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| Overview | This standard covers the competence to plan for and establish system variances and their causes in vessel electrical and electronic systems in compliance with safety rules, regulations and organisational requirements. The effect on associated machinery and interfaced systems and any further problems are investigated and identified. Logical fault finding techniques are applied to identify and isolate the fault, the causes are determined and equipment is dismantled and re-assembled when necessary. A full description of the variance, its symptoms and causes are accurately recorded for future use.  **Target Group**  This standard applies to individuals at the management level with responsibility for instrumentation and control systems on vessels of any type and of any registered power. |

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| **Performance criteria**  You must be able to: | 1. plan for and establish variances in accordance with established safety rules and regulations 2. apply logical fault finding techniques and sequence of engineering diagnostic procedures in accordance with recommended practices, procedures, safety rules and regulations 3. identify correctly and accurately the extent, nature and cause of the variance and its effect on associated machinery and interfaced systems 4. propose action to be taken to correct the cause of the variation in accordance with recommended operating specifications and limitations 5. isolate, dismantle and re-assemble machinery and equipment as required 6. use specialist tools and equipment correctly in compliance with technical and manufacturer's instructions 7. minimise downtime and disruption to overall operations 8. investigate any further problems arising from the investigation 9. record accurately the full description of the history of the problem and its symptoms for future reference |

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| Knowledge and understanding  You need to know and understand: | 1. the operating principles and normal operating conditions for vessel instrumentation and control systems 2. analysis and evaluation methods, processes and techniques 3. fault finding techniques and routines 4. the cause and effects of faults or failures in vessel instrumentation and control systems 5. the corrective action required to restore normal operating conditions 6. the limiting values for running marine machinery and systems outside normal conditions 7. the characteristics and limitations of materials and components 8. the effects that the function of the equipment or system has on interfaced equipment and systems 9. operational and maintenance plans and schedules 10. the use of internal communication systems and effective forms of communication. 11. statutory and organisational reporting requirements. 12. the importance and use of records for commercial and legislative purposes. 13. how to evaluate and apply Statutory Regulations and guidelines, organisational instructions and guidance and vessel contingency plans |

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