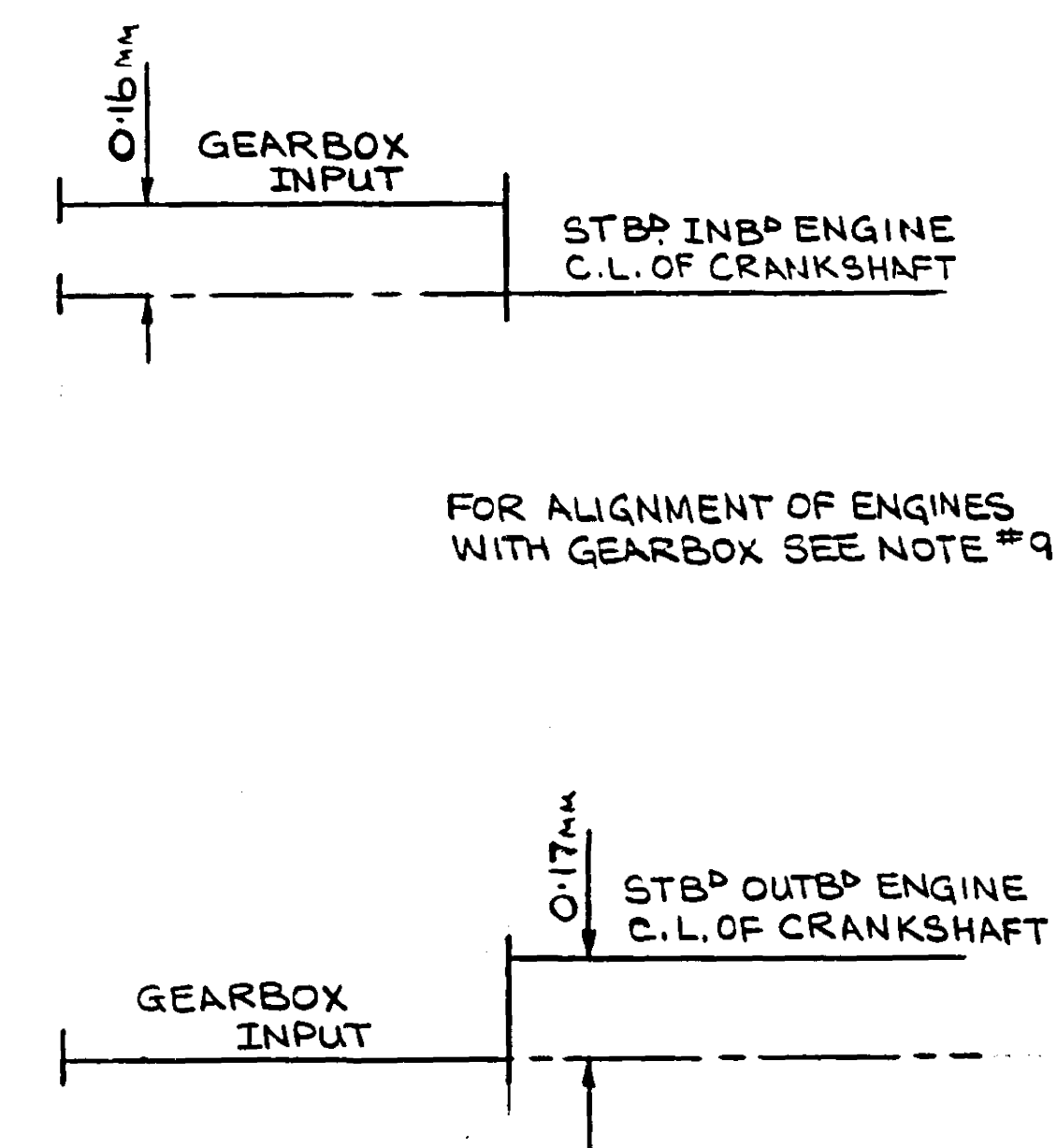


HORIZONTAL COLD ALIGNMENT OF STB² MAIN ENGINES AND GEARBOX.



VERTICAL COLD ALIGNMENT OF STB^D
MAIN ENGINES AND GEARBOX.

