|  |  |  |  |
| --- | --- | --- | --- |
| **Qualification Code** |  | **Qualification Name and Release Number** |  |
| **Unit Code** | UEPOPS428B | **Unit Name** | Develop H.V. switching programs |

|  |  |  |
| --- | --- | --- |
| **Summary of Assessment Events** | | |
| **Event Number/Name** | **Description** | **Assessment Method** |
| *Task 1* | ***Presentation:*** *Deliver task briefing to a group.* | Choose an item. |
| Assessment 1 Theory Test A1 | Develop HV Switching Programs and operation schedules written test | *Written* |
| Assessment 2 Practical/ Portfolio Assessment(A2) | HV Switching Program, practical , portfolio Observation & Assessment | *Observation* |

| Evidence Requirements | | | **Assessment Methods** | | | | | | **Learner Resources** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ways in which evidence will be collected (E.g. Written, observation etc.) | | | Written | Practical | Observation | Oral Question | Portfolio | Add assessment method |  |
| **Element** | **Performance Criteria**  (Indicate where each element/performance criterion will be assessed. E.g. Task 1, Q4 etc.) | | | | | | | |  |
| Interpret requirements | 1.1 | Notification of requirement is confirmed and assessed | Q18 |  |  |  |  |  |  |
|  | 1.2 | Area of planned outage is identified using system diagrams, drawings and/or maps, in consultation with appropriate personnel | Q10 |  |  |  |  |  |  |
|  | 1.3 | Planned work details are interpreted from outage request or equivalent and stated on the draft program | Q40 |  |  |  |  |  |  |
|  | 1.4 | Where appropriate, the teams and individuals roles and responsibilities within the team are identified and, where required, assist in the provision of the on-the-job training |  | A2 | A2 | A2 |  |  |  |
| Research switching programme | 2.1 | Implications of switching program on the system are identified and recognised | Q22 |  |  |  |  |  |  |
|  | 2.2 | Types and function of switchgear to be operated are identified and their suitability for operation under forecast system conditions during scheduled outage is assessed | Q23/Q30 |  |  |  |  |  |  |
|  | 2.3 | System loadings, limitations and alternate supply route capabilities are evaluated to ensure system integrity | Q48 |  |  |  |  |  |  |
|  | 2.4 | Consultation with appropriate parties affected by the switching programme is undertaken in accordance with enterprise procedures | Q46/Q53 |  |  |  |  |  |  |
|  | 2.5 | Consideration is given to geographical and/or site location of isolation points to conclude shortest possible route when determining sequence of switching steps in order to minimise outage time | Q48 |  |  |  |  |  |  |
|  | 2.6 | Isolated work area is appraised to ensure safe working clearances are maintained in accordance with mandatory regulations and enterprise/site requirements | Q20 |  |  |  |  |  |  |
|  | 2.7 | H.V./L.V. and control circuitry is examined to ensure no back-feed to work is possible | Q40 |  |  |  |  |  |  |
| Draft switching program | 3.1 | Draft is formatted in logical sequential steps, stating location, apparatus, apparatus ID and operation to be conducted | Q46 |  |  |  |  |  |  |
|  | 3.2 | Permit to work procedures are entered at correct step in program | Q53 |  |  |  |  |  |  |
|  | 3.3 | Program is planned to ensure access, work and reinstatement take place in a logical and sequential manner | Q53 |  |  |  |  |  |  |
|  | 3.4 | Switching program is checked for errors and omissions in accordance with enterprise procedures |  | A2 | A2 | A2 |  |  |  |
|  | 3.5 | All documentation supporting the program is filled out requirements in accordance with enterprise procedures |  | A2 | A2 | A2 |  |  |  |
| Validate program | 4.1 | Switching program is forwarded to appropriate personnel for checking and verification in accordance with enterprise procedures |  | A2 | A2 | A2 |  |  |  |

