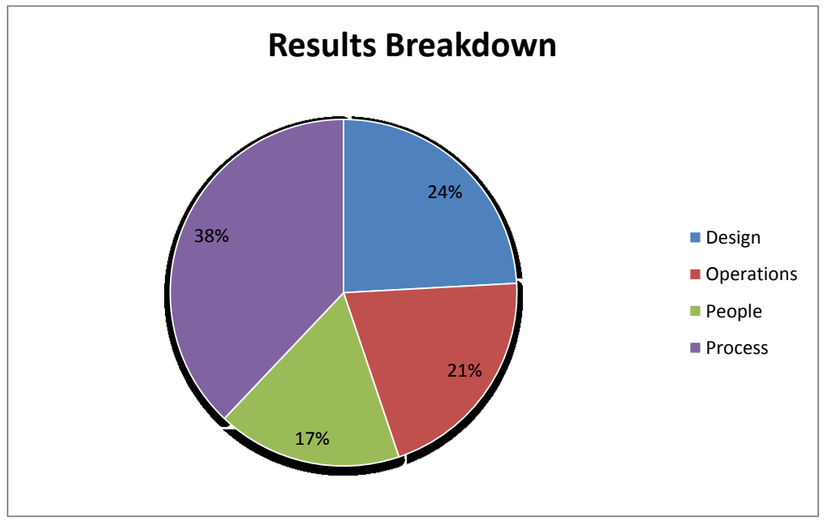
| TOPICS | SUB - TOPICS | PLEASE ENTER RELEVANT INCIDENT DETAILS BELOW | HELP TEXT |
|---|---|---|---|
| **Title** | | Example of LFI | Provide a title describing the nature of the incident |
| **Target audience for the LFI** | | -Charterers<br>-Owners<br>-Vessel crew<br>-Industry | Enumerate the target audience for the LFI |
| **What happened** | | Demonstration of the tool | Provide incident related information (Refer techop appendices for examples, provide vessel statistics, configuration, activities, environmental conditions etc.) |
| **Why it happened** | | To demonstrate the tool | Provide summary of investigations carried out post incident by onboard vessel management team (VMT) (Refer techop appendices for examples) |
| **What investigation steps were carried out** | | •The following steps were carried out<br>•List steps<br>•More steps | |
| **What was focused on** | | Checking for bugs | |
| **Why was this focused** | | To get the TECHOP tool working | |
| **What was the outcome** | | The tool seems to be working | |

## LEARNING FROM INCIDENT

| TOPICS | SUB - TOPICS | PLEASE ENTER RELEVANT INCIDENT DETAILS BELOW | HELP TEXT |
|---|---|---|---|
| | **Confidence level on outcomes** | High | |
| | **Basis of confidence** | Testing | |
| **Lessons learned** | | Following lessons were learned:<br>- Lesson A<br>- Lesson B<br>- Lesson C | What information can be dessiminated to the industry from this incident and its investigation |
| **Recommendations** | | The following remedial actions are proposed | Describe how the findings of the incident report were addressed by short, medium and long term measures. Comment on how other stakeholders could apply the learnings from this incident so as to manage similar risks to which they may be exposed |
| | **Short term remedial actions** | Fix the problem, find out root cause | |
| | **Medium term remedial actions** | Check company wide, does similar problem exist? Fix, verify root cause was correctly identified | |
| | **Long term remedial actions** | Remove the root cause from design if possible, else mitigate. Future designs shouldn't repeat. Spread to industry. | |
| **Additional notes** | | None | Any other pertinent information |

## LEARNING FROM INCIDENT

| TOPICS | SUB - TOPICS | PLEASE ENTER RELEVANT INCIDENT DETAILS BELOW | HELP TEXT |
|---|---|---|---|
| **Results breakdown** | | The chart below shows the breakdown of the causal and contributory factors as defined within the four criteria of Design, Operations, People and Process. | The data below is automatically generated from the worksheets. Please do not edit any of the below items. If they seem to be wrong, kindly recheck the other worksheets |
| | **Design** | 7 | 24.14% |
| | **Operations** | 6 | 20.69% |
| | **People** | 5 | 17.24% |
| | **Process** | 11 | 37.93% |




### Design sub topics

| | |
|---|---|
| Ergonomics | was a causal or contributory factor |
| Commonality | wasn't a causal or contributory factor |
| External Interfaces | weren't a causal or contributory factor |

The above Design sub topics have been found to be causal or contributory factors in many learning from incidents and are thus highlighted separately