NOTE :- PROPULSION SHAFT ALIGNMENT IS THE SAME FOR PORT AND STBD

ALIGNMENT PROCEDURE

- (a) UNTIL THE ALIGNMENT PROCEDURE STATES OTHERWISE, THE FLYWHEEL SHOULD BE SAFELY SUPPORTED AND CHOCKED, JUST AFT OF ITS INSTALLATION POSITION SO AS NOT TO LOAD THE SHAFTING.
- (b) AS SHAFTHING WILL LIE IN THE BOTTOM OF THE BEARINGS DURING ALIGNMENT, THEN THE ALIGNMENT DATUM (TO WHICH THE FOLLOWING MEASUREMENTS ARE REFERRED) WILL BE BELOW THE STERN BUSH DATUM BY AN AMOUNT EQUAL TO THE RADIAL CLEARANCE IN THE STERN BEARINGS.
- (c) THE ALIGNMENT IS DESCRIBED SUCH THAT IT MAY BE EFFECTED EITHER OPTICALLY OR WITH REFERENCE TO FLANGE GAPS AND SAGS.
 - 1 WITH THE VESSEL ON LAUNCH WAYS, THE AFTER AND FORWARD STERN BUSHES, ARE TO BE SET AND CONCENTRIC ON THE STERN BUSH DATUM
 - 2 ALL THREE PLUMMER BLOCKS AND GEARBOX TO BE SET ON LINE OF SIGHT ALIGNMENT DATUM, INTERMEDIATE SHAFTS AND FLYWHEEL TO BE SUPPORTED IN TEMPORARY POSITION.
 - 3 AFTER THE HOUSE IS FITTED AND WHILE VESSEL IS IN DRYDOCK, ALIGNMENT OF GEARBOX AND PLUMMER BLOCKS TO BE CHECKED, INTERMEDIATE SHAFTS TO BE LOWERED INTO POSITION AND GEARBOX SET UP ON DATUM LINE OF SIGHT.
 - 4 MAIN SHAFT TOGETHER WITH PROPELLER AND MUFF COUPLING TO BE INSTALLED, FORWARD END OF TAILSHAFT TO BE JACKED UP TO LINE UP WITH NO1 INTERMEDIATE SHAFT ON DATUM LINE OF SIGHT.
 - 5 WITH COMPLETE SHAFT SYSTEM ALIGNED, PULL UP COUPLING BOLTS TO BE INSTALLED LEAVING A 2 mm GAP BETWEEN FLANGE FACES.
 - 6 AFTER DRYDOCK WITH THE VESSEL AFLOAT ALIGNMENT TO BE APPROVED BY LLOYD'S, C.S.I. AND OWNERS BEFORE HOLES ARE REAMED AND COUPLING BOLTS FITTED.
 - 7 GEARBOX TO BE LOWERED TO A SLOPED POSITION, AFT END BEARING 6 AG TO 0.234 mm BELOW DATUM AND FWD END BEARING 7 FG TO 0.002 mm BELOW DATUM, AS INDICATED ON DRAWING.
 - 8 FLYWHEEL TO BE LOWERED INTO POSITION AND BOLTS FITTED, BEARING LOADINGS TO BE TAKEN AND OFFSETS ADJUSTED TO SUIT STATIC LOADS GIVEN IN LLOYD'S ALIGNMENT ANALYSIS.
 - 9 MAIN ENGINES WILL REQUIRE TO BE SLOPED TO LINE UP WITH GEARBOX, GIVING A SLOPE OVER FULL LENGTH OF EACH ENGINE OF APPROXIMATELY 2.0 mm.

BEARING LOADS INFLUENCE COEFFICIENTS


TABLE SHOWS CHANGE IN BEARING LOAD(kg)
WHEN ANY ONE BEARING IS LOWERED BY 1.0 MM
BEARINGS ARE NUMBERED FROM AFT.

| | 1 A.S. | 2 F.S. | 3 A.P. | 4 I.P. | 5 F.P. | 6 A.G. | 7 F.G. |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1 | -807 | 2653 | -2065 | 334 | -216 | 32 | -221 |
| 2 | 2653 | -9442 | 9609 | -3548 | 1329 | -337 | 226 |
| 3 | -2065 | 9609 | -12913 | 9929 | -4969 | 1250 | -841 |
| 4 | 334 | -3548 | 9929 | -19144 | 15507 | -9395 | 6317 |
| 5 | -126 | 1329 | -4969 | -15507 | -16804 | 18375 | -13322 |
| 6 | 32 | -337 | 1250 | -9395 | 15375 | -50426 | 40586 |
| 7 | -21 | 226 | -841 | 6317 | -13322 | 40501 | -3250 |