| **Required Skills** (must be mapped to the tasks) | **Assessment Methods** | | | | | | **Learner Resources** |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Written | Practical | Observation | Oral Questioning | Portfolio |  |  |
| REQUIRED SKILLS AND KNOWLEDGE  **AC Distribution Systems**  **Emergency Power and Shore Supply**  **Automatic Voltage Regulators**  **Panel Instrumentation**  **Paralleling of Alternators**  **Switchboards and Switchgear**  **Starters for Alternating Current Motors**  **Fault Protection Devices**  **Propulsion Systems**  **Steering and Stabiliser Systems**  **Deck Machinery**  **Control of Air Compressors**  **HV equipments**  **Substation equipments**  **Generator Control + Load Flow**  **Computer Control**  **Voltage surge control**  **Modern Power System**  **Electronics Signals** |  |  |  |  | Portfolio Assessment on Marine Electrical Switching System |  |  |
| 8) **This describes the essential skills and knowledge and their level, required for this unit.**  **AC Distribution Systems**  **Emergency Power and Shore Supply** |  |  |  |  |  |  |  |
| **Evidence shall show that knowledge has been acquired developing H.V. switching programs.**  **HV equipments**  **Substation equipments**  **Generator Control + Load Flow**  **Computer Control** |  |  | CLASS WORKS |  |  |  |  |
| **All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.**  **AMSA Ship Electrical safety** |  |  |  | CLASS WORKS |  |  |  |
| **The extent of the Essential Knowledge and Associated Skills required follows:**  **Panel Instrumentation**  **Paralleling of Alternators**  **Switchboards and Switchgear**  **Starters for Alternating Current Motors**  **Fault Protection Devices**  **Propulsion Systems**  **Steering and Stabiliser Systems**  **Deck Machinery**  **Control of Air Compressors** |  |  | CLASS WORKS |  |  |  |  |
| **KS01-PO428B H.V. switching programs** |  |  |  |  |  |  |  |
| **T1 Evidence shall show that knowledge has been acquired for safe working practices of:**  **HV Switching Sequence on board** |  | Practical Assessment |  |  |  |  |  |
| * **Relevant environmental, occupational health and safety legislation and regulations** | Test 1 |  |  |  |  |  |  |
| * **Enterprise procedures** |  |  |  | CLASS WORKS |  |  |  |
| * **Plant drawings and manufacturers manuals**   **Panel Instrumentation** |  |  |  | CLASS WORKS |  |  |  |
| * **Introduction to and typical arrangements of power production plant** | Assessment 1 Written Test |  |  |  |  |  |  |
| * **Relevant plant and equipment, its location and operating parameters** | Assessment 1 Written Test |  |  |  |  |  |  |
| * **Relevant state and territory regulations** |  |  |  | Oral Questioning |  |  |  |
| * **Switchgear types and characteristics** | Assessment 1 Written Test |  |  |  |  |  |  |
| * **Electrical protection types and characteristics** | Assessment 1 Written Test |  |  |  |  |  |  |
| * **Electrical principles** | Assessment 1 Written Test |  |  |  |  |  |  |
| * **a.c. generators types and characteristics** |  |  | Class work |  |  |  |  |
| * **Transformers types and characteristics** |  |  | Class work |  |  |  |  |
| * **Plant status** |  |  | Class work |  |  |  |  |
| * **Enterprise recording procedures** |  |  | Class work |  |  |  |  |
| * **Interconnected utilities systems and equipment** |  |  | Class work |  |  |  |  |
| * **Network systems** |  |  | Class work |  |  |  |  |
| * **Isolating, tagging and earthing procedures** |  |  | Class work |  |  |  |  |
| * **Control systems** |  |  | Class work |  |  |  |  |
| **T2 Specific skills needed to achieve the Performance Criteria:** |  |  |  |  |  |  |  |
| * **Interpret plant drawings and manufacturers manuals** |  | Practical Assessment |  |  |  |  |  |
| * **Apply relevant state and territory regulations** |  |  |  | Oral Questioning |  |  |  |
| * **Apply enterprise recording procedures** |  |  |  | Oral Questioning |  |  |  |
| * **Identify plant status** |  | Practical Assessment |  |  |  |  |  |
| * **Communicate effectively** |  |  | Observation |  |  |  |  |
| * **Use data analysis techniques and tools** |  |  | Observation |  |  |  |  |
| * **Apply or determine appropriate corrective actions required** |  |  | Observation |  |  |  |  |
| * **Plan and prioritise work** | . | . | Observation | . | . | . |  |
| * **Write switching programmes.** |  |  | Observation |  |  |  |  |

| **Critical Aspects** | **Assessment Methods** | | | | | | **Learner Resources** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Understand HV switching system controlling the equipment and machineries on ship and provide effective and efficient switching operation to control and protect the equipment and various system | Written | Practical | Observation | Portfolio | Oral questioning |  |  |
| Critical aspects of evidence required to demonstrate competency in this unit | Test 1 |  | Class Work |  |  |  |  |
| 9.2)**Before the critical aspects of evidence are considered all pre-requisites shall be met.** |  |  |  |  |  |  |  |
| **Evidence for competence in this unit shall be considered holistically. Each element and associated Performance Criteria shall be demonstrated on at least two occasions in accordance with the “Assessment Guidelines – UEP12”. Evidence shall also comprise:** |  |  |  |  |  |  |  |
| * **A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:** |  |  | Class Work |  |  |  |  |
| * **Implement Occupational Health and Safety workplace procedures and practices including the use of risk control measures as specified in the Performance Criteria and Range Statement** |  |  | Class Work |  |  |  |  |
| * **Apply sustainable energy principles and practices as specified in the Performance Criteria and Range Statement** |  |  |  | Oran Questioning |  |  |  |
| * **Demonstrate an understanding of the essential knowledge and associated skills as described in 6) Essential Knowledge and Associated Skills of this unit** |  |  |  |  | Observation |  |  |
| * **Demonstrate an appropriate level of employability skills** |  |  |  | Observation |  |  |  |
| * **Conduct work observing the relevant Anti-Discrimination legislation, regulations, polices and workplace procedure** |  |  |  |  | Oral Questioning |  |  |
| * **Demonstrated performance across a representative range of contexts from the prescribed items below:** |  | Practical |  |  |  |  |  |
| * **The knowledge and application of relevant sections of: Occupational Health and Safety legislation; Statutory legislation; Enterprise/site safety procedures; Enterprise/site emergency procedures, Researching switching programmes, Drafting switching programmes, Validation procedures** | Written Test |  |  |  |  |  |  |
| * **Dealing with an unplanned event by drawing on essential knowledge and skills to provide appropriate solutions incorporated in the holistic assessment with the above listed items.** | Written Test | Practical | Observation | Oral questioning | portfolio | Add assessment method |  |
|  |  |  | Class Work |  |  |  |  |

| **Dimensions of Competency to be incorporated into the tasks/assessment** | **Assessment Methods** | | | | | | **Learner Resources** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Which assessment event/s allow the learner to demonstrate the following | Written Test | Practical | Observation | Oral Questioning | Portfolio | Add assessment method |  | |
| Task Skills (undertaking the specific task/s required to complete a work activity to the required standards) | X | X |  |  | X |  |  | |
| Task Management Skills (able to do more than one thing at a time and managing the tasks correctly) |  |  | X |  |  |  |  | |
| Contingency Planning Skills (responding appropriately to irregularities and breakdowns in routine within a job or workplace) |  |  | X |  |  |  |  | |
| Job Role Environment Skills (able to deal with the responsibilities and expectations of the work environment) |  |  |  | X |  |  |  | |

LEARNER RESOURCES

**UEPOPS428B - Develop H.V. switching programs**

**Session 1+2 Ship Electrical System**

**Chapter 1 Marine Electrical Technology.pdf (23.48MB)**  
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**Session 3+4 Fault Protection**

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**Session 5 Voltage Regulators**

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**Session 6 Alternators Parallel Operation**

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**Session 7+8 Deck Machineries**

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**Session 9 Air Compressors**

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**Session 10 Risk Assessment**

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**Session 11+12 Alarm & Communication**

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**Session 13+14 Maintenance Troubleshooting**

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**Session 15+16 Generator Control**

