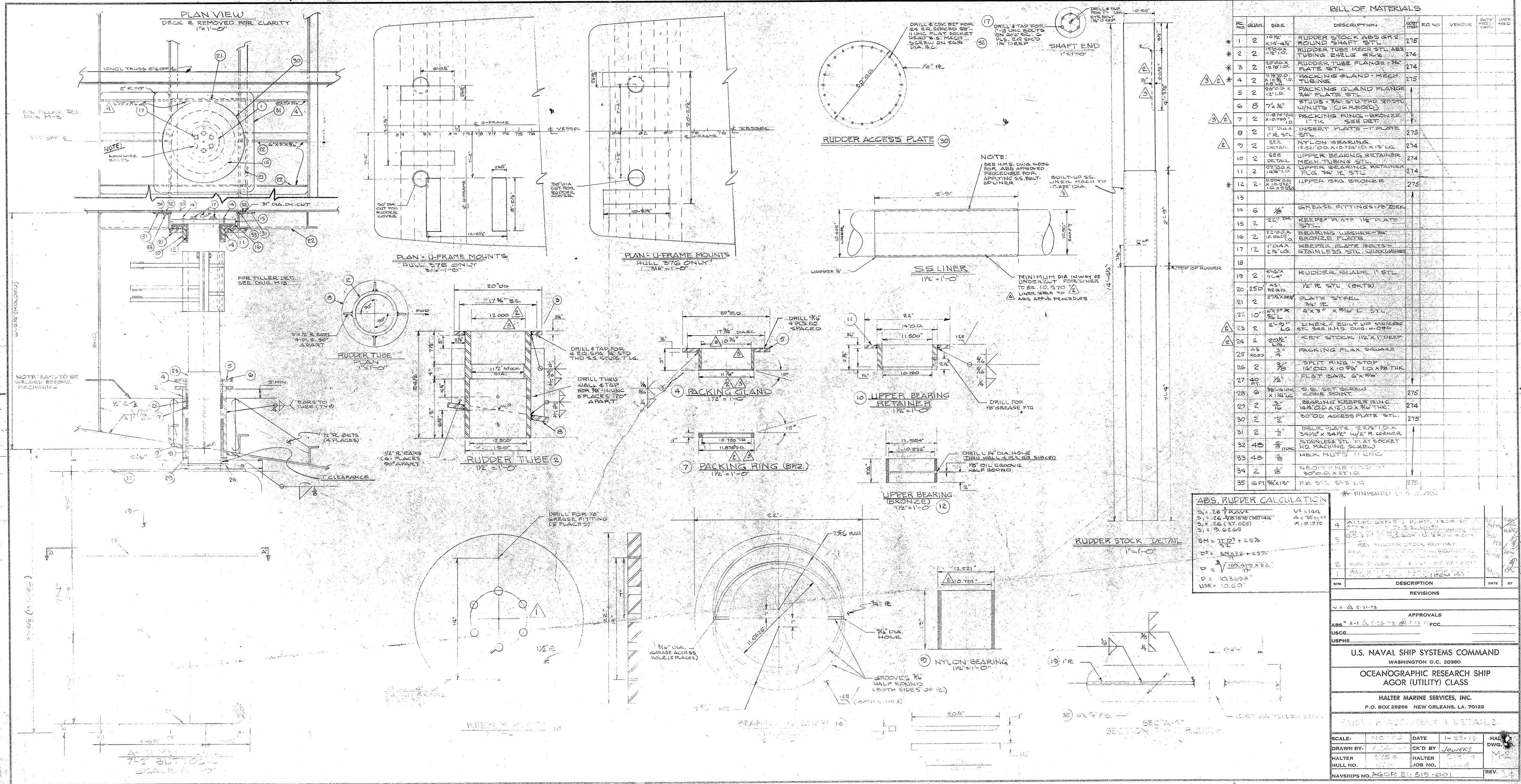

BILL OF MATERIALS

PC. NO.	QUAN.	SIZE	DESCRIPTION	CERT ITEM	R.D. NO.	VENDOR	DUTY FREE TARIFF	DUTY FREE EEC
* 1	2	10½" x 141'-4½"	RUDDER STOCK ABS GR.2 ROUND SHAFT STL.	275				
* 2	2	19.00 O.D. X 11.12" I.D.	RUDDER TUBE MECH STL. ABS TUBING 241" LG. 9% R2	274				
* 3	2	20.00 O.D. X 19.76" I.D.	RUDDER TUBE FLANGE - 3¼" PLATE STL.	274				
3,2 * 4	2	11.870" O.D. X 10.750" I.D. AS REQ.	PACKING GLAND - MECH TUBING.	275				
5	2	20.0" O.D. X 12" I.D.	PACKING GLAND FLANGE 3/4" PLATE STL.					
6	8	7" X 3/8"	STUDS - 3/4" STD THD STUD W/NUTS (G16 R&SQ)					
3,2 7	2	11.870"/11.750" X 10.750" I.D.	PACKING RINGS - BRONZE SEE DET. 1" TK					
8	2	21" DIA. X 1" R. STL	INSERT PLATE - 1" PLATE STL.	275				
2 9	2	SEE DETAIL	NYLON BEARING 12.521" O.D. X 10.724" I.D. X 13" LG.	274				
10	2	SEE DETAIL	UPPER BEARING RETAINER MECH. TUBING STL.	274				
11	2	23" O.D. X 14.98" I.D.	UPPER BEARING RETAINER FLG. 3/4" R. STL.	274				
* 12	2	11.504 O.D. X 10.932" I.D. X 6 15/16"	UPPER BRG. BRONZE	275				
13								
14	6	1/8"	GREASE FITTINGS - 1/8" ZERK					
15	2	22" DIA.	KEEPER PLATE 1½" PLATE STL.					
16	2	23" O.D. X 10.94" I.D.	BEARING WASHER - 3¼" BRONZE PLATE					
17 12		1" DIA. X 2½" LG.	KEEPER PLATE BOLTS - STAINLESS STL. W/LOCKWASHERS					
18								
19	2	6'-6" X 7'-4"	RUDDER BLADE 1" STL.					
20	250 LBS.	AS REQ'D.	½" R. STL (BKTS)					
21	2	2½" X 26¾"	PLATE STEEL					
22	10	6" X 3" X 5/16" L	6" X 3" X 5/16" L STL					
2 23	2	2'-0" LG.	LINER - BUILT UP STAINLESS STL SEE H.M.S. DWG. H-056					
2 24	2	20½" LBS.	KEY STOCK 1½" X 1" DEEP					
