

| Peralatan |                                                                   | Set | Daya kW |        | Berlayar |                       |                          |
|-----------|-------------------------------------------------------------------|-----|---------|--------|----------|-----------------------|--------------------------|
|           |                                                                   |     |         |        | Work set | Daya (kW)             |                          |
|           |                                                                   |     |         |        |          | Continue load LF(80%) | Intermitten load LF(80%) |
| No        | Machinery Part                                                    |     | Input   | output |          |                       |                          |
| 1.        | Aux.eng room fan 1<br>(kipas tekan ruang MB no 1)                 | 1   | 18,5    | 15,3   | 1        | 14,8                  | -                        |
| 2.        | Supply fan separator<br>(kipas ruang separator)                   | 1   | 5,5     | 4,6    | 1        | 4,4                   | -                        |
| 3.        | Exhaust fan steering room<br>(kipas isap ruangan steering)        | 1   | 5,5     | 4,6    | 1        | -                     | 4,4                      |
| 4.        | Supply fan air cond. room<br>(kipas tekan ruangan AC)             | 1   | 15      | 12,5   | 1        | 12                    | -                        |
| 5.        | Fresh water hydrofor pump<br>1,2,3 (pompa saniter AT no<br>1,2,3) | 3   | 13      | 10,8   | 2        | -                     | 20,8                     |
| 6.        | Ceiling light ecr<br>(AC ruang komando mesin)                     | 1   | 1,5     | 1,3    | 1        | 1,2                   | -                        |
| 7.        | Incinerator                                                       | 1   | 10      | 8,3    | 1        | -                     | 8                        |
| 8.        | Pd 11 boiler plant<br>(bagan ketel uap PD11)                      | 1   | 10      | 8,3    | 1        | 8                     | -                        |
| 9.        | Sea cool water pump 1,2 aux<br>eng (pompa AL pend.MB no<br>1,2)   | 2   | 14,9    | 12,4   | 1        | 23,84                 | -                        |
| 10        | Bilge and blast pump 1,2<br>(pompa got dan ballast 1,2)           | 2   | 13,2    | 10,9   | 1        | -                     | 10,6                     |

|    |                                                                         |   |      |       |   |       |      |
|----|-------------------------------------------------------------------------|---|------|-------|---|-------|------|
| 11 | Engine room fan 1,2,3,4 (kipas tekan ruangan MI no 1,2,3,4)             | 4 | 18,5 | 15,3  | 2 | 29,6  | -    |
| 12 | Pd 29 Moring winches (pembagi daya capstan pd 29)                       | 1 | 60   | 49,8  | 1 | -     | -    |
| 13 | Pd 14 air cond .plant 1 (pembagi daya AC.1 Pd14)                        | 1 | 270  | 224,1 | 1 | 216   | -    |
| 14 | Pd12 cool.water pump air cond plant (pembagi daya pendingin AC pd12)    | 1 | 105  | 87,15 | 1 | 84    | -    |
| 15 | Pd 22 boatwinchess ps,sb 7.deck (pembagi daya derek sekoci KI,KA pd22)  | 2 | 45   | 37,4  | 1 | -     | 36   |
| 16 | Pd 1 distribution fans (pembagi daya kipas PD1)                         | 1 | 58   | 48,1  | 1 | 46,4  | -    |
| 17 | Pd2 distribution fans (pembagi daya kipas pd2)                          | 1 | 75   | 62,25 | 1 | 60    | -    |
| 18 | Pd 3 distribution fans (pembagi daya kipas PD3)                         | 1 | 68   | 56,4  | 1 | 54,4  | -    |
| 19 | Stand by lub.oil pump ME ps,sb (pompa L.O.MI .KI,KA)                    | 2 | 32   | 26,6  | 1 | -     | 25,6 |
| 20 | Starting air kompresor 1,2,3 (kompresor udara no 1,2,3)                 | 3 | 28   | 23,2  | 2 | -     | 44,8 |
| 21 | Pd 18 provision cool plant (Pembagi daya kamar beku pd18)               | 1 | 24   | 19,9  | 1 | 19,2  | -    |
| 22 | Pd 26 seperator room ps (pembagi daya ruang separator KI pd26)          | 1 | 15   | 12,4  | 1 |       | 12   |
| 23 | See cool .water pump 1 Me ps,sb ( pompa A laut pendingin MI KI KA no 1) | 2 | 25,3 | 20,9  | 1 | 20,24 |      |