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[http://www.filefactory.com/file/2w7g39d6o1kd/n/G037+G038+G039(3)Harmonics.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbymEg3nzLF24GYDTOHvp-2B1TqKflYLC4Wm0t0l-2F5o64cbKRh6KkAguV-2BuDerGufQT4RHBWEFMuBIR05dfUpKJQWU_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMcJ3ZEU5-2BoGl93gyiXBhe03Cmvk-2BTVjTEP-2FConVUz38-2B3dVCEgvq1P2VTLYT6B60Itaw-2BJDh0ZmdMnGeKokM81OhwEBQ9WTfBnPkEyemR9REJtH26iSY5ZiXGVmh-2BPAJOD1jlaCjt-2BBwwCbDgPd6Z54-3D)  
  
  
**G037+G038+G039(6)Reducing the effect of coupling.zip (8.75MB)**  
[http://www.filefactory.com/file/3jcggu8793br/n/G037+G038+G039(6)Reducing\_the\_effect\_of\_coupling.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbz-2B64A5qxMXprzBXRxNnER-2BWbyHH-2FlTtzlgWHBzPsrg6GJjMELKCt2nbrird7wx9XI8Pw-2BVFyYxIeXXNmfuRl3USS7K7O1LFBgTPGpq75VDmw-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMVgdzfkaBjU-2FMbAxe4NCfX4p0pDfViQdm-2BKsketyRQ2SIHll-2FpVxxMEycWdT0lh4flQz1232CKSGMp79oNhOQzbbzLnCkt8rLS2vOyhl-2Fk3-2BUWzXxnC6K2Xn-2BawUZIRtNiZ4pE-2BcytRPqK9wgto3CP8-3D)  
  
**G037+G038+G039(9)Preparing for emergency.zip (8.17MB)**  
[http://www.filefactory.com/file/4fkyvrv3hd9r/n/G037+G038+G039(9)Preparing\_for\_emergency.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzEMh18yR9KlIMLKkJjcT47p9RHk0494YvrzDk-2BmUqiGkbClsCUmh4hClerCBFeloAY5TVREdbIr9YE0Zpc-2Bs1V9NDSlsJB5MgJLKDy5tAs9g-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMRm8JgFI2cM0Avu7gsDt1qzYMmXtj8FDe8HHNKfkEuzNiOho9WXrNsdF6kAvZ-2FNM-2FwlimgDBhYINbRrlkLrcK18uZlCNXS-2FXbYILrJPqQU6SC9KzY7aFjebgtSBLny2BV8buJl1-2FZSqqt4WSZ-2BukT1o-3D)  
  
**G037+G038+G039(10)Generator control load flow.zip (6.67MB)**  
[http://www.filefactory.com/file/4jflsqghwhl/n/G037+G038+G039(10)Generator\_control\_load\_flow.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzSmBAS9bMWsiMA-2Ft7TgHSaS-2FNLTLIqCArNc9KXgu2WpI9q1PYZ9PzpYL6kumXhgN1eIGTN1jDDfG945tLwUf8agVx7BXvv-2FJmNwKf4HqxWAA-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMWUPSnyyHV9s1-2BOMpIB36dzD0kdQrMaDQFsDWMHyu1neVgVOqJ0nfMdL6TfEPf8tefyrWa3Yp1w8CVn4oIgQfllfRDlsELA4rBJejlI-2F1daQfXOUIYXtr-2B2rhefRQgQjK8qnC7At-2Bjxt7KwS2MZIAOo-3D)  
  
  
**G037+G038+G039(1)Voltage and power relationship.zip (4.59MB)**  
[http://www.filefactory.com/file/4rcmsbouaxaf/n/G037+G038+G039(1)Voltage\_and\_power\_relationship.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxTJDZBy8q-2BHk2Zvv2XL-2BxlSLLbsjpx4j9MNRByC-2FiQKXK4ETO05x384qPvBDEqDEJ9nG7zvjssZ0qbU6wJ-2F7Nrxsi-2FHLHFwRRaOd4a8f345Q-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMU1rc14G-2Fb0uB-2Bja03SvuLxWIhgfXoNwLmIr-2Fw7LjQlTd4AAeuDD-2BMO6RM3ow3ESt95ihweL3GPHF49LKsamu4dkhmCWwPfSv6mXX5uwW0ZXoCZE5m18OqoeHFklMsL1Fw5xC07FDco3-2FxQpfoYBinY-3D)  
  
  
**G037+G038+G039(2)Power system control equipments.zip (2.51MB)**  
[http://www.filefactory.com/file/5zevyw54qw1h/n/G037+G038+G039(2)Power\_system\_control\_equipments.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxMb9LJoGB3L61iwpO-2Bh-2FLt0ybqNMIAyaqKqErpsEbkYg8OWYDdvvwkEZCA-2F9-2B9SzG3R8bJs3QUq2-2B8G6jAqZLHj9tWE0O20eMhRJ4M9v6T5w-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMcGPxh4K6tjWpTW0lBeBew4CM52rChbPWbAmFr0PsWv-2FXoPW0tZBSAzDqnu9rJDbkDj2K2R0z7Mdw8sYfGgZV5zsCqJwdRayUtbNYqTSyZF9qsAdN3XGH5j0u-2B3-2FIqGgF8OhMV98UidRI6PmVjhOOKQ-3D)  
  
**G037+G038+G039(7)Power quality.zip (9.22MB)**  
[http://www.filefactory.com/file/60xghchtzfqf/n/G037+G038+G039(7)Power\_quality.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbwarkqKl86-2FbBv9Jyh4vcnmYdfiWCDupkWNVJV4mNT7alzeztNwJ2EbCJhHXJDFoNF2-2FIHA6W0ik1K32pyEis-2BS_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMTzEEEzj2yie7TeTApy9VvVYE8VvAd0jUq57oiklaeirt6V-2B8GeWRulOXvheQORqWlpD0A5h5a28mj9dujNBPy0KXR2EmiKC-2FUmGiKpy56r8XMlSUqBeBkuDkj81O-2Br-2FRDCvZLyhJOb4c3EEXwKY8sY-3D)  
  
