NSRP-SPC-SP 8

NSRP 0189

UMTRI

71196

FINAL REPORT

BACK-UP .DATA.
for

TEMPORARY STAGING
for
SHIPYARDS

Prepared for

SNAME Panel SP-B
MarAd Task ES-8-15
Under direction of
H.B. Maynard & Co.

Transportation
Research Institute

Prepared by

Industrial Engineering- Department
Bethlehem Steel Corporation.
Marine Construction.Group
Sparrows Point, Mtislmd
July, 1983

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INDEX

SECTION	TITLE	PAGE #
1	FINAL REPORT .- BACK UP DATA	1
1.1	SCOPE	1
2	JOB LAYOUT - WORK AREAS	2 - 7 7
2.1	WORK AREAS	2 - 77
	CENTER TANK	2 - 1 4
	WING TANK	15 - 23
	TANK STAGING PLATFORM	24 - 59
	EXTERIOR SHELL	60 - 65
	PIPE STAGING	66 - 77
3	MANUAL METHODS	78 - 171
	CENTER TANK	78 - 98
	WING TANK	99- 121
	TANK STAGING PLATFORM	122 - 144
	EXTERIOR SHELL	145 - 155
	PIPE STAGING	156 - 171
4	STANDARD TIME CALCULATION	172 - 337.
4.1	TITLE SHEETS	172 - 190
	CENTER TANK	172 - 175
	WING TANK	176 - 180
	TANK STAGING PLATFORM	181 - 183
	EXTERIOR SHELL	l84 - 187
	PIPE STAGING	188 - 190
4.2	HOW TO CALCULATE TIME STANDARDS	190 - 336
	CENTER TANK	190 - 233
	WING TANK	234 — 277
	TANK STAGING PLATFORM	278 - 304
	EXTERIOR SHELL	305 - 314
	PIPE STAGING	315 - 326
4.3	MANNING AND CREW SIZE	327
	CENTER TANK	327
	WING TANK	327
	TANK STAGING PLATFORM	327
	EXTERIOR SHELL	327
	PIPE STAGING	327

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INDEX

SECTION	TITLE	PAGE #
5	**DATA SYNTHESIS AND BACK-UP**	328 - 504
5.1	**SUMMARY**	328 - 392
	CENTER TANK	328 - 342
	WING TANK	343 - 359
	TANK STAGING PLATFORM	360 - 372
	EXTERIOR SHELL	373 - 379
	PIPE STAGING	380 - 392
5.2	SYNTHESIS AND ANALYSIS	393 - 506
	CENTER TANK	393 - 418
	WING TANK	419 - 445
	TANK STAGING PLATFORM	446 - 473
	EXTERIOR SHELL	474 - 486
	PIPE STAGING	487 - 506

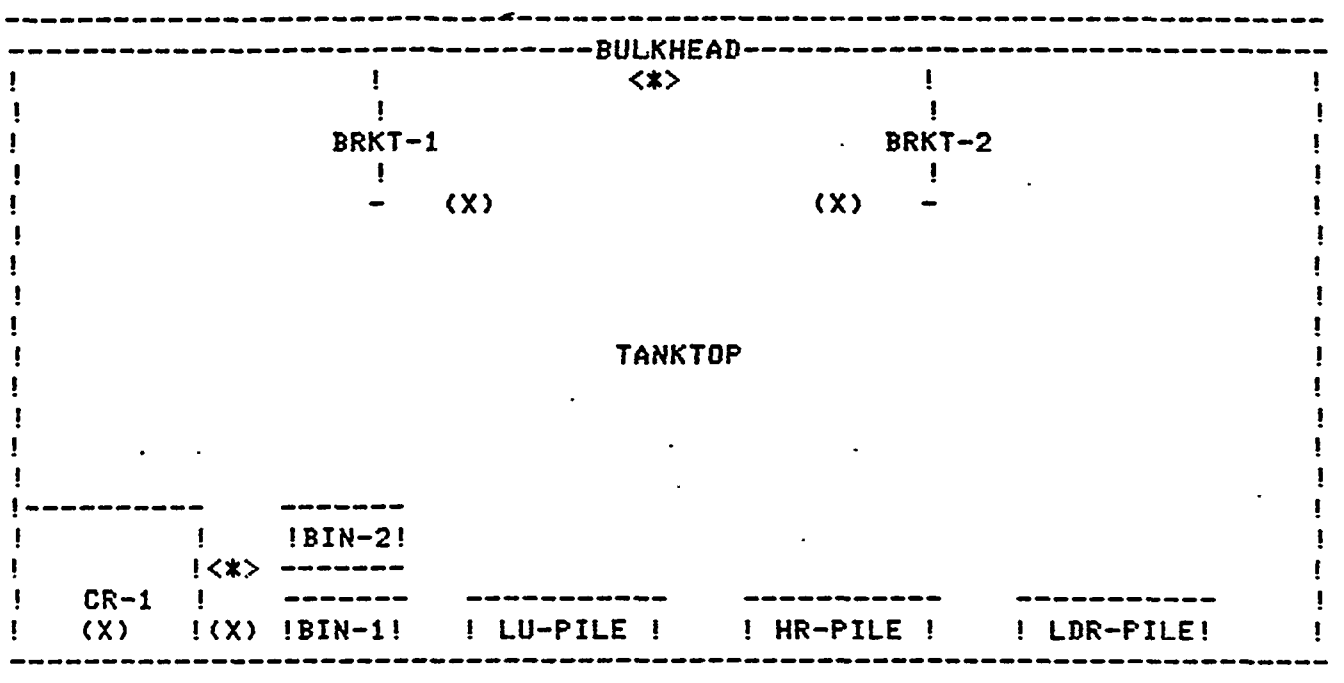
SECTION 1
FINAL REPORT - BACK-UP DATA

1.1 SCOPE

This manual covers the back-up data necessary. for the final report.on. temporary staging. Areas included are (1). center tanks (2) wing tanks, (3) tank staging platform, (4) exterior shell, and (5) pipe staging.

SECTION 2
JOB LAYOUT - WORK AREAS

2.1 WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
BRKT-1	20,15	0,5	
BRKT-2	50,15	0,5	
BULKHEAD	0,20	71,0	
TANKTOP	0,0	71,21	
CR- 1	0,0	10,5	
BIN-1	15,0	6,2	BEND
BIN-2	15,3	6,2	BEND
LU-PILE	25,0	10,2	BEND
HR-PILE	40,0	10,2	BEND
LDR-PILE	55,0	10,2	BEND
TOOLS:			
WRENCH-1	C A R P - 1		
HAMMER-1	CARP-1		
STEEL-TAPE-1	CARP-1		
OBJECTS:			