|    |                                                                           |   |      |       |   |       |      |
|----|---------------------------------------------------------------------------|---|------|-------|---|-------|------|
| 24 | Fore ship (crane,container distribusi,fan cargo room )                    | 1 | 220  | 182,6 | 1 | -     | -    |
| 25 | Fresh cool water pump 1 me ps,sb ( pompa A Tawar pendingin MI KI,KA no 1) | 2 | 34   | 28,2  | 1 | 27,2  | -    |
| 26 | Fire pump 1,2 (pompa kebakaran no 1,2)                                    | 2 | 39   | 32,3  | 1 | -     | 31,2 |
| 27 | Sprinklerpump ( pompa sprinkler)                                          | 1 | 41   | 34    | 1 | -     | 32,8 |
| 28 | Bow thruster                                                              | 1 | 736  | 610,8 | 1 | -     | -    |
| 29 | Sea cool water pump 2 me ps,sb (Pompa AL.pendingin MI KI,KA no 2)         | 2 | 25,3 | 20,9  | 1 | 20,24 | -    |
| 30 | Fresh cool .water pump 2 me ps,sb (pompa AT.pendingin MI KI,KA No 2)      | 2 | 34   | 28,2  | 1 | 27,2  | -    |
| 31 | Steering gear Intalasi kemudi                                             | 1 | 39   | 32,3  | 1 | 31,2  | -    |
| 32 | Pd 27 seperatorroom sb ( Pem bagi daya ruang separator KA Pd27)           | 1 | 30   | 24,9  | 1 | -     | 24   |
| 33 | pd 25 eng .room (pembagi daya kamar mesin )                               | 1 | 80   | 66,4  | 1 | 64    | -    |
| 34 | Pd 28 anchor winches (pembagi daya mesin jangkar pd 28)                   | 1 | 60   | 49,8  | 1 | -     | -    |
| 35 | Hydr.unit bow thruster (bagan hidrolik bow thruster)                      | 1 | 4    | 3,3   | 1 | -     | -    |

|    |                                                                  |   |      |      |   |       |     |
|----|------------------------------------------------------------------|---|------|------|---|-------|-----|
| 36 | Exhaust fan separator room<br>(kipas isap ruangan separator)     | 1 | 5.5  | 4,6  | 1 | -     | 4,4 |
| 37 | Supply fan bow thruster room<br>(kipas tekan ruang bow thruster) | 1 | 5.5  | 4,6  | 1 | 4,4   | -   |
| 38 | Exhaust fan air cond room<br>(kipas isap ruangan AC)             | 1 | 15   | 12,4 | 1 | -     | 12  |
| 39 | Pd 4 distribution fan ( pembagi daya kipas PD4 )                 | 1 | 10   | 8,3  | 1 | 8     | -   |
| 40 | Water tight door system<br>(sistem control pintu kedap)          | 1 | 18.4 | 15,3 | 1 | 14,72 | -   |
| 41 | Pd 17 workshop ( pembagi daya bengkel mesin pd30)                | 1 | 14   | 11,6 | 1 | 11,2  | -   |
| 42 | Pd 30 laundry (pembagi daya mesin cuci pd30 )                    | 1 | 12   | 9,9  | 1 | 9,6   | -   |
| 43 | Pd 6 scullery 6.deck<br>( Pembagi daya cuci piring PD6 )         | 1 | 16   | 13,3 | 1 | 12,8  | -   |
| 44 | Pd 7 galley 5 deck (pembagi daya dapur dek ke 5 pd7 )            | 1 | 18   | 14,9 | 1 | 14,4  | -   |
| 45 | Pd 9 galley 4 deck (pembagi daya dapur deck ke 4 pd9 )           | 1 | 18   | 14,9 | 1 | 14,4  | -   |

|                                                                 |                                                   |   |     |     |   |            |       |
|-----------------------------------------------------------------|---------------------------------------------------|---|-----|-----|---|------------|-------|
| 46                                                              | Light transformer 1,2 ( suplai penerangan No 1,2) | 2 | 350 | 350 | 2 | 400        | -     |
| Total Continous Load                                            |                                                   |   |     |     |   | 1253,4     |       |
| Total Intermitten Load                                          |                                                   |   |     |     |   |            | 266,6 |
| Faktor diversitas (0,6x Intermitten load)                       |                                                   |   |     |     |   | 159,9      |       |
| Jumlah beban keseluruhan ( continuouse load + beban bersamaan)  |                                                   |   |     |     |   | 1413,4     |       |
| Generator Output X no (jumlah generator)                        |                                                   |   |     |     |   | 800 Kw x 2 |       |
| Generator load faktor (jumlah beban dibagi kapasitas generator) |                                                   |   |     |     |   | 88,3 %     |       |
| Standby generator                                               |                                                   |   |     |     |   | 2 sets     |       |