**G037+G038+G039(8)Harmonic losses.zip (6.59MB)**  
[http://www.filefactory.com/file/6m7zpvvqqlrt/n/G037+G038+G039(8)Harmonic\_losses.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbw8W5E6eYeaUNX51-2BJxhsIZxNg-2BU-2B-2B7Zu0DSY7iZ-2BmsPw2SfV5JoSY5K7DcOAySdDgVcnllHcSKkAfgOwb0bYCb_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpLmxwXPzQ04xmwdOCix296cq7f8h64bzP-2FF8hVUjiDMQ-2B7xkuTUsKbfR1-2FP3NJWDC842DEQeiISKNZqutttVwnFZLtlVYra6Wy1kXaJGVbkm-2But07Du5hbnobgg0PTFFKk2rNTwJD5HB6rvRQXH97eaKxg-2B6150yPRAl8x5REQqvEX2lywIVAumk6zMFJpOUc-3D)

**Session 17+18 Revise+ Assessment**

**UEPOPS456A - Perform switching to a switching program**

**Session 1+2 Marine Power Generation**

**Session 1+2 Marine Power Generation.zip (1.89MB)**  
[http://www.filefactory.com/file/4z7lgcinw7f1/n/Session\_1+2\_Marine\_Power\_Generation.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbznRjH4xkGt9-2FQ8r8JKHzKCMcCc1-2FKwgCOkaABDz5mW7BR9hX2Ns2WrrlrDG8ClqGuyISrQpPfMMYUpc-2B6FvLLz_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPE8dRSk40ICpnBm4JMCZvRYk6LTScY0aVaNnyA0PXskfwt0FYS-2BFOzOulgHYFqpcGjnwn38tO1Ice51M2KN5xSyCXzD-2BGfourg-2Fx11ZipgOmrkL6OmatEIMuw34GaNoGWaqxwHLMa1Dgx3hdPaMoKkm4-3D)  
  
**1.Electrical components +Energy & power.zip (22.35MB)**  
[http://www.filefactory.com/file/6dh662qkib79/n/1.Electrical\_components\_+Energy\_&\_power.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbygPTGs6AoxnRbUawm-2FQw9NN-2FDKXDtSReHK8MSAZULR3w4Tac4yCXx0u5VYPUxARG5OgYjrG7eGwzlySa1IdN-2FSUfLD9Fn9bf-2FNMiFxZdJihA-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPExh67PzY6pkf3DVdMmcK2IN8lpTpUIJqjzvgg7FfrYhLh-2BmhPJL1gqZPJRwAb8QbnJ4t0hwf5CFD-2BBCwMXbbB3z3T7DxxVwVeb4e9IOYEqM46-2Bo9CivvYQd4J42k4SyPihIsSCewTxIxke2zeDkk6Yc-3D)

**Session 3+4 Principle +System**

**G033+G063+G107 Wk 6.zip (2.07MB)**  
[http://www.filefactory.com/file/15wicxhfqfyx/n/G033+G063+G107\_Wk\_6.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbx03UypWvER0giW9iVHkHqEztMQmNk6KiecPd5EAtV3kXyMe9NpgSgiuIOnmukqsbM-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPEy8m8AZUBX5gBpWsmdTi2-2FAz8hw1KszqUvcTzotXkeddSyuFz7AmCN9Uea9Ygx9Rz-2FGGpRfk2VBIu0Lu4QE3SKEA6bYZIxjIAtLHwun0NVdT-2BDIpYvkqXItH4ye2f3dCqo6RJHCWGfavdFqiczkJprY-3D)  
  
**G063\_Wk\_7+8.zip (28.15MB)**  
[http://www.filefactory.com/file/1hnxpzq39j91/n/G063\_Wk\_7+8.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxFY-2F8tv5Zy63JUTTzHUmsmYhZzlRoqhESoY4XlBm6XjxwurIJw6xYZGdwDczUE4eY-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPE7-2FVDK-2FeWp-2FYya1ig9DJ1Ns6ACdCGXDt59urSnQnOoA6P4CE1ZWZfUC1-2BEJUCugEWxUB9yfm-2F5b-2FLjZEs9rUwGmpHMIX08rpJAY0nUnmwgvHGZKGRUR-2FbSTEAeKBZjlvbCjpa-2BNqPJPhwv-2BFln1C2m0-3D)  
  
**Page 40 to 111 Second half of Marine\_Auxiliary\_Machinery\_7E.pdf (33.76MB)**  
[http://www.filefactory.com/file/1snv4862qhw3/n/Page\_40\_to\_111\_Second\_half\_of\_Marine\_Auxiliary\_Machinery\_7E.pdf](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbwFyzxCt2537vzLmQrxC-2FoDaCLssS7vAxPLHMYGE8GmXssEzeo5gCs11bbfaM4kOoYqGJdIBeEbmUlZYyvpnHRzTlAJKNqw7JgUC-2FmtnXAkIHzSWoKQvVo2fsvUW9PUP7w-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPEwYfzydON1qZA5TET-2BuoMGhfsS3LDjdh7UQfzMNcDQpNd-2FVm22XHq2XYEJJHzJ0zN-2FgvOYZiERmTOKQJaDF-2F10jT-2FlV0nD-2FB91hjRVeXf-2Fs7yWAIn4a23mjoMj-2BT2-2FqPIlns9W6tnVzaBBGaWfwyTN0-3D)  
  
**3.Energy conversion, AC Principle,AC Circuits.zip (16.39MB)**  
[http://www.filefactory.com/file/1vpf0xfcz3v5/n/3.Energy\_conversion,\_AC\_Principle,AC\_Circuits.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzalTm3oxjlvkhBBrR39bxKDldjRkQyzjaKFWx8n789NaD4v1-2BeHIxOGcfYQhUSWXRJv4xlYu-2BPMsDdUcPkxrZFTdKboZnyH8-2BbC4vg971zww-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fqr4h-2BeSAhqnGeek3fkXpyvOQh3CZxY0ClEcbvo6iBPE53Qg-2BOyLymZH0vieUDdGaAnbdGWNCRKyBo2Jnyxej1EOkqf3CQBay4nC01SZlRJ7-2FD6oZ-2F5mSPKx3nrqsGzr-2BKWul9ErjC9ESM-2Bi2jaWj-2F5qf0wEzOE-2BPjW1h94M5AUSpOwMlkVa74pP9dM1xhmCDQ-3D)