JOB LAYOUT - WORK AREAS

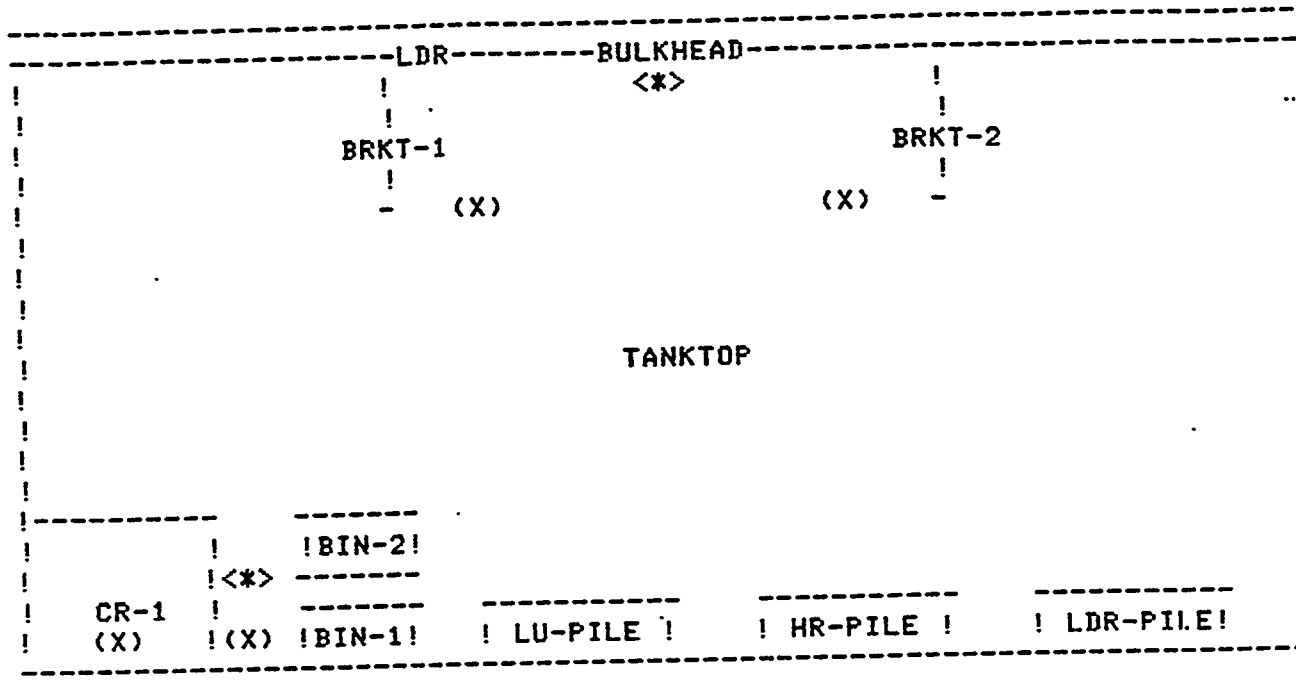
BRKT	BIN-1	FRAG
STAN	BIN-2	FRAG
BOARDS	LU-PILE	FRAG
HANDRAIL	HR-PILE	FRAG
LADR	LDR-PILE	FRAG
NUT	TOOLBOX-1	FRAG
BOLT	TOOLBOX-1	FRAG
SCLIP	TOOLBOX-2	FRAG
LCLIP	TOOLBOX-2	FRAG
EQUIPMENT:		
CRANE	CR-1	80P
OPERATORS:		
CARP-1	TANKTOP	25,15
CARP-2	TANKTOP	45,15
CARP-3	BIN-1	12,1 E
C-OPER	CR-1	5,1
CARRIERS:		
TOOLBOX-I	BIN-1	12,3
TOOLBOX-1	BIN-1	12,3
TOOLBOX-2	BULKHEAD	35,19
TOOLBOX-2	BULKHEAD	35,19

From	To	Steps
BRKT-1	BRKT-2	7
ERKT-1	BULKHEAD	0
BRKT-1	TANKTOP	0
BRKT-1	CR-1	11
BRKT-1	BIN-1	11
BRKT-1	BIN-2	13
BRKT-1	LU-PILE	17
RRKT-1	HR-PILE	14
BRKT-1	LDR-PILE	24
EIRKT-2	BULKHEAD	0
BRKT-2	TANKTOP	0
BRKT-2	CR-1	11
BRKT-2	BIN-1	11
BRKT-2	BIN-2	13
BRKT-2	LU-PILE	17
BRKT-2	HR-PILE	14
BRKT-2	LDR-PILE	24
BULKHEAD	TANKTOP	0

JOB LAYOUT - WORK AREAS

BULKHEAD	CR-1	11
BULKHEAD	BIN-1	l1
BULKHEAD	BIN-2	13
BULKHEAD	LU-PILE	17
BULKHEAD	HR-PILE	14
BULKHEAD	LDR-PILE	24
TANKTOP	CR-1	0
TANKTOP	BIN-1	0
TANKTOP	BIN-2	0
TANKTOP	LU-PILE	0
TANKTOP	HR-PILE	0
TANKTOP	LDR-PILE	0
CR-1	BIN-1	10
CR-1	BIN-2	8
CR-1	LU-PILE	18
CR-1	HR-PILE	12
CR-1	LDR-PILE	17
BIN-1	BIN-2	7
BIN-1	LU-FILE	15
BIN-1	HR-PILE	15
BIN-1	LDR-PILE	24
BIN-2	LU-PILE	21
BIN-2	HR-PILE	19
BIN-2	LDR-PILE	17
LU-PILE	HR-PILE	10
LU-PILE	LDR-PILE	35
HR-PILE	LDR-PILE	28

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag.
WORKPLACES:			
BRKT-1	20,15	0,5	
BRKT-2	50,15	0,5	
BULKHEAD	0,20	71,0	
TANKTOP	0,0	71,21	
CR-1	0,0	10,5	
BIN-1	15,0	6,2	BEND
BIN-2	15,3	6,2	BEND
LU-PILE	25,0	10,2	BEND
HR-PILE	40,0	10,2	BEND
LDR-PILE	55,0	10,2	BEND
LDR	22,20	0,0	
TOOLS:			
WRENCH-I	CARP-1		
HAMMER-1	CARP-1		
STEEL-TAFE-1	CARP-1		
PLIER-1	CARP-1		
OBJECTS:			