PREDICTED BEARING LOADS IN EACH RUNNING CONFIGURATION

| | | BEARING LOAD(Kg) | | | | | | |
|--|------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | | 1 A.S. | 2 F.S. | 3 A.R. | 4 I.F. | 5 F.P. | 6 A.G. | 7 F.G. |
| BOTH ENGINES DRIVING | HOT | 60450 | 14339 | 7989 | 9591 | 14257 | 4821 | 78855 |
| | COLD | 60452 | 14373 | 8085 | 8871 | 15440 | 2498 | 9673 |
| OUTER ENGINE DRIVING | HOT | 60450 | 14403 | 7975 | 9699 | 14029 | 15728 | 21976 |
| | COLD | 60458 | 14337 | 8071 | 8979 | 15211 | 13405 | 23764 |
| INBOARD ENGINE DRIVING | HOT | 60445 | 14454 | 7787 | 11114 | 11808 | -826 | -10255 |
| | COLD | 60447 | 14428 | 7883 | 10393 | 12990 | -3148 | -8466 |
| BEARING DISPLACEMENTS FROM DATUM (mm) (+VE DOWNWARDS) | | | | | | | | |
| CHOSEN ALIGNMENT | HOT | 0.0 | 0.0 | 0.0 | 0.0 | 0.156 | 0.0 | -0.233 |
| | COLD | 0.0 | 0.0 | 0.0 | 0.0 | 0.156 | 0.234 | 0.008 |

DRAWN IN ACCORDANCE WITH INFORMATION GIVEN
BY STORK WERKSPOOR, LOHMANN STOLTERFORT
AND LLOYD'S ALIGNMENT AND VIBRATION ANALYSIS.

| | | |
|---|--|---|
|  Burford Yarrow's Corporation | SHIP BUILDERS SHIP REPAIRERS GENERAL ENGINEERS | Vancouver Division P.O. Box 80068 North Vancouver British Columbia Canada V7L 6A8 Victoria Division P.O. Box 1800 Victoria British Columbia Canada V8X 2Y2 |
| | DIVISION VANCOUVER | |
| HULL 1-075-54 JOB NO. 61-00 OWNERS GULF CANADA RESOURCES | | |

TITLE
INSTALLATION ALIGNMENT OF
MAIN ENGINES GEARBOXES AND
PROPULSION SHAFTING.

| | | | | | |
|-----------|--|------------|------|--|--------------------|
| APPROVALS | | REPRESENTS | DATE | DRAMA | DWN |
| | | | | CHECKED | <i>[Signature]</i> |
| | | | | APPROVED | <i>[Signature]</i> |
| | | | | SCALING SHOWN 14 FEB 1983 DWG NO. 61-00-SK45 <i>[Signature]</i> | |
| | | | | | |

| DISTRIBUTION | | | | | |
|------------------------|-----|--------------------|-----|----------------|-----|
| DEPARTMENT | QTY | DEPARTMENT | QTY | DEPARTMENT | QTY |
| Office | 3 | Operations Manager | | Managers | |
| Circulation | 6 | News Local Dept | 1 | Editor | |
| Circulation Inspection | 4 | Chiefs Dept | | Printer | |
| g plus | | Reprint Dept | | Press 2 Man | |
| Planning & Scheduling | | Setup Dept | | Machine Shop | 1 |
| WFO | | Historia | 4 | | |
| Machine D.D. | 1 | Sparks | | | |
| Machine D.D. | | | | | |
| Machine D.D. | | Printer | | Electric Shop | |
| Machine D.D. | | Printer | | Engine & Motor | 1 |

| No. | REVISION | BY | DATE |
|-----|---|------|--------------------------------|
| ① | ALIGNMENT PROCEDURE NOTE 1 TO 8 CHANGED. GEARBOX OFFSETS CHANGED BAG 0.22 MM BELOW DATUM 7FG 0.22 MM BELOW DATUM | DW | |
| ② | ALIGNMENT PROCEDURE NOTE 7 CHANGED AND NOTE 9 ADDED BAG 0.234MM BELOW DATUM 7FG 0.002 MM BELOW DATUM AS PER LATEST REQUIREMENTS OF LOHMANN & STOLTERFOHT, AND LLOYD'S. | DW | 5 TH MAY 1983 |
| ③ | "AS FITTED" | P.K. | 1 ST JUN 83 |