**Session 5+6 Alternators**

**12.Synchronous generator.zip (3.95MB)**  
[http://www.filefactory.com/file/1j4qusz28t09/n/12.Synchronous\_generator.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbw4HpiFB7n-2Bo7-2B2Js4Id5S6tL2j-2B4zewi-2FCyO8l08MVwhvZ-2BHlQZillW72-2BVrr1R2mZN8zxzUqKvOWkskQGv3xh_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrtuHEYkb4qo0dE5R9QE8stB0JnAz7xMbrM9zenOnbaxUnN5lqYtRZZA5cNTR46LXRETfzHMuX3wtnFqhTsXsLyO9Dk7zi1Z3Tn3bJqYs3eC4VZDIozUNaK-2F0zey-2Ffb4fUiHkUICMlrOF1K74-2FNPKf3xWaWce9JkupWAZMbi9TL9QnwGf2Fsh4xO4zAm42TAuw-3D)  
  
**14.Oscillation of synchronous machine.zip (23.96MB)**  
[http://www.filefactory.com/file/4043507vfmsr/n/14.Oscillation\_of\_synchronous\_machine.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbznSz1rYpJdouGbEKLjwXQwZUS-2BkzywzUWT-2BFTjx7FbPNoWDzCXvFw3w4UtJt3gYuC-2FvZnFsh2yl0eGUZUvctNe_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrtuHEYkb4qo0dE5R9QE8stB0JnAz7xMbrM9zenOnbaxeN0UPeQu6dccOdbkWf9-2BQ6Dd55W-2FV0PZyzbrm0Tcdutt34L-2BlECwIP-2BWK0hD0HHyiwy2BCMtO3Wpzpezuw1BRAi88wMXFwGSz18Mhjx4AjNLITHUjjBNcHRedTKgYF-2F5ZmE0atg9aueDpEG0jpuC2E-3D)  
  
**15.Generator control.zip (32.2MB)**  
[http://www.filefactory.com/file/4hkvow1kktpd/n/15.Generator\_control.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbxxxb-2FguFSkPoukO7Gud3Zz0269mT0OW4Iv-2Flr2HdFGVdTFJLolG0FHxE0RJc56bIM-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrtuHEYkb4qo0dE5R9QE8stB0JnAz7xMbrM9zenOnbaxWBJ4U3OWtacFbU9ETJQ7F4LIm05D-2BrSud4xYDJzuJMwW3GHHOS0GhO5JucsFfLWJx0a1QenC986r1zvcNeQLTcEZ7rqh58Ju0OxFNz4Co9fmCeopQMTxMnK2-2BNdYdRbR40cUO789s13kwrgVHigpjk-3D)  
  
**13.Effect of field excitation.zip (23.68MB)**  
[http://www.filefactory.com/file/5yv8ucyi8g9l/n/13.Effect\_of\_field\_excitation.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbwLIaH4-2BgW0WvtewI7TVszwv-2BRzPxyLcEQLtwFdWcCTFsNVJvut7ubj9xFgOZKbYei7ZLV4hSt5uEpJ2FBanqpa_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrtuHEYkb4qo0dE5R9QE8stB0JnAz7xMbrM9zenOnbaxQdd9zIwj0Z36Ui-2Flk37cm1m-2F9GCpNMozPCvE3JGCCUBYpyOYOo7-2Br2jEt7f37wIe7nsVACBBPoTfViDuLD-2BAood9-2BfQapRWp61Y-2B10PGGLDJEbmAHomWnuDDPQ0FiobE2AnjkqGenqzT9KotgqipYY-3D)  
  
**11.Synchronous machine.zip (11.53MB)**  
[http://www.filefactory.com/file/64oa58sd0445/n/11.Synchronous\_machine.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbx4whHwrdd3jWRHDShC5MzzhL7Jw-2FtfwN9mWJvRnRQfawqzgLJnhwFUrZs6P-2F0Mt5I-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrtuHEYkb4qo0dE5R9QE8stB0JnAz7xMbrM9zenOnbaxbgUOC2pp-2Fhg-2BCTrBU-2BPq1nhVlwod-2BP1TsbCONFjYF1gXOVeq3NbwPgy88UXww784AdhOl1JgBmWtLcOn0y-2BO72iUaWhUADDMJ5M4qnSBxumYVxvjxftUXs4-2BCzlfGfPEgkW5e-2F-2BSjU1RZ-2FY2bYjUZ4-3D)

**Session 7+8 Transformer**

**13.Polarity.zip (24.47MB)**  
[http://www.filefactory.com/file/1vdgt7lwqqat/n/13.Polarity.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbwFO96XNdvRe7H3-2F1UIKmFCf46sSHAVL1qTdSYvYs3K8DqMVoX-2FOeSe5rMoZ7mC35c-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7Y693RaTXTSLwwGbHGAV7-2BQUGJGB9ZguhzJVgMKS6HW2CDEREKPBSlhCVng3QJmvactsVWw8eS0WLXopi-2Brc-2Fyis-2FPzok1Lp5NaHYUP5ciHpUAjHhOsvh2tgaTBScVPhP54Nku3XEwW7-2BUR30nkmo4I-3D)  
  
**6.Parallel operation.zip (30.5MB)**  
[http://www.filefactory.com/file/2jvo1ny9j3bf/n/6.Parallel\_operation.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxL-2BO-2BxC04DUCGxsclGxGzk6cmYxoPu1MvJPuADD7f36uVahvjIDgWAY9GC5RMC2kk-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7ed9fehXIhh5B5X16Fc0XAA2CA3EVLz9z-2Bigsx-2FBjJJfvOni8k2lKpImXMlaNx58jBmGDeqTTUJHc-2FF6D1TiiT592SJuUN8SdswVXmJi-2B4y3BMPNFslES5T3fpgZI2YuZ2NkHjyrtx97UlhKo26Km04-3D)  
  