JOB LAYOUT - WORK AREAS

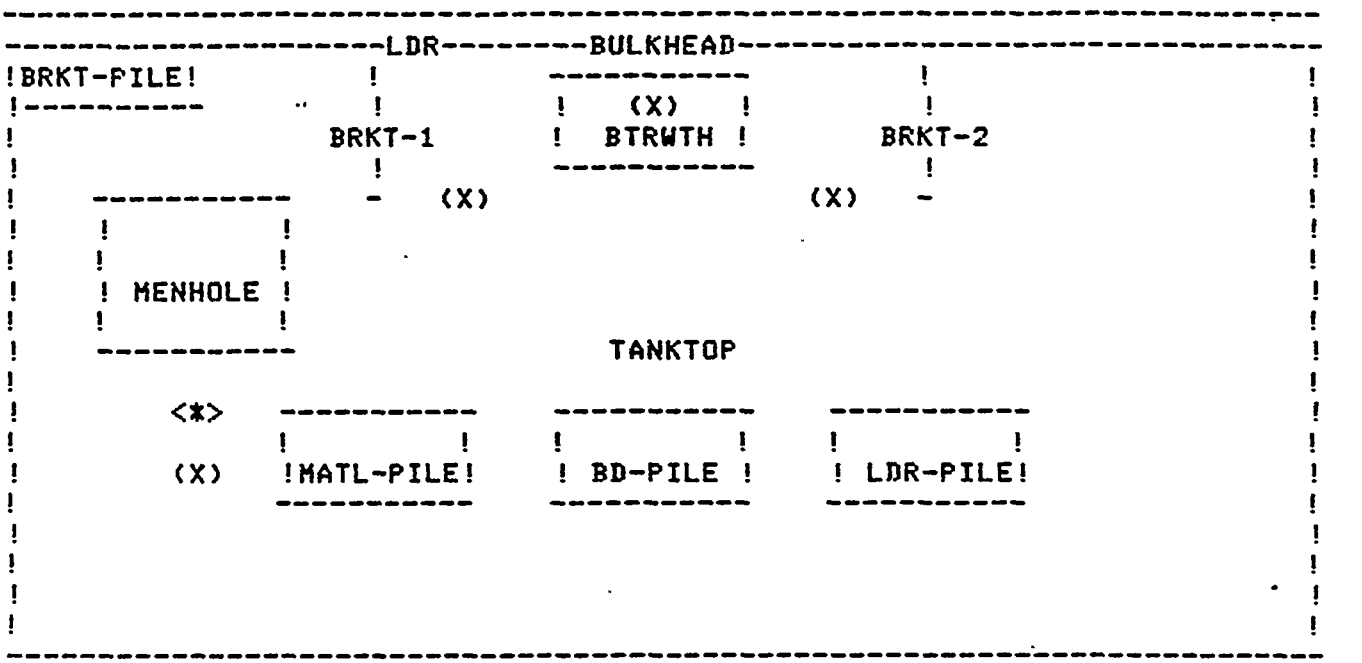
BRKT	BIN-1	FRAG	
STAN	BIN-2	FRAG	
BOARDS	LU-PILE	FRAG	
HANDRAIL	HR-PILE	FRAG	
LADR	LDR-PILE	FRAG	
NUT	TOOLBOX-1	FRAG	
BOLT	TOOLBOX-1	FRAG	
SCLIP	TOOLBOX-2	FRAG	
LCLIP	TOOLBOX-2	FRAG	
MIRE-ROPE	TOOLBOX-2	FRAG	
EQUIPMENT:			
CRANE	CR-1	80P	
OPERATORS:			
CARP-1	TANKTOP	25,15	
CARP-2	TANKTOP	45,15	
CARP-3	BIN-1	12,1	B
C-OPER	CR-1	5,1	
CARRIERS:			
TOOLBOX-1	BIN-1	12,3	
TOOLBOX-1	BIN-1	12,3	
TOOLBOX-2	BULKHEAD	35,19	
TOOLBOX-2	BULKHEAD	35,19	

From	To	Steps
BRKT-1	BRKT-2	7
BRKT-1	BULKHEAD	0
BRKT-1	TANKTOP	0
BRKT-1	CR-1	11
BRKT-1	BIN-1	11
RRKT-1	BIN-2	13
BRKT-1	LU-PILE	17
BRKT-1	HR-PILE	14
BRKT-1	LDR-PILE	24
BRKT-1	LDR	1
BRKT-2	BULKHEAD	0
RRKT-2	TANKTOP	0
BRKT-2	CR-1	11
BRKT-2	BIN-1	11
BRKT-2	BIN-2	13
BRKT-2	LU-PILE	17
BRKT-2	HR-PILE	14

JOB LAYOUT - WORK AREAS

BRKT-2	LDR-PILE	24
BRKT-2	LDR	
BULKHEAD	TANKTOP	6
BULKHEAD	CR-1	11
BULKHEAD	BIN-I	11
BULKHEAD	BIN-2	13
BULKHEAD	LU-PILE	17
BULKHEAD	HR-PILE	14
BULKHEAD	LDR-PILE	24
BULKHEAD	LDR	0
TANKTOP	CR-1	0
TANKTOP	BIN-1	0
TANKTOP	BIN-2	0
TANKTOP	LU-PILE	0
TANKTOP	HR-PILE	0
TANKTOP	LDR-PILE	0
TANKTOF	LDR	0
CR-1	BIN-1	10
CR-1	BIN-2	8
CR-1	LU-PILE	18
CR-1	HR-PILE	12
CR-1	LDR-PILE	17
CR-1	LDR	11
BIN-1	BIN-2	7
BIN-I	LU-PILE	15
BIN-1	HR-PILE	15
BIN-1	LDR-PILE	24
BIN-1	LDR	11
BIN-2	LU-PILE	21
BIN-2	HR-PILE	19
BIN-2	LDR-PILE	17
BIN-2	LDR	13
LU-PILE	H R - P I L E	10
LU-PILE	LDR-PILE	35
LU-PILE	LDR	17
HR-PILE	LDR-PILE	28
HR-PILE	LDR	14
LDR-PILE	LDR	24

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
BRKT-1	20,15	0,5	
BRKT-2	50,15	0,5	
BULKHEAD	0,20	71,0	
TANKTOP	0,0	71,21	
BRKT-PILE	0,18	10,2	BEND
HATL-PILE	15,5	10,3	BEND
BD-PILE	30,5	10,3	BEND
LDR-PILE	45,5	10,3	BEND
BTRUTH	30,16	10,3	
KENHOLE	5,10	10,5	
LDR	22,20	0,0	
TOOLS:			
WRENCH-1	CARP-1		
PLIER-1	CARP-1		
OBJECTS:			
BRKT	BULKHEAD		FRAG
BOARD	BULKHEAD		FRAG

