



8/29/02

ENGINEERING CHANGE NOTICE (ECN)

| | | |
|---|-------|--------------------|
| DOCUMENT No. (DOC-REV-GP. ID) LIGO-D960404-02-W | TITLE | NEW REV. 03 |
|---|-------|--------------------|

CHANGE DESCRIPTION (FROM/TO): Rev. change from -02 to -03

Changed circuit (CKT) 1 from three phase to single phase
 Added single phase circuits 3 and 5
 Changed circuit 7 from three phase to single phase
 Added single phase circuits 9 and 11
 Added single phase circuit 37
 Changed circuit 2 from three phase to single phase "spare"
 Added spare single phase circuit 4
 Added single phase circuit 6

REASON FOR CHANGE: To make drawing consistent with "As is" configuration

ACTION: Incorporate change Attach DCN to drawing(s) Other action (specify):

| | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-----------|--------|-------|-------|-----------|-----------|------|---------|-----------|---------|-------|-------|----------|--|--|---------------------|--|--|------------------|--|--|
| <p>DISPOSITION OF HARDWARE (IDENTIFY SERIAL NUMBERS)</p> <p><input checked="" type="checkbox"/> No hardware affected (record change only)</p> <p><input type="checkbox"/> List S/Ns which comply already:</p> <p><input type="checkbox"/> List S/Ns to be reworked or scrapped:</p> <p><input type="checkbox"/> List S/Ns to be built with this change:</p> <p><input type="checkbox"/> List S/Ns to be retested per this change:</p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> <p><input type="checkbox"/></p> | <p>DCN DISTRIBUTION (X=incl. docs)</p> <table border="0"> <tr> <td></td> <td>Barish</td> <td>Coles</td> </tr> <tr> <td>Coyne</td> <td>Lazzarini</td> <td>Lindquist</td> </tr> <tr> <td>Raab</td> <td>Sanders</td> <td>Shoemaker</td> </tr> <tr> <td>Stapfer</td> <td>Tyler</td> <td>Weiss</td> </tr> <tr> <td>Whitcomb</td> <td></td> <td></td> </tr> <tr> <td colspan="3">[X]Richard McCarthy</td> </tr> <tr> <td colspan="3">[X]Otto Matherny</td> </tr> </table> | | Barish | Coles | Coyne | Lazzarini | Lindquist | Raab | Sanders | Shoemaker | Stapfer | Tyler | Weiss | Whitcomb | | | [X]Richard McCarthy | | | [X]Otto Matherny | | |
| | Barish | Coles | | | | | | | | | | | | | | | | | | | | |
| Coyne | Lazzarini | Lindquist | | | | | | | | | | | | | | | | | | | | |
| Raab | Sanders | Shoemaker | | | | | | | | | | | | | | | | | | | | |
| Stapfer | Tyler | Weiss | | | | | | | | | | | | | | | | | | | | |
| Whitcomb | | | | | | | | | | | | | | | | | | | | | | |
| [X]Richard McCarthy | | | | | | | | | | | | | | | | | | | | | | |
| [X]Otto Matherny | | | | | | | | | | | | | | | | | | | | | | |

SAFETY, COST, SCHEDULE, REQUIREMENTS IMPACT? No Yes (if yes, enter Change Request number)

| | | | |
|--|-------------|----------------------------------|-------------|
| APPROVALS: | DATE | OTHER APPROVALS (specify) | DATE |
| ORIGINATOR: Kyle Ryan <i>Kyle Ryan</i> | 8/29/2002 | | |
| TASK LEADER: | | | |
| GROUP LEADER: | | | |
| DCC RELEASE: <i>[Signature]</i> | 10/15/02 | | |