**7.Three phase transformer connection.zip (26.36MB)**  
[http://www.filefactory.com/file/2q1wovhkg85t/n/7.Three\_phase\_transformer\_connection.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxB3x97dW-2F9wWjEp6YliTL5meyeM4sDwm7KabZr2f1BLf8Pgp94pHeyR-2FBj5raloe8O3421UlRKB-2FMl1wFoyl14_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7VvqydeW-2FxKy3fbIsUTPtDo1wXAdxuvAGWkCyVrIJaji90iiGvy0tOyx21HJpvJJuMTQ-2FW1smVyPS97WvjGJsXd0yWcGiy-2BMNv6Pev1LTdCVbMr4rOVCadS1zVwtrj-2B6APEF7o7vEv6uzYxu4tGxefQ-3D)  
  
**1.Transformer construction.zip (20.18MB)**  
[http://www.filefactory.com/file/3ca3ibrfz6r9/n/1.Transformer\_construction.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzBXVqZDU0n0SdsdpJwRYnv6wSQnsJ-2F9l-2FWXfo-2BvmYrWrf0B8hAPf2p7uI-2FZy9HalwZVqevG7Jn0ejbdaD2wsRC_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7aBPBAx-2F81U5T0hf-2FSNC5bm0wYIQqaUzB-2FEm-2FCacZesn-2BjIQRjWim4pS3jw9QU-2FzezZyyS3ELr48i6ThzkuqmM2X6X-2Bfnr0kckU6vmRZuKN-2BG2ZpadmRKX-2BLE4RljhGDhS0dG5cj2sWW3wwe2Ubj1yc-3D)  
  
**4.Polarity testing.zip (38.56MB)**  
[http://www.filefactory.com/file/6uj4096fts7n/n/4.Polarity\_testing.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbyEx6JUcWF6rbAfn0Zaz3Ax7UIek9Da9Ys6fugBoghxat5DdSEW2C9jeJxUkHjrQJo-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7Q2K9br6DKqKcGX3cubzMyt0aTNdV-2FToVSgEcHysIqSALv5fZEBElItYe-2BcIdhaD5bRC-2FO-2FFZ4Q-2BPsEx0T5D-2BMpbNZSQHvNT6pXhyeChy2O-2FjktflQvwjBHXe72-2BbNrU4sqjdpLQqvYDhzPqKWuaKo8-3D)  
  
**9.Harmonic in transformer+All day efficiency.zip (42.19MB)**  
[http://www.filefactory.com/file/6wndb8u04f1x/n/9.Harmonic\_in\_transformer+All\_day\_efficiency.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbyOMgIREFA5V4sgUi-2B53Lv9qbK2adgWxitfMNNn4GyFbRb9WxtOeEvAWSyPWK-2BAcgLw8-2B9J0pmUa2NlOLwfISEFXtn0blJr8ryOYY6GrBhsOQ-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7RN-2BmiM6vGuEwM-2F-2Fn9nblH2beTkPV3Fmx80w8B8wS-2BBD7Jc5MormHv68hExXoriOfGQLGL9E-2B-2BBSwriJvDahTqi7dU5xxQbI0uyhA295KtHXdw7L67lsdI5bcNV11fcCRWs6W-2BIIpu4HgBo5Z4dSCH0-3D)  
  
**11.Rating+Conservator system.zip (24.12MB)**  
[http://www.filefactory.com/file/tsqyeq4qkpj/n/11.Rating+Conservator\_system.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzBI7M-2BKSQz5KMYZNLReERdMUgMJtI8kKUQAgybYTLx5wJSjfuJRd2MsTY5afhL1qM7FdzmPy0GM-2FpaP52uxyR9_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FrUn4MoQWeG9rxI79iT0oYkK1YAHNJg5gaeKrMf2tCI7U-2B1WsjZ6Yr7B55oL0k-2Fbm8WQe0Qg5fxRoZCAh8nXvBrKTmPydqRXu8SOxANloIjGPQ6mW5W6fvVjaYpO6pK4VzNDf65eWd1TIoSEut2mfAaKrwUk7-2BA-2FwiPIYYS30Bp-2BFBMzL-2FvpuHZNtOaoWrmvfQ-3D)

**Session 9 Risk Management Leadership**

**8.Team Effectiveness.zip (25.18MB)**  
[http://www.filefactory.com/file/1d1dw9r4490n/n/8.Team\_Effectiveness.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbx5McAH0o0Pe8bi7ws-2B9yiQecIb9TZMWHMXL1vVUFS2nphYVcBv0eo8kIADgON-2FwUQ-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpxqCyUuNE2pogsv8CbcKVLSLTxXfBTj2fIdx5jutEPbt9pWtXjkgLDi8m-2FxTi-2F1o66-2FyU1OexHZTteugD7K5GuSU8bwOY5o8BP-2FUPpbagm-2BLiXOhnfm-2FnSiPowifbl1sawh4NZvjBMLneiiu9Puy5qClqo4HuQyMN88zoeGqzyYeJ8BVUacaLJ8NBieTbrnA0-3D)  
  
**13.Management leadership.zip (12.32MB)**  
[http://www.filefactory.com/file/3eplnlv4lup3/n/13.Management\_leadership.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbwH3OHK0ygd0AM29KrWsb8QdPhROXbSiOhT5Dxn-2FAe0WHbyx7-2B0NrcfgOmFZI3Cw7IV6wbyU6zDvBDxbrdzJ5tE_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpxqCyUuNE2pogsv8CbcKVLSLTxXfBTj2fIdx5jutEPbjAprEtah464Sho27h772K2Wt97kj-2Fxi3hSHRFjZjAJGkrXVYNc-2F2KDhs46XslWZsVpdJ67jMYpRhu2nwJ9S-2BPiYOwtX7U-2Fc7axrVRELGORMDeEbBl-2FkWw3mec7532Cs1c3nqJbnNHgGugAaKzWfFaQ-3D)  
  