JOB LAYOUT - WORK AREAS

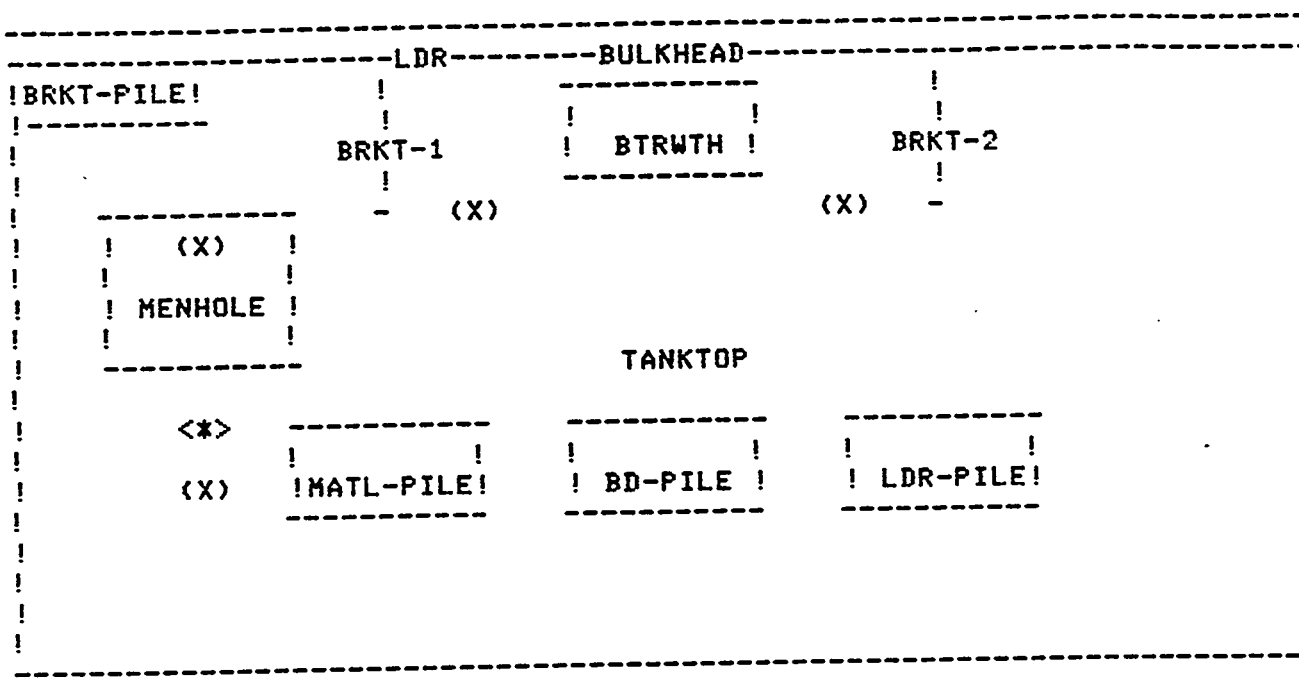
STAN	BULKHEAD	FRAG
HANDRAIL	BULKHEAD	FRAG
LADR	BULKHEAD	FRAG
NUT	BULKHEAD	FRAG
BOLT	BULKHEAD	FRAG
LCLIP	BULKHEAD	FRAG
HIRE-ROPE	BULKHEAD	FRAG
TORCH	BULKHEAD	FRAG
CABLE	BTRWTH	FRAG
EQUIPMENT:		
WINCH-FREE	BTFWTH	0.38 M
WINCH-UP	BTRWTH	1,5 M
WINCH-DOWN	BTRUTH	0.5 M
OPERATORS:		
CARP-1	BULKHEAD	25,15
CARP-2	BULKHEAD	45,15
CARP-3	MATL-PILE	10,6
WINCH-OPER	BTRWTH	35,18
CARRIERS:		
TOOLBOX-1	MATL-PILE	10,8
TOOLBOX-1	MATL-PILE	10,8

From	To	steps
BRKT-1	BRKT-2	7
BRKT-1	BULKHEAD	0
BRKT-1	TANKTOP	0
RRKT-1	BRKT-PILE	7
BRKT-1	MATL-PILE	0
BRKT-1	BD-PILE	0
BRKT-1	LDR-PILE	0
BRKT-1	BTRWTH	0
BRKT-1	MENHOLE	0
BRKT-1	LDR	1
BRKT-2	BULKHEAD	0
BRKT-2	TANKTOP	0
BRKT-2	BRKT-PILE	14
BRKT-2.	MATL-PILE	0
BRKT-2	BD-PILE	0
BRKT-2	LDR-PILE	0
BRKT-2	BTRUTH	0
BRKT-2	MENHOLE	0

JOB LAYOUT - WORK AREAS

BRKT-2	LDR	6
RULKHEAD	TANKTOP	0
BULKHEAD	BRKT-PILE	0
BULKHEAD	MATL-PILE	0
BULKHEAD	BD-PILE	0
BULKHEAD	LDM-PILE	0
BULKHEAD	BTRWTH	0
BULKHEAD	MENHOLE	0
BULKHEAD	LDR	0
TANKTOP	BRKT-PILE	0
TANKTOP	MATL-PILE	0
TANKTOP	BD-PILE	0
TANKTOP	LDR-PILE	0
TANKTOP	BTRWTH	0
TANKTOP	MENHOLE	0
TANKTOP	LDR	0
BRKT-PILE	MATL-PILE	0
BRKT-PILE	BD-PILE	0
BRKT-PILE	LDR-PILE	0
BRKT-PILE	BTRUTH	0
BRKT-PILE	MENHOLE	0
BRKT-PILE	LDR	0
MATL-PILE	BD-PILE	8
MATL-PILE	LDR-PILE	16
MATL-PILE	BTRUTH	0
MATL-PILE	MENHOLE	0
MATL-PILE	LDR	0
BD-PILE	LDR-PILE	8
BD-PILE	BTRUTH	0
BD-PILE	MENHOLE	0
BD-PILE	LDR	0
LDR-PILE	BTRWTH	0
LDR-PILE	MENHOLE	0
LDR-PILE	LDR	0
BTRWTH	MENHOLE	0
BTRWTH	LDR	0
MENHOLE	LDR	0

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/
WORKPLACES:			
BRKT-1	20,15	0,5	
BRKT-2	50,15	0,5	
BULKHEAD	0,20	71,0	
TANKTOP	0,0	71,21	
BRKT-FILE	0,18	10,2	BEND
MATL-PILE	15,5	10,3	BEND
BD-PILE	30,5	10,3	BEND
LDR-PILE	45,5	10,3	BEND
BTRWTH	30,16	10,3	
MENHOLE	5,10	10,5	
LDR	22,20	0,0	
TOOLS:			
WRENCH-1	CARP-1		
PLIER-1	CARP-1		
OBJECTS:			
BRKT	BULKHEAD		FRAG
BOARD	BULKHEAD		FRAG