| CIRCUIT | SIZE | AMPS | HMP'S | | | SIZES | P | S | C | DESCRIPTION | CIRCUIT |
|---------------------------|------|------|-------|--------|-------|-------|----|---|----|--------------------------------|---------|
| | | | A | B | C | | | | | | |
| 1 | 1 | 12 | 15 | 895 | 2542 | 15 | 12 | 1 | 2 | LTG RM 128,130,131,133,135,152 | 2 |
| 3 | 1 | 12 | 15 | 1672 | 3002 | 17 | 10 | 1 | 1 | LTG RM 140,141 | 4 |
| 5 | 1 | 12 | 15 | 216 | 380 | 15 | 12 | 1 | 6 | LTG RM 144,145 | 6 |
| 7 | 1 | 12 | 15 | 352 | 150 | 15 | 12 | 1 | 8 | EMERGENCY LIGHTING | 8 |
| 9 | 1 | 12 | 15 | 10 | 1140 | 15 | 12 | 1 | 10 | LTG 140,141,142,143,125 | 10 |
| 11 | 1 | 12 | 15 | 1045 | 1300 | 15 | 12 | 1 | 12 | LTG RM 129-135 | 12 |
| 13 | 1 | 12 | 20 | 720 | 2800 | 20 | 12 | 3 | 14 | L-CS-135-WH-02 | 14 |
| 15 | 1 | 12 | 20 | | | | | | 16 | | 16 |
| 17 | 1 | 12 | 20 | | | | | | 18 | | 18 |
| 19 | 3 | 12 | 20 | 13000 | 13000 | 20 | 12 | 3 | 20 | L-CS-132-SV-04 | 20 |
| 21 | | | | | | | | | 22 | | 22 |
| 23 | | | | | | | | | 24 | | 24 |
| 25 | 3 | 12 | 20 | 13000 | 13000 | 20 | 12 | 3 | 26 | L-CS-127-SV-08 | 26 |
| 27 | | | | | | | | | 28 | | 28 |
| 29 | | | | | | | | | 30 | | 30 |
| 31 | 3 | 12 | 20 | 13000 | 13000 | 20 | 12 | 3 | 32 | L-CS-145-SV-16B | 32 |
| 33 | | | | | | | | | 34 | | 34 |
| 35 | | | | | | | | | 36 | | 36 |
| 37 | 3 | 12 | 20 | 13000 | 3000 | 15 | 12 | 1 | 38 | L-CS-149-WH-31 | 38 |
| 39 | | | | | | | | | 40 | | 40 |
| 41 | | | | | | | | | 42 | SPARE | 42 |
| TOTAL | | | | 38618 | 37255 | 36968 | | | | | |
| TOTAL CONNECTED LOAD (VA) | | | | 112940 | | | | | | | |
| (AMPS) | | | | | | | | | | | |

| CIRCUIT | SIZE | AMPS | HMP'S | | | SIZES | P | S | C | DESCRIPTION | CIRCUIT | |
|---------------------------|--------------------|------|-------|-------|-------|-------|----|----|----|----------------|----------------|----|
| | | | A | B | C | | | | | | | |
| 1 | 1 | 12 | 15 | 1324 | 3135 | 15 | 12 | 1 | 2 | LTG RM 167 | 2 | |
| 3 | 1 | 12 | 15 | 1442 | 1442 | 15 | 12 | 1 | 4 | LTG RM 171 | 4 | |
| 5 | 1 | 12 | 15 | 2736 | 884 | 15 | 12 | 1 | 6 | LTG RM 171,172 | 6 | |
| 7 | 1 | 12 | 15 | 1425 | 664 | 15 | 12 | 1 | 8 | HALL | 8 | |
| 9 | 1 | 12 | 15 | 2700 | 780 | 15 | 12 | 1 | 10 | LTG RM 169 | 10 | |
| 11 | 1 | 12 | 15 | 2400 | 388 | 15 | 12 | 1 | 12 | LTG RM 169 | 12 | |
| 13 | L-CS-135-SV-D1 | 13 | 3 | 12 | 20 | 13000 | 20 | 12 | 3 | 14 | L-CS-135-SV-2A | 14 |
| 15 | | 15 | | | | | | | 16 | | 16 | |
| 17 | | 17 | | | | | | | 18 | | 18 | |
| 19 | LTG RM 165 | 19 | 1 | 12 | 15 | 950 | 20 | | 20 | SPARE | 20 | |
| 21 | SPARE | 21 | 1 | 12 | 20 | 0 | 20 | | 22 | SPARE | 22 | |
| 23 | EMERGENCY LIGHTING | 23 | 1 | 12 | 15 | 240 | 20 | | 24 | SPARE | 24 | |
| 25 | SPARE | 25 | 2 | 20 | 0 | 20 | | | 26 | SPARE | 26 | |
| 27 | | 27 | | 20 | 0 | 20 | | | 28 | SPARE | 28 | |
| 29 | | 29 | | 20 | 0 | 20 | | | 30 | SPARE | 30 | |
| 31 | SPARE | 31 | 1 | 20 | 0 | 20 | | | 32 | SPARE | 32 | |
| 33 | SPARE | 33 | 1 | 20 | 0 | 20 | | | 34 | SPARE | 34 | |
| 35 | SPARE | 35 | 1 | 20 | 0 | 20 | | | 36 | SPARE | 36 | |
| 37 | SPARE | 37 | 1 | 20 | 0 | 20 | | | 38 | SPARE | 38 | |
| 39 | SPARE | 39 | 1 | 20 | 0 | 20 | | | 40 | SPARE | 40 | |
| 41 | SPARE | 41 | 1 | 20 | 0 | 20 | | | 42 | SPARE | 42 | |
| TOTAL | | | | 18954 | 16848 | 17206 | | | | | | |
| TOTAL CONNECTED LOAD (VA) | | | | 52996 | | | | | | | | |
| (AMPS) | | | | | | | | | | | | |