**1.Hazard of electricity+ Risk assessment.zip (1.92MB)**  
[http://www.filefactory.com/file/3fb1wo2eovhh/n/1.Hazard\_of\_electricity+\_Risk\_assessment.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utby3qdjViYIJmWd4YRyoZG5nw6Vh0-2B3qdLdtA5vf-2FEOKkGYhW4jsOkWPNunUuTF3v2E-2B8O4F2oHjNgmk-2FhYiT3ASCM8LfCDC6B4kcUFUZ0Asgw-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpxqCyUuNE2pogsv8CbcKVLSLTxXfBTj2fIdx5jutEPbgLoNj6mIFwCcZ8cVIhdXclha3JS0OtkG-2BSnLm1G4MiyTHS22idvfZpnpgtC4DkV1XPHWDAXBxgOwo5Ux78VBYIV82QRbFmBdEb4UztD1D5sVvHMEJ163OZAqrNRu4U6RulMKt0GEmrH9nK7VTHIbTg-3D)  
  
**2.Risk analysis.zip (1.38MB)**  
[http://www.filefactory.com/file/5jwtzagglid7/n/2.Risk\_analysis.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbyCLhlWipDb46srHTBQ8YkLP0B31GIhOoI5N44aKftP3DhbpYmr37srgh-2Bsc2W9uaA-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpxqCyUuNE2pogsv8CbcKVLSLTxXfBTj2fIdx5jutEPbiCOnob8ffjNIrR2nduBoPYj4Bpq6QUIxyGTV4px4jBs2eKmF9ratLXvm9tW-2FgrU4mLDgjyXHXKhR4zonscplYFIAhQSyX1c07rqNrzAlpqKnZb9EVvcwA7VxAU5LBqXBM9K2MfJWtnAR7mX-2BV0A8PI-3D)

**Session 10+11+12 Control**

**2.Operational amplifier.zip (27.85MB)**  
[http://www.filefactory.com/file/2seva2hdpo19/n/2.Operational\_amplifier.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbykNiq6-2BJw3j7RBzmmA7WoGyNGsD5wCl-2B0Fa7sqILeA1DgWkglOdlVG9bQSPalgICt3RZCkKfV4QlgWuiNGTt6k_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpEzCYgj2Zt1sw0Of6F1gdQT9N-2BzIOG5v6mkRf9Qoh5kEaaTpwzkl6056oEPoB5NoGIPGGcXoVhHUMWuMTU5hWGNHK6tQGaLyqxOylUQ4Y14kiZGLBZZMo1ql3BMIRQEb4TbIFRws01NfT6vficLFNy0LUTzwnq6S0uJiQV6j3oDA-3D-3D)  
  
**5.PLC TL31.zip (10.85MB)**  
[http://www.filefactory.com/file/3ht0modi2aot/n/5.PLC\_TL31.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzdiPi5Z23N6a47pRweUx2fsHR73-2Bp-2FsqzAp3-2BS70f5SjViA1OpOhFEFWYcuN2ZBvk-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpEzCYgj2Zt1sw0Of6F1gdQT9N-2BzIOG5v6mkRf9Qoh5kFnRggRn09EBy5FL1Wgb2B0CT2VYWDcug3hcF-2BAoy-2BXdPxC6414XVR3VivdrntvdWryucZMtgTEFMl0fo4Shx9eBSXKJWcNe5tBW9OOnmN82jg65nsp9lSSGVO9cxWNhlg-3D-3D)  
  
**4.Digital control.zip (43.16MB)**  
[http://www.filefactory.com/file/6fvur80agdp5/n/4.Digital\_control.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzGDcqNuHiVIerp5xhhap-2BvpWPhtXpM-2FdAOzsqElJWlIxw7uRSBVE9Hrq7u-2BTx3U1o-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpEzCYgj2Zt1sw0Of6F1gdQT9N-2BzIOG5v6mkRf9Qoh5kIgvUN-2BLvPbWqMk2sdWhMu8kGJf5UPpoZpcAEBE2iPIyBAHfHiAumYmDp-2FQm2buxRvjmBBilfdnpktiG6WUap1-2F7A9bxEPdfHM0gnpEt7DaGzT-2BYigywzyLt-2B5c6GLF66Q-3D-3D)  
  
**1.Process control transducer.zip (37.27MB)**  
[http://www.filefactory.com/file/6th3foce1wnp/n/1.Process\_control\_transducer.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbztc5Ud0AdqPyeiV0e8AKIE2qD7Ucskm0hOCJ0sxDKW-2FGunS86cuPZGcisMI0bXooREQDMNg0ujiD9ySJtcm4FW_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2FpEzCYgj2Zt1sw0Of6F1gdQT9N-2BzIOG5v6mkRf9Qoh5kJxVhKzrOENIi3PhQ6LHFgNkbLwpPb3A8nZJ-2FuEV3Xyb7tzVn-2B-2B6bqSfC2v1w1qFhorfaWxrYz6x8KCyuLr44vzB2xy9UFDjKjfvGnpbPwNyeXEKBvL8rqn8sBnu4UuMmw-3D-3D)

**Session 13+14 Ship systems**

**Page 40 to 111 Second half of Marine\_Auxiliary\_Machinery\_7E.pdf (33.76MB)**  
[http://www.filefactory.com/file/1z90sqj9i86r/n/Page\_40\_to\_111\_Second\_half\_of\_Marine\_Auxiliary\_Machinery\_7E.pdf](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxDk-2BhJLOZRRhBJ5GD0GiLaiyjeqtICHL-2Fs704TRjf8K8q-2BT4MwVY2q9etpukGycs2udpIe51lnpuABF2pOKXg9YPutSUhOhhNQCY98joHXkBSKzvi3htVmLFXadzZq7Rw-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qM5JnxCwkXQ-2BQh0aYkua6NcynE16pDVk9C4ldD5QvptiC7obVFU2-2BzC7sZmW6u8FRwzHMVqCxFb2NjNzw5PBkarxjNmyRFLwui8tAWEleEWR-2F7pejhFTcA39Cie6udf-2BOjelq3pOlbaWhBjnS5RJ-2FK4I-3D)