JOB LAYOUT - WORK AREAS

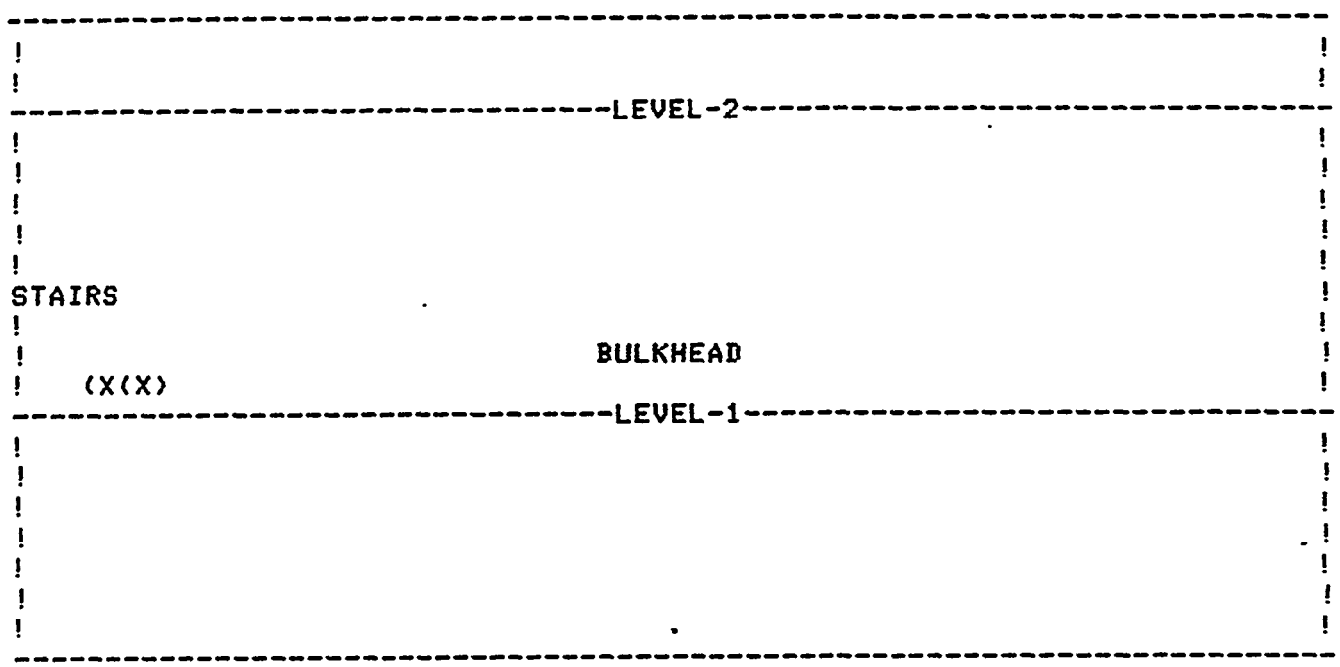
STAN	BULKHEAD	FRAG
MANDRAIL	BULKHEAD	FRAG
LADR	BULKHEAD	FRAG
NUT	BULKHEAD	FRAG
BOLT	BULKHEAD	F R A G
LCLIP	BULKHEAD	FRAG
WIRE-ROPE	BULKHEAD	FRAG
TORCH	BULKHEAD	
CABLE	BTRUTH	FRAG
EQUIPHENT:		
WINCH-FREE	MENHOLE	**0.38 M**
WINCH-UP	MNENHOLE	**1.5 M**
WINCH-DOWN	MENHOLE	**0.5 M**
OPERATORS:		
CARP-1	BULKHEAD	25,15 B
CARP-2	BULKHEAD	45,15
CARP-3	HATL-FILE	10,6
WINCH-OPER	MENHOLE	10,14
CARRIERS:		
TOOLBOX-1	HATL-PILE	10,8
TOOLBOX-1	HATL-PILE	10,8

From	T o	Steps
BRKT-1	BRKT-2	7
BRKT-1	BULKHEAD	0
BRKT-1	TANKTOP	0
BRKT-1	BRKT-PILE	7
BRKT-1	MATL-PILE	0
BRKT-1	BD-PILE	0
BRKT-I	LDR-PILE	0
RRKT-1	BTRWTH	0
BRKT-1	MENHOLE	0
BRKT-1	LDR	1
BRKT-2	BULKHEAD	0
BRKT-2	TANKTOP	0
BRKT-2	BRKT-PILE	14
BRKT-2	MATL-PILE	0
BRKT-2	BD-PILE	0
BRKT-2	LDR-PILE	0
BRKT-2	B T R U T H	0
RRKT-2	MENHOLE	0

JOB LAYOUT - WORK AREAS

BRKT-2	LDR	6
BULKHEAD	TANKTOP	0
BULKHEAD	BRKT-PILE	0
BULKHEAD	MATL-PILE	0
BULKHEAD	BD-PILE	0
BULKHEAD	LDR-PILE	0
BULKHEAD	BTRUTH	0
BULKHEAD	MENHOLE	0
BULKHEAII	LDR	0
TANKTOP	BRKT-PILE	0
TANKTOP	MATL-PILE	0
TANKTOP	BD-PILE	0
TANKTOP	LDR-PILE	0
TANKTOP	BTRWTH	0
TANKTOP	MENHOLE	0
TANKTOP	LDR	0
BRKT-PILE	MATL-PILE	0
BRKT-PXLE	BD-PILE	0
BRKT-PILE	LDR-PILE	0
BRKT-PILE	BTRUTH	0
BRKT-PILE	MENHOLE	0
BRKT-PILE	LDR	0
MATL-PILE	BD-PILE	8
MATL-PILE	LDR-PILE	16
MATL-PILE	BTRUTH	0
MATL-PILE	MENHOLE	0
MATL-PILE	LDR	0
BD-PILE	LDR-PILE	8
BD-PILE	BTRWTH	0
BD-PILE	MENHOLE	0
BD-PILE	LDR	0
LDR-PILE	BTRUTH	0
LDR-PILE	MENHOLE	0
LDR-PILE	LDR	0
BTRWTH	MENHOLE	0
BTRWTH	LDR	0
MENHOLE	LDR	0

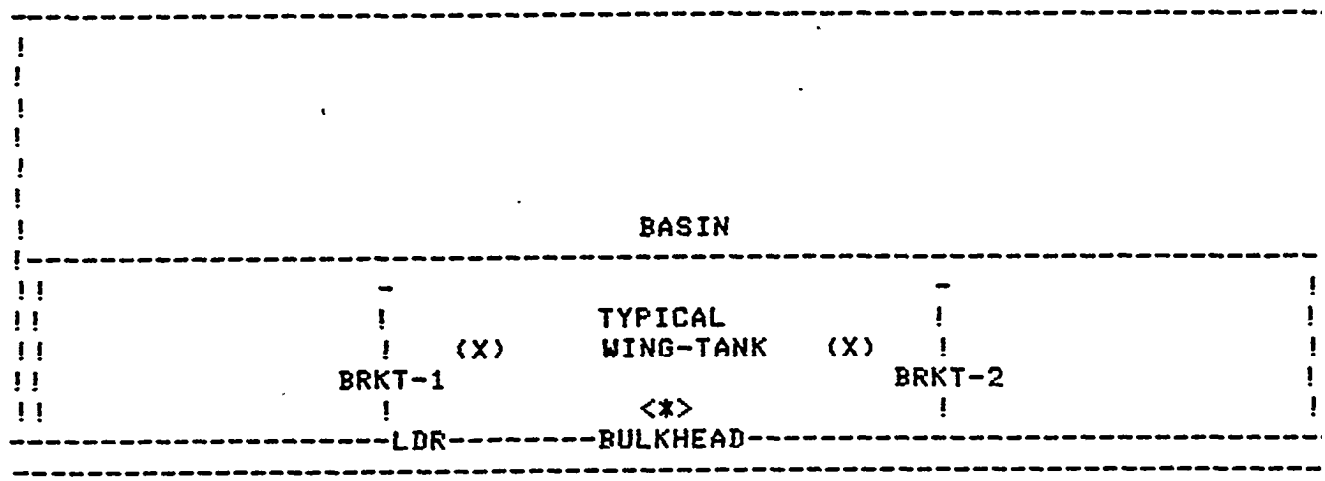
JOB LAYOUT - WORK AREAS



Name	Location		Beds/Frag/FT
WORKPLACES :			
LEVEL-1	0,8	71,0	
LEVEL-2	0,18	71,0	
STAIRS	0,12	5,0	
BULKHEAD	0,0	71,21	
OPERATORS:			
CARP-1	LEVEL-1		5,9 B
CARP-2	LEVEL-I		7,9