Before Change

| LOCATION | | ROOM 172 | | VOLTS | | 208Y/120V | | | | | | |
|---------------------------|-------|-----------|-----|-----------|-----------------|-----------|-----|-----------|-------|------|------------------|---------|
| MOUNTING | | Recessed | | MAIN | | Main Lugs | | | | | | |
| PHASE | | 3 | | WIRE | | 4 | | | | | | |
| FEEDER | | BUS | | 225 | | | | | | | | |
| SLOT | POLES | WIRE SIZE | BKR | VOLT AMPS | PHASE LOAD (VA) | VOLT AMPS | BKR | WIRE SIZE | POLES | SLOT | LOAD SERVED | CIRCUIT |
| 1 | 3 | 10 | 30 | 8646 | 2882 | 8646 | 30 | 3 | 2 | 2 | RCPT RM 175 | 2 |
| 3 | | | | | 2882 | | | | | 4 | | 4 |
| 5 | | | | | 2882 | | | | | 6 | | 6 |
| 7 | 3 | 10 | 30 | 8646 | 900 | 900 | 20 | 1 | 8 | 8 | RCPT RM 173 GFCI | 8 |
| 9 | | | | | 900 | 900 | 20 | 1 | 10 | 10 | RCPT RM 172 | 10 |
| 11 | | | | | 1080 | 1080 | 20 | 1 | 12 | 12 | RCPT RM 175 | 12 |
| 13 | 1 | 12 | 20 | 900 | 720 | 720 | 20 | 1 | 14 | 14 | RCPT RM 174 | 14 |
| 15 | 1 | 12 | 20 | 900 | 1080 | 1080 | 20 | 1 | 16 | 16 | RCPT RM 175 | 16 |
| 17 | 1 | 12 | 20 | 900 | 900 | 900 | 20 | 1 | 18 | 18 | RCPT RM 175 | 18 |
| 19 | 1 | 12 | 15 | 900 | 8646 | 8646 | 30 | 3 | 20 | 20 | RCPT RM 167 | 20 |
| 21 | 1 | 15 | | | | | | | 22 | | | 22 |
| 23 | 1 | 15 | | | | | | | 24 | | | 24 |
| 25 | 3 | 10 | 30 | 8646 | 20 | 20 | | 1 | 26 | 26 | SPARE | 26 |
| 27 | | | | | 20 | 20 | | | 28 | 28 | SPARE | 28 |
| 29 | | | | | 20 | 20 | | 1 | 30 | 30 | SPARE | 30 |
| 31 | 1 | 15 | | | 30 | 30 | | 3 | 32 | 32 | SPARE | 32 |
| 33 | 1 | 15 | | | | | | | 34 | | | 34 |
| 35 | 1 | 15 | | | | | | | 36 | | | 36 |
| 37 | 1 | 20 | | | 20 | 20 | | 1 | 38 | 38 | SPARE | 38 |
| 39 | 1 | 20 | | | 20 | 20 | | 1 | 40 | 40 | SPARE | 40 |
| 41 | 1 | 20 | | | 20 | 20 | | 1 | 42 | 42 | SPARE | 42 |
| TOTAL | | | | 17830 | 17290 | 17650 | | | | | | |
| TOTAL CONNECTED LOAD (VA) | | | | 52776 | | | | | | | | |
| (AMPS) | | | | | | | | | | | | |