25	AS REQ'D	¾"	PACKING FLAX SQUARE					
26	2	3" / 8"	SPLIT RING - STOP 16" OD X 10 5/8" ID X 1" X 3/8" THK					
27	40 FT.	½"	FLAT BAR 6" X 3/8"					
28	6	3/8"-16 UNC X 1¼" LG.	S.S. SET SCREW CONE POINT	275				
29	2	3" / 16	BEARING KEEPER RING 14.98 O.D. X 12" I.D. X 3/16" THK.	274				
30	2	½"	30" OD ACCESS PLATE STL.	275				
31	2	½"	DELR. PLATE 22½" I.D. X 34½" X 34½" W/2" R. CORNER					
32	48	3/8" 11 UNC	STAINLESS STL. FLAT SOCKET HD. MACHINE SCREW					
33	48	3/8"	HEX NUTS 11 UNC.					
34	2	½"	NEOPRENE GASKET 30" O.D. X 22" I.D.					
35	16 PT.	9½" X 13"	P.B. STL. 2-2 LG.	275				

* FINISHED [illegible] WHEN

ABS RUDDER CALCULATION

$S_1 = 2.8\sqrt{\text{RAVE}}$ $V^2 = 144$

$S_2 = 2.6 - (A/BT)(B/T)(422)$ $A = 35.49$

$S_3 = .26\,(37.023)$ $B = 8.1870$

$S_4 = 9.6265$

$SM = \frac{\pi D^3}{32} + 2.6\%$

$D^3 = \frac{SM \times 32 + 2.5\%}{\pi}$

$D = \sqrt[3]{\frac{109.4102 \times 32}{\pi}}$

$D = 10.3308$"

USE = 10.50

SYM	DESCRIPTION	DATE	BY
4	ALTER GASKET & PACKING DETAIL (ITEM 34)	8/13	KEK
3	ADD ITEM 35 & REVISE ITEM 16	5/13	KEK
2	REV. RUDDER STOCK KEY (ITEM 24)	3/13	KEK
1	ADD ITEM 34 & REVISE ITEM 15	2/13	KEK

REVISIONS

NO. 4 2-21-73

APPROVALS

ABS A-1 7/13 FCC

USCG

USPHS

U.S. NAVAL SHIP SYSTEMS COMMAND
WASHINGTON D.C. 20360

OCEANOGRAPHIC RESEARCH SHIP
AGOR (UTILITY) CLASS

HALTER MARINE SERVICES, INC.
P.O. BOX 29266 NEW ORLEANS, LA. 70129

RUDDER ASSEMBLY & DETAILS

SCALE-	NOTED	DATE	1-23-73
DRAWN BY-	[illegible]	CK'D BY	Jowers
HALTER HULL NO.	376	HALTER JOB NO.	2129
NAVSHIPS NO.	AGOR 21-515-301		

HALTER DWG. M-2

REV. 4

GYRE-0079