From	To	Steps
LEVEL-1	LEVEL-2	16
L E V E L - 1	STAIRS	0
LEVEL-1	BULKHEAD	0
LEVEL-2	STAIRS	0
LEVEL-2	BULKHEAD	0
STAIRS	BULKHEAD	0

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/P
WORKPLACES:			
BASIN	0,7	71,14	
ROAD	0,4	71,2	
TYPICAL	35,11	0,0	
WING-TANK	1,7	69,6	
BULKHEAD	1,7	69,0	
CR-1	0,0	10,4	
BRKT-1	20,7	0,5	
BRKT-2	50,7	0,5	
LDR	22,7	0,0	
BIN-1	15,0	6,2	BEND
BIN-2	23,0	6,2	BEND
LU-PILE	32,0	10,2	BEND
HR-PILE	45,0	10,2	BEND
LDR-PILE	60,0	10,2	BEND
TOOLS:			
WRENCH-1	CARP-1		
HAMMER-1	CARP-1		
STEEL-TAPE-1	CARP-1		

JOB LAYOUT - WORK AREAS

PLIER-1	CARP-1	
OBJECTS:		
BRKT	BIN-1	FRAG
STAN	BIN-2	FRAG
BOARD	LU-PILE	FRAG
HANDRAIL	HR-PILE	FRAG
LADR	LDR-PILE	FRAG
NUT	TOOLBOX-1	FRAG
BOLT	TOOLBOX-1	FRAG
SCLIP	TOOLBOX-2	FRAG
LCLIP	TOOLBOX-2	FRAG
WIREROPE	TOOLBOX-2	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS:		
CARP-1	WING-TANK	25,10
CARP-2	WING-TANK	45,10
CARP-3	BIN-1	12,1 B
C-OPER	CR-1	5,1
CARRIERS:		
TOOLBOX-1	BIN-1	12,3
TOOLBOX-1	BIN-1	12,3
TOOLBOX-2	BULKHEAD	35,8
TOOLBOX-2	BULKHEAD	35,8

From	To	Steps
BASIN	ROAD	0
BASIN	TYPICAL	0
BASIN	WING-TANK	0
BASIN	BULKHEAD	0
BASIN	CR-1	0
BASIN	BRKT-1	0
BASIN	BRKT-2	0
BASIN	LDR	0
BASIN	BIN-1	0
BASIN	BIN-2	0
BASIN	LU-PILE	0
BASIN	HR-PILE	0
BASIN	LDR-PILE	0
ROAD	TYPICAL	0

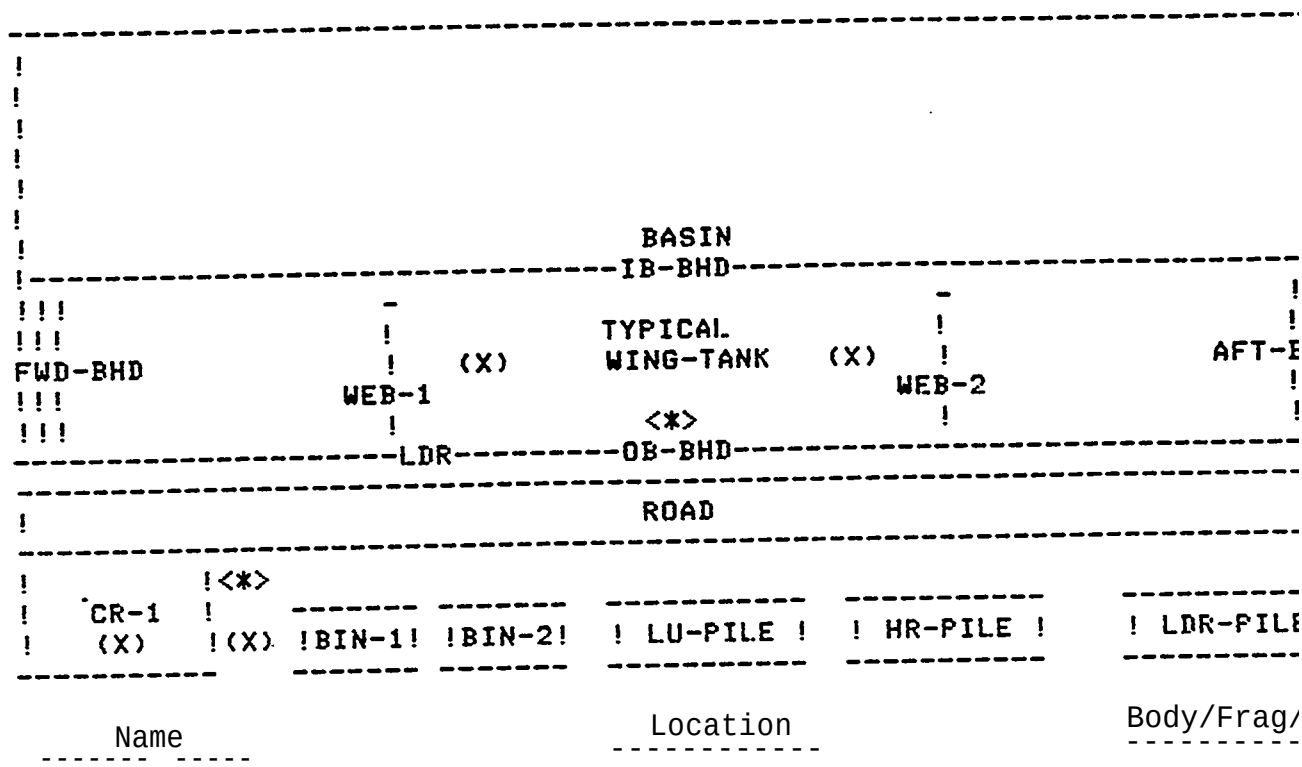
JOB LAYOUT - WORK AREAS

ROAD	WING-TANK	0
ROAD	BULKHEAD	0
ROAD	CR-1	0
ROAD	BRKT-1	0
ROAD	BRKT-2	0
ROAD	LDR	0
ROAD	BIN-1	0
ROAD	BIN-2	0
ROAD	LU-PILE	0
ROAD	HR-PILE	0
ROAD	LDR-PILE	0
ROAD	WING-TANK	0
TYPICAL	BULKHEAD	0
TYPICAL	CR-1	0
TYPICAL	BRKT-1	0
TYPICAL	BRKT-2	0
TYPICAL	LDR	0
TYPICAL	BIN-1	0
TYPICAL	BIN-2	0
TYPICAL	LU-PILE	0
TYPICAL	HR-PILE	0
TYPICAL	LDR-PILE	0
MING-TANK	B U L K H E A D	0
WING-TANK	CR-1	0
WING-TANK	BRKT-1	0
WING-TANK	BRKT-2	0
WING-TANK	LDR	0
WING-TANK	BIN-I	0
WING-TANK	BIN-2	0
WING-TANK	LU-PILE	0
WING-TANK	HR-PILE	0
WING-TANK	LDR-PILE	
BULKHEAD	CR-1	160
BULKHEAD	BRKT-1	0
BULKHEAD	BRKT-2	0
BULKHEAD	LDR	0
BULKHEAD	BIN-1	80
BULKHEAD	BIN-2	80
BULKHEAD	LU-PILE	80
BULKHEAD	HR-PILE	80
BULKHEAD	LDR-PILE	80
BULKHEAD	BRKT-1	160
CR-1	BRKT-2	160
CR-1	LDR	160
CR-1	BIN-I	160
CR- 1	BIN-2	160
CR-1	LU-PILE	160
CR-1		