| PANEL | | 168RF.1 | | LOCATION | | ROOM 168 | | VOLTS | | 208Y/120V | | | | |
|---------------------------|------------------|---------|-------|-----------|-------|-----------|-----------------|-----------|-----|-----------|-------|------|--------------------|---------|
| FED FROM | | CKT # | | MOUNTING | | Recessed | | MAIN | | Main Lugs | | | | |
| PHASE | | 3 | | WIRE | | 4 | | FEEDER | | BUS | | | | |
| FEEDER | | BUS | | 225 | | | | | | | | | | |
| CIRCUIT | LOAD SERVED | SLOT | POLES | WIRE SIZE | BKR | VOLT AMPS | PHASE LOAD (VA) | VOLT AMPS | BKR | WIRE SIZE | POLES | SLOT | LOAD SERVED | CIRCUIT |
| 1 | RCPT RM 169 | 1 | 3 | 10 | 30 | 8646 | 2882 | 8646 | 30 | 10 | 3 | 2 | RCPT RM 169 | 2 |
| 3 | | 3 | | | | | 2882 | | | | | 4 | | 4 |
| 5 | | 5 | | | | | 2882 | | | | | 6 | | 6 |
| 7 | RCPT RM 169 | 7 | 3 | 12 | 20 | 4952 | 1664 | 5104 | 20 | 12 | 3 | 8 | RCPT RM 169 | 8 |
| 9 | | 9 | | | | | 1664 | | | | | 10 | | 10 |
| 11 | | 11 | | | | | 1664 | | | | | 12 | | 12 |
| 13 | RCPT RM 166 | 13 | 1 | 12 | 20 | 360 | 360 | 540 | 20 | 12 | 1 | 14 | RCPT RM 166 | 14 |
| 15 | RCPT RM 169 GFCI | 15 | 1 | 12 | 20 | 720 | 360 | 360 | 20 | 12 | 1 | 16 | RCPT RM 168 GFCI | 16 |
| 17 | RCPT RM 167 GFCI | 17 | 1 | 12 | 20 | 540 | 540 | 180 | 20 | 12 | 1 | 18 | RCPT RM 165 | 18 |
| 19 | RCPT RM 166 | 19 | 1 | 12 | 20 | 180 | 720 | 720 | 20 | 12 | 1 | 20 | RCPT RM 167 | 20 |
| 21 | RCPT RM 169 GFCI | 21 | 1 | 12 | 20 | 720 | 720 | 720 | 20 | 12 | 1 | 22 | RCPT RM 167 | 22 |
| 23 | RCPT RM 167 | 23 | 1 | 12 | 20 | 540 | 540 | 305 | 20 | 12 | 1 | 24 | LTG STAIR 176 | 24 |
| 25 | RCPT RM 166 | 25 | 1 | 12 | 20 | 720 | 720 | 720 | 20 | 12 | 1 | 26 | RCPT ROOF PLATFORM | 26 |
| 27 | FUME HOOD | 27 | 1 | 12 | 20 | 180 | 180 | 180 | 15 | 12 | 1 | 28 | RCPT RM 166 | 28 |
| 29 | FUME HOOD | 29 | 1 | 12 | 15 | 180 | 180 | 180 | 15 | 12 | 1 | 30 | RCPT RM 166 | 30 |
| 31 | SPARE | 31 | 3 | 15 | | | | | 20 | | 1 | 32 | SPARE | 32 |
| 33 | | 33 | | 15 | | | | | 15 | 12 | 1 | 34 | ROOF WALK/PLATFORM | 34 |
| 35 | | 35 | | 15 | | | | | 15 | | 1 | 36 | | 36 |
| 37 | SPARE | 37 | 1 | 15 | | | | | 15 | | 1 | 38 | SPARE | 38 |
| 39 | SPARE | 39 | 1 | 15 | | | | | 15 | | 1 | 40 | SPARE | 40 |
| 41 | SPARE | 41 | 1 | 15 | | | | | 15 | | 1 | 42 | SPARE | 42 |
| TOTAL | | | | 11829 | 11829 | 11674 | | | | | | | | |
| TOTAL CONNECTED LOAD (VA) | | | | 34532 | | | | | | | | | | |
| (AMPS) | | | | | | | | | | | | | | |

LIGO-D960404-02
WA-E-115 Rev2

| | | | | | | | | | | | | | | | | |
|----|-------|-------|---|-------|-------|-------|--|--|--|--|--|----|---|----|-------|----|
| 31 | SPARE | 31 | 1 | 20 | | | | | | | | 20 | 1 | 32 | SPARE | 32 |
| 33 | SPARE | 33 | 1 | 20 | | | | | | | | 20 | 1 | 34 | SPARE | 34 |
| 35 | SPARE | 35 | 1 | 20 | | | | | | | | 20 | 1 | 36 | SPARE | 36 |
| 37 | SPARE | 37 | 1 | 20 | | | | | | | | 20 | 1 | 38 | SPARE | 38 |
| 39 | SPARE | 39 | 1 | 20 | | | | | | | | 20 | 1 | 40 | SPARE | 40 |
| 41 | SPARE | 41 | 1 | 20 | | | | | | | | 20 | 1 | 42 | SPARE | 42 |
| | | TOTAL | | 18864 | 18848 | 17236 | | | | | | | | | | |

TOTAL CONNECTED LOAD (VA) 52996
(AMPS)