**Session 15+16 Energy Supply-Operational status**

**34.Stability.zip (19.39MB)**  
[http://www.filefactory.com/file/242xcn7akfo9/n/34.Stability.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbw8eYwAQsQBjlHL1c5bCzu4qzHqwGBHM5U-2B23CjhGqEngUtQsDs-2B-2BdqjVWtAK5PJdU-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qM9ILbLDCFigirfwcuDCnkAvyKJuBcFM5tcrYqSoCteXqIWrU6Rx2OTgRdCIeyNoHU8P832J6dFMJUQ4Yc36Pn4QeDEtM-2FwOCIkKGNOAObr3hiHHKiyJfOldk2F2bepWcRNLsLNmVfDkZCvn5Np8f57s-3D)  
  
**43.Air insulation+Short ckt current+Corona+Line surge.zip (18.56MB)**  
[http://www.filefactory.com/file/2p456pzt9v0z/n/43.Air\_insulation+Short\_ckt\_current+Corona+Line\_surge.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5Utbztl0mIy-2BRTrC12maxhb-2Bhgmm8xgRHnsaS7ElvcGDMx2Xu2sdIEFMKsnGKoMSmCqwVnrv0FNNLN0gadx4Gyo8ufpqpN05OmR1BoM-2FJj6418Gg-3D-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qM8qG9gHpsCw5hcx4FRuZ6krOAYLZNe01eaYKFZh46jhjuDqdWt1-2FIBIG6WKfkYXEDt0xIhTNrQ78gda4BNqi-2BGl3j-2BalGvIZkD1H881slinLrL1PrnUwjhzx2eKxfjZcc0bcV1RL5wd045MM3IRMV04-3D)  
  
**42.Voltage & PF control+Static VAC.zip (15.83MB)**  
[http://www.filefactory.com/file/2w5oazdbwe99/n/42.Voltage\_&\_PF\_control+Static\_VAC.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbxrL-2FgPf5FAL-2BPcAP6FA1exGMz3qnUv-2Fbn5ZMK-2FHdnoF8uhDr4FzhAzcp0ktRg0V2CH7pUaXzwCSivxkSq7S1tt_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qM4Mffr5y41h6o2xUeMpQ3k8-2Fps4LlaiZVHyga38QCrjA4ETtXfGSIaTiKX2JWn0H8QEDcwpL-2FBr8dwti6JsuezqDHAWnn5tZzTHSUuArl8FTZPICqFGPIskDel0ofQ-2BvFIQC6NeMrmSJMtEV3-2FEbnwU-3D)  
  
**11.Positive,negative,zero sequence.zip (14.04MB)**  
[http://www.filefactory.com/file/4clhtfgenef1/n/11.Positive,negative,zero\_sequence.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbyLFkK5TF82UR1FVCMPg44cWSif9obnBEW7-2Bdbrn28tKxjK1IkX0tqVFrvLym5HPzQ1FXk-2F9gLIk9JndWk1Cy2t_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qMxJLYg-2BDEIQNWzKp5fSUNngU2yYolgdiAbzqbVEVRQj2yrz4VDw9yU-2Fq56TP-2F-2BNVJKsLCT1I2V1vAKbvirCHdGg-2FiMGF0OkD-2Bfgc8IA9WwAlR-2FEYvPQME8jwBgDsdDwhguaPTcke2b2rQmKIYWKFljQ-3D)  
  
**3.Three ph 4 wires unbalanced.zip (7.92MB)**  
[http://www.filefactory.com/file/6ktim3bhdcfz/n/3.Three\_ph\_4\_wires\_unbalanced.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbzTTfSSEWAONb-2FAxu9fBxy3QRdFqC5pX19fM9ifyzoxkSPIrY-2FQVPPP3ip-2BB72dNBS9ezS5ui1x0bMIID4ZrgcU_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qMy7D05HZW8IA5X9kewXHsnmN03jvMYVgJyI8hekXrHJXoxejtTl0Zl3GZcBItv536YWHkKDVzimloWwWF2lAky-2Fm-2FEdEzuqXNTbYcoDA8nsfU5vhLJD6Jijzmew7VbDSSwbpgpUu4erjPNnlC3Qmlg4-3D)  
  
**38.Computerised control.zip (38.4MB)**  
[http://www.filefactory.com/file/6pewreqg45zh/n/38.Computerised\_control.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbyzTShcyhb6Q2yTyaqj5VfOF8SqEYyz9LRl6fhMjnzA5VHobAwzypc9gRwyo37LBZg8raPyHAEzXab0RoMb28Rr_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qMzNMf2nvaPzkYQembYuuaVJgO-2F74ozBP-2FpOHdwv4K-2FjZyV9IFrHoq-2BMayEN8W2U05buMpiEUpNtBQGrpzdGVoZxbJxKilFOXgnD5aOR8w06DEPIsrC0N9D99MTCivb9XKHpw4bP-2BgPhi07eYJcJiG5U-3D)  
  
**13.Fault calculation.zip (22.55MB)**  
[http://www.filefactory.com/file/7c03ili0de23/n/13.Fault\_calculation.zip](http://grid.filefactory.com/wf/click?upn=8tIX75zmv4pcsn9X2kg5JPXYkvZKM0XicLE0Xe5UtbweMqnXLGZFUmqt5FbZRcaQy3BJK98xtUTVMc-2BZx5By1nbkJmH9ypJF04M2B7npy-2B8-3D_v7TcKo3CcnPCP8zlK8SZehnLGxiqxn5RsshmUhilv-2Fo4uXY-2BieNlgfEa9-2F-2F92kvycvCRz8KiDxV1D9N9DS1qM9IENjl5kgxDUmjSbeJQV7mksUJR0d0q8Z8dMZpBizerh4UxQqpSQ4KJRg7FEFcSt68724b-2BYUu3VLvyyRhTP7LvkMcXPlw1z8M9S-2FcrXz8upefp-2BUBAY4AHF7dE7xlSMe9OSQIE4WnSemE1cu3kE48-3D)