JOB LAYOUT - WORK AREAS

CR-1	HR-PILE	160
CR-1	LDR-PILE	160
BRKT-1	BRKT-2	7
BRKT-1	LDR	1
BRKT-1	BIN-1	80
RRKT-1	BIN-2	80
BRKT-1	LU-PILE	80
BRKT-1	HR-PILE	80
BRKT-1	LDR-PILE	80
BRKT-2	LDR	6
BRKT-2	BIN-1	80
BRKT-2	BIN-2	80
BRKT-2	LU-PILE	80
BRKT-2	HR-PILE	80
BRKT-2	LDR-PILE	80
LDR	BIN-1	80
LDR	BIN-2	80
LDR	LU-PILE	80
LDR	HR-PILE	80
LDR	LDR-PILE	80
BIN-1	BIN-2	8
BIN-1	LU-PILE	16
BIN-1	HR-PILE	24
BIN-1	LDR-PILE	32
BIN-2	LU-PILE	8
BIN-2	HR-PILE	16
BIN-2	LDR-PILE	24
LU-PILE	HR-PILE	8
LU-PILE	LDR-PILE	16
HR-PILE	LDR-PILE	8

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/
WORKPLACES:			
BASIN	0,7	71,14	
ROAD	0,4	71,2	
TYPICAL	35,11	0,0	
WING-TANK	1,7	69,6	
IB-BHD	1,13	69,0	
OB-MD	1,7	69,0	
AFT-BHD	69,7	1,6	
FWD-BHD	1,7	1,6	
CR-1	0,0	10,4	
WEB-1	20,7	0,5	
WEB-2	50,7	0,5	
LDR	22,7	0,0	
BIN-I	15,0	6,2	BEND
BIN-2	23,0	6,2	BEND
LU-PILE	32,0	10,2	BEND
HR-PILE	45,0	10,2	BEND
LDR-PILE	60,0	10,2	BEND
TOOLS:			

JOB LAYOUT - WORK AREAS

WRENCH-1	CARP-1	
HAMMER-1	CARP-1	
STEEL-TAPE-1	CARP-1	
PLIERS-1	CARP-1	
OBJECTS:		
BRKT	BIN-1	FRAG
STAN	BIN-2	FRAG
BOARD	LU-PILE	FRAG
HANDRAIL	HR-PILE	FRAG
LADR	LDR-PILE	FRAG
NUT	TOOLBOX-1	FRAG
BOLT	TOOLBOX-1	FRAG
SCLIP	TOOLBOX-2	FRAG
LCLIP	TOOLBOX-2	FRAG
WIREROPE	TOOLBOX-2	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS:		
CARP-1	WING-TANK	25,10
CARP-2	WING-TANK	45,10
CARP-3	BIN-1	12,1 B
C-OPER	CR-1	5,1
CARRIERS:		
TOOLBOX-1	BIN-1	12,3
TOOLBOX-1	BIN-1	12,3
TOOLBOX-2	OB-BHD	35,8
TOOLBOX-2	OB-BHD	35,8

From	To	Steps
BASIN	ROAD	0
BASIN	TYPICAL	0
BASIN	UING-TANK	0
BASIN	IB-BHD	0
BASIN	OB-BHD	0
BASIN	AFT-BHD	0
BASIN	FWD-BHll	0
BASIN	CR-1	0
BASIN	WEB-1	0
BASIN	WEB-2	0
BASIN	LDR	0

JOB LAYOUT - WORK AREAS

BASIN	BIN-1	0
BASIN	BIN-2	0
BASIN	LU-PILE	0
BASIN	HR-PILE	0
BASIN	LDR-PILE	0
ROAD	TYPICAL	0
ROAD	WING-TANK	0
ROAD	IB-RHD	0
ROAD	OB-BHD	0
ROAD	AFT-BHD	0
ROAD	FWD-BHD	0
ROAD	CR-1	0
ROAD	WEB-1	0
ROAD	WEB-2	0
ROAD	LDR	0
ROAD	BIN-1	0
ROAD	BIN-2	0
ROAD	LU-PILE	0
ROAD	HR-PILE	0
ROAD	LDR-PILE	0
TYPICAL	WING-TANK	0
TYPICAL	IB-BHD	0
TYPICAL	OB-BHD	0
TYPICAL	AFT-BHD	0
TYPICAL	FUD-BHD	0
TYPICAL	CR-1	0
TYPICAL	WEB-1	0
TYPICAL	WEB-2	0
TYPICAL	LDR	0
TYPICAL	BIN-1	0
TYPICAL	BIN-2	0
TYPICAL	LU-PILE	0
TYPICAL	HR-PILE	0
TYPICAL	LDR-PILE	0
WING-TANK	IB-BHD	0
WING-TANK	OB-BHD	0
WING-TANK	AFT-BHII	0
WING-TANN	FWD-BHD	0
WING-TANK	CR-1	0
WING-TANK	WEB-1	0
WNG-TANK	WEB-2	0
WING-TANK	LDR	0
WING-TANK	BIN-1	0
WING-TANK	BIN-2	0
WING-TANK	LU-PILE	0
WING-TANK	HR-PILE	0
WING-TANK	LDR-PILE	0