"After change"

| PANEL 168RP_1 | | LOCATION ROOM 168 | | VOLTS 206Y/120Y | | | | | | | | | | | | |
|----------------|------------------|---------------------------|-------|-----------------|-------|-----------|-----------------|-----|------|-----------|-----|-----------|-------|--------------------|----------------|-----|
| FED FROM CKT # | | MOUNTING Recessed | | MAIN Main Ings | | | | | | | | | | | | |
| | | PHASE 3 WIRE 4 FEEDER | | BUS 225 | | | | | | | | | | | | |
| CKT | LOAD SERVED | SLOT | POLES | WIRE SIZE | BKR | VOLT AMPS | PHASE LOAD (VA) | | | VOLT AMPS | BKR | WIRE SIZE | POLES | SLOT | LOAD SERVED | CKT |
| | | | | | | | A | B | C | | | | | | | |
| 2 | VBO Panel RM 169 | 1 | | 10 | 20 | | | | | 15 | | | 2 | SPARE | 2 | |
| 3 | VBO Panel RM 169 | 3 | 1 | 10 | 20 | | | | | 20 | | | 4 | SPARE | 4 | |
| 5 | VBO Panel RM 169 | 5 | 1 | 10 | 20 | | | | | 20 | 10 | 1 | 6 | VBO Panel RM 169 | 6 | |
| 7 | VBO Panel RM 169 | 7 | 1 | 10 | 20 | | | | 5104 | 20 | 12 | 3 | 8 | RCPT RM 169 | 8 | |
| 9 | VBO Panel RM 169 | 9 | 1 | 10 | 20 | | | | | | | | 10 | | | |
| 11 | RCPT RM 166 | 11 | 1 | | 20 | | | | | | | | 12 | | | |
| 13 | RCPT RM 166 | 13 | 1 | 12 | 20 | 360 | 360 | 0 | 540 | 20 | 12 | 1 | 14 | RCPT RM 166 | 14 | |
| 15 | RCPT RM 169 GFCI | 15 | 1 | 12 | 20 | 720 | 0 | 720 | 360 | 20 | 12 | 1 | 16 | RCPT RM 168 GFCI | 16 | |
| 17 | RCPT RM 167 GFCI | 17 | 1 | 12 | 20 | 540 | 0 | 0 | 540 | 180 | 20 | 12 | 1 | 18 | RCPT RM 166 | 18 |
| 19 | RCPT RM 166 | 19 | 1 | 12 | 20 | 180 | 180 | 0 | 720 | 20 | 12 | 1 | 20 | RCPT RM 167 | 20 | |
| 21 | RCPT RM 169 GFCI | 21 | 1 | 12 | 20 | 720 | 0 | 720 | 720 | 20 | 12 | 1 | 22 | RCPT RM 167 | 22 | |
| 23 | RCPT RM 167 | 23 | 1 | 12 | 20 | 540 | 0 | 0 | 540 | 305 | 20 | 12 | 1 | 24 | LTG, STAIR 176 | 24 |
| 25 | RCPT RM 166 | 25 | 1 | 12 | 20 | 180 | 180 | 0 | 720 | 20 | 12 | 1 | 26 | RCPT ROOF PLATFORM | 26 | |
| 27 | FUME HOOD | 27 | 1 | 12 | 20 | | 0 | 0 | 180 | 180 | 15 | 12 | 1 | 28 | RCPT RM 166 | 28 |
| 29 | FUME HOOD | 29 | 1 | 12 | 15 | | 0 | 0 | 180 | 180 | 15 | 12 | 1 | 30 | RCPT RM 166 | 30 |
| 31 | SPARE | 31 | 3 | | 15 | | 0 | 0 | 0 | 20 | | 1 | 32 | SPARE | 32 | |
| | | 33 | | | 15 | | 0 | 0 | 0 | 15 | 12 | 1 | 34 | ROOF WALK/PLATFORM | 34 | |
| | | 35 | | | 15 | | 0 | 0 | 0 | 15 | | 1 | 36 | | 36 | |
| 37 | VBO Panel RM 169 | 37 | 1 | 10 | 15 | | 0 | 0 | 0 | 15 | | 1 | 38 | SPARE | 38 | |
| 39 | SPARE | 39 | 1 | | 15 | | 0 | 0 | 0 | 15 | | 1 | 40 | SPARE | 40 | |
| 41 | SPARE | 41 | 1 | | 15 | | 0 | 0 | 0 | 15 | | 1 | 42 | SPARE | 42 | |
| | | TOTAL | | 11829 | 11829 | 18674 | | | | | | | | | | |
| | | TOTAL CONNECTED LOAD (VA) | | 34532 | | | | | | | | | | | | |
| | | (AMPS) | | | | | | | | | | | | | | |

LTG-0-D960404-03
WA-E-115 Rev 3