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|           |                                                                   |     |         |        | Work set | Daya (kW)             |                          |
|           |                                                                   |     |         |        |          | Continue load LF(80%) | Intermitten load LF(80%) |
| No        | Machinery Part                                                    |     | Input   | output |          |                       |                          |
| 1.        | Aux.eng room fan 1<br>(kipas tekan ruang MB no 1)                 | 1   | 18,5    | 15,3   | 1        | 14,8                  | -                        |
| 2.        | Supply fan separator<br>(kipas ruang separator)                   | 1   | 5,5     | 4,6    | 1        | 4,4                   | -                        |
| 3.        | Exhaust fan steering room<br>(kipas isap ruangan steering)        | 1   | 5,5     | 4,6    | 1        | -                     | 4,4                      |
| 4.        | Supply fan air cond. room<br>(kipas tekan ruangan AC)             | 1   | 15      | 12,5   | 1        | 12                    | -                        |
| 5.        | Fresh water hydrofor pump<br>1,2,3 (pompa saniter AT no<br>1,2,3) | 3   | 13      | 10,8   | 2        | -                     | 20,8                     |
| 6.        | Ceiling light ecr<br>(AC ruang komando mesin)                     | 1   | 1,5     | 1,3    | 1        | 1,2                   | -                        |
| 7.        | Incinerator                                                       | 1   | 10      | 8,3    | 1        | -                     | 8                        |
| 8.        | Pd 11 boiler plant<br>(bagan ketel uap PD11)                      | 1   | 10      | 8,3    | 1        | 8                     | -                        |
| 9.        | Sea cool water pump 1,2 aux<br>eng (pompa AL pend.MB no<br>1,2)   | 2   | 14,9    | 12,4   | 1        | 23,84                 | -                        |
| 10        | Bilge and blast pump 1,2<br>(pompa got dan ballast 1,2)           | 2   | 13,2    | 10,9   | 1        | -                     | 10,6                     |

|    |                                                                         |   |      |       |   |       |      |
|----|-------------------------------------------------------------------------|---|------|-------|---|-------|------|
| 11 | Engine room fan 1,2,3,4 (kipas tekan ruangan MI no 1,2,3,4)             | 4 | 18,5 | 15,3  | 2 | 29,6  | -    |
| 12 | Pd 29 Moring winches (pembagi daya capstan pd 29)                       | 1 | 60   | 49,8  | 1 | -     | 48   |
| 13 | Pd 14 air cond .plant 1 (pembagi daya AC.1 Pd14)                        | 1 | 270  | 224,1 | 1 | 216   | -    |
| 14 | Pd12 cool.water pump air cond plant (pembagi daya pendingin AC pd12)    | 1 | 105  | 87,15 | 1 | 84    | -    |
| 15 | Pd 22 boatwinchess ps,sb 7.deck (pembagi daya derek sekoci KI,KA pd22)  | 2 | 45   | 37,4  | 1 | -     | 36   |
| 16 | Pd 1 distribution fans (pembagi daya kipas PD1)                         | 1 | 58   | 48,1  | 1 | 46,4  | -    |
| 17 | Pd2 distribution fans (pembagi daya kipas pd2)                          | 1 | 75   | 62,25 | 1 | 60    | -    |
| 18 | Pd 3 distribution fans (pembagi daya kipas PD3)                         | 1 | 68   | 56,4  | 1 | 54,4  | -    |
| 19 | Stand by lub.oil pump ME ps,sb (pompa L.O.MI .KI,KA)                    | 2 | 32   | 26,6  | 1 | -     | 25,6 |
| 20 | Starting air kompresor 1,2,3 (kompresor udara no 1,2,3)                 | 3 | 28   | 23,2  | 2 | -     | 44,8 |
| 21 | Pd 18 provision cool plant (Pembagi daya kamar beku pd18)               | 1 | 24   | 19,9  | 1 | 19,2  | -    |
| 22 | Pd 26 seperator room ps (pembagi daya ruang separator KI pd26)          | 1 | 15   | 12,4  | 1 |       | 12   |
| 23 | See cool .water pump 1 Me ps,sb ( pompa A laut pendingin MI KI KA no 1) | 2 | 25,3 | 20,9  | 1 | 20,24 |      |

|    |                                                                           |   |      |       |   |       |       |
|----|---------------------------------------------------------------------------|---|------|-------|---|-------|-------|
| 24 | Fore ship (crane,container distribusi,fan cargo room )                    | 1 | 220  | 182,6 | 1 | -     | 176   |
| 25 | Fresh cool water pump 1 me ps,sb ( pompa A Tawar pendingin MI KI,KA no 1) | 2 | 34   | 28,2  | 1 | 27,2  | -     |
| 26 | Fire pump 1,2 (pompa kebakaran no 1,2)                                    | 2 | 39   | 32,3  | 1 | -     | 31,2  |
| 27 | Sprinklerpump ( pompa sprinkler)                                          | 1 | 41   | 34    | 1 | -     | 32,8  |
| 28 | Bow thruster                                                              | 1 | 736  | 610,8 | 1 | -     | 588,8 |
| 29 | Sea cool water pump 2 me ps,sb (Pompa AL.pendingin MI KI,KA no 2)         | 2 | 25,3 | 20,9  | 1 | 20,24 | -     |
| 30 | Fresh cool .water pump 2 me ps,sb (pompa AT.pendingin MI KI,KA No 2)      | 2 | 34   | 28,2  | 1 | 27,2  | -     |
| 31 | Steering gear Intalasi kemudi                                             | 1 | 39   | 32,3  | 1 | 31,2  | -     |
| 32 | Pd 27 seperatorroom sb ( Pem bagi daya ruang separator KA Pd27)           | 1 | 30   | 24,9  | 1 | -     | 24    |
| 33 | pd 25 eng .room (pembagi daya kamar mesin )                               | 1 | 80   | 66,4  | 1 | 64    | -     |
| 34 | Pd 28 anchor winches (pembagi daya mesin jangkar pd 28)                   | 1 | 60   | 49,8  | 1 | -     | 48    |
| 35 | Hydr.unit bow thruster (bagan hidrolik bow thruster)                      | 1 | 4    | 3,3   | 1 | -     | 3,2   |

|    |                                                                  |   |      |      |   |       |     |
|----|------------------------------------------------------------------|---|------|------|---|-------|-----|
| 36 | Exhaust fan separator room<br>(kipas isap ruangan separator)     | 1 | 5.5  | 4,6  | 1 | -     | 4,4 |
| 37 | Supply fan bow thruster room<br>(kipas tekan ruang bow thruster) | 1 | 5.5  | 4,6  | 1 | 4,4   | -   |
| 38 | Exhaust fan air cond room<br>(kipas isap ruangan AC)             | 1 | 15   | 12,4 | 1 | -     | 12  |
| 39 | Pd 4 distribution fan ( pembagi daya kipas PD4 )                 | 1 | 10   | 8,3  | 1 | 8     | -   |
| 40 | Water tight door system<br>(sistem control pintu kedap)          | 1 | 18.4 | 15,3 | 1 | 14,72 | -   |
| 41 | Pd 17 workshop ( pembagi daya bengkel mesin pd30)                | 1 | 14   | 11,6 | 1 | 11,2  | -   |
| 42 | Pd 30 laundry (pembagi daya mesin cuci pd30 )                    | 1 | 12   | 9,9  | 1 | 9,6   | -   |
| 43 | Pd 6 scullery 6.deck<br>( Pembagi daya cuci piring PD6 )         | 1 | 16   | 13,3 | 1 | 12,8  | -   |
| 44 | Pd 7 galley 5 deck (pembagi daya dapur dek ke 5 pd7 )            | 1 | 18   | 14,9 | 1 | 14,4  | -   |
| 45 | Pd 9 galley 4 deck (pembagi daya dapur deck ke 4 pd9 )           | 1 | 18   | 14,9 | 1 | 14,4  | -   |

|                                                                 |                                                   |   |     |     |   |            |        |
|-----------------------------------------------------------------|---------------------------------------------------|---|-----|-----|---|------------|--------|
| 46                                                              | Light transformer 1,2 ( suplai penerangan No 1,2) | 2 | 350 | 350 | 2 | 400        | -      |
| Total Continous Load                                            |                                                   |   |     |     |   | 1253,4     |        |
| Total Intermitten Load                                          |                                                   |   |     |     |   |            | 1130,6 |
| Faktor diversitas (0,6x Intermitten load)                       |                                                   |   |     |     |   | 678,36     |        |
| Jumlah beban keseluruhan ( continuouse load + beban bersamaan)  |                                                   |   |     |     |   | 1931,76    |        |
| Generator Output X no (jumlah generator)                        |                                                   |   |     |     |   | 800 Kw x 3 |        |
| Generator load faktor (jumlah beban dibagi kapasitas generator) |                                                   |   |     |     |   | 80,49 %    |        |
| Standby generator                                               |                                                   |   |     |     |   | 1 sets     |        |