JOB LAYOUT - WORK AREAS

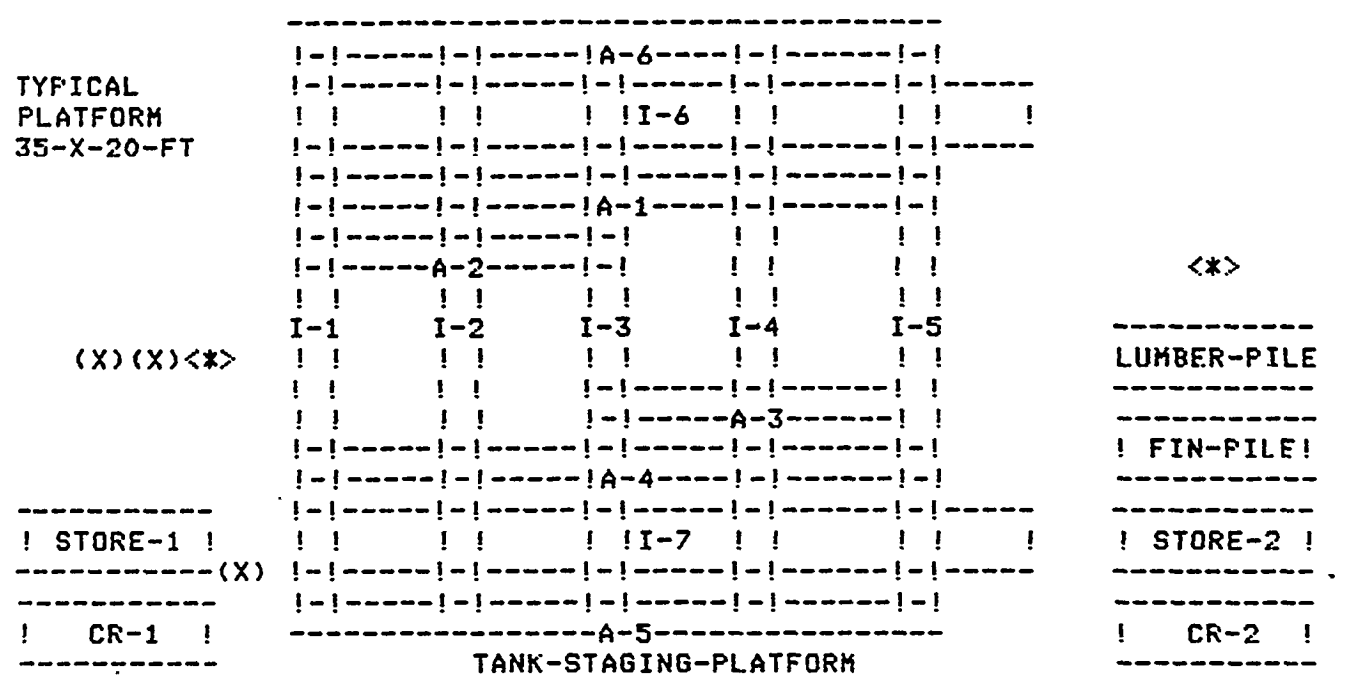
IB-BHD	OB-BHD	12
IB-BHD	AFT-BHII	
IB-BHD	FUD-BHD	0
IB-BHD	CR-1	160
IB-BHD	WEB-1	0
IB-BHD	WEB-2	0
IB-BHD	LDR	0
IB-BHD	BIN-1	8 0
IB-BHD	BIN-2	80
IB-BHD	LU-PILE	80
IB-BHD	HR-PILE	80
IB-BHD	LDR-PILE	80
OB-BHD	AFT-BHD	0
OB-BHD	FWD-BHD	0
OB-BHD	CR-1	160
OB-BHD	WEB-1	0
OB-BHD	WEB-2	0
OB-BHD	LDR	0
OB-BHD	BIN-1	80
OB-BHD	BIN-2	80
OB-BHD	LU-PILE	80
OB-BHD	HR-PILE	80
OB-BHD	LDR-FILE	80
AFT-BHD	FWD-BHD	40
AFT-BHD	CR-1	160
AFT-BHD	WEB-1	0
AFT-BHD	WEB-2	0
AFT-BHD	LDR	0
AFT-BHD	BIN-1	80
AFT-BHD	BIN-2	80
AFT-BHD	LU-PILE	80
AFT-BHD	HR-PILE	80
AFT-BHD	LDR-PILE	80
FWD-BHD	CR-1	160
FWD-BHD	WEB-1	0
FWD-BHD	WEB-2	0
FWD-BHD	LDR	0
FWD-BHD	BIN-1	80
FWD-BHD	BIN-2	80
FWD-BHD	LU-PILE	80
FWD-BHD	HR-PILE	80
FWD-BHD	LDR-PILE	80
CR-1	WEB-1	160
CR-1	WEB-2	160
CR-1	LDR	160
CR-1	BIN-1	160
CR-1	BIN-2	160

JOB LAYOUT - WORK AREAS

CR-1	LU-PILE	160
CR-1	HR-PILE	160
CR-1	LDR-PILE	160
WEB-1	WEB-2	7
WEB-1	LDR	1
WEB-1	BIN-1	80
WEB-1	BIN-2	80
WEB-1	LU-PILE	80
WEB-1	HR-PILE	80
WEB-1	LDR-PILE	80
WEB-2	LDR	6
WEB-2	BIN-1	80
WEB-2	BIN-2	80
WEB-2	LU-PILE	80
WEB-2	HR-PILE	80
WEB-2	LDR-PILE	80
LDR	BIN-1	80
LDR	BIN-2	80
LDR	LU-PILE	80
LDR	HR-PILE	80
LDR	LDR-PILE	80
BIN-1	BIN-2	8
BIN-1	LU-PILE	16
BIN-1	HR-PILE	24
BIN-l	LDR-PILE	32
BIN-2	LU-PILE	8
BIN-2	HR-PILE	16
BIN-2	LDR-PILE	24
LU-PILE	HR-PILE	8
LU-PILE	LDR-PILE	16
HR-PILE	LDR-PILE	8

SECTION 2
JOB LAYOUT - WORK AREAS

2.1 WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
I-1	15,1	2,20	BEND
I-2	23,1	2,20	BEND
I-3	31,1	2,20	BEND
I-4	39,1	2,20	BEND
I-5	48,1	2,20	BEND
I-6	15,17	40,2	BEND
A-1	15,15	35,1	BEND
A-2	16,13	16,1	BEND
A-3	32,8	16,1	BEND
A-4	15,6	35,1	BEND
I-7	15,3	40,2	BEND
A-5	15,1	35,1	BEND
A-6	15,20	35,1	BEND
STORE-1	0,3	10,2	
STORE-2	60,3	10,2	
FIN-PILE	60,6	10,2	
LUMBER-PILE	60,9	10,2	

JOB LAYOUT - WORK AREAS

CR-1	0,0	10,2
CR-2	60,0	10,2
TANK-STAGING-PLATFORM	35,0	0,0
TYPICAL	0,19	0,0
PLATFORM	0,18	0 , 0
35-X-20-FT	0,17	0,0

TOOLS:		
BROOM	STORE-2	
WRENCH	CARP-1	
HAMIER	CARP-1	
STEEL-TAPE	CARP-1	
MARKER	CARP-1	
PRINT	CARP-1	
OBJECTS:		
PALLETS	STORE-1	FRAG
BINS	STORE-1	FRAG
ANGLES	STORE-2	FRAG
I-BEAM	STORE-2	FRAG
BOARDS	LUMBER-PILE	FRAG
FIN-PLATFORM	TANK-STAGING-PLATFORM	FRAG
NUTS	TOOLBOX-1	FRAG
BOLTS	TOOLBOX-1	FRAG
MASHERS	TOOLBOX-1	FRAG
BLOCKS	TOOLBOX-2	FRAG
EQUIPMENT:		
CRANE-1	CR-1	01P
CRANE-2	CR-2	01P
OPERATORS:		
CARP-1	I-6	4,10
CARP-2	I-6	7,10
HOOKER-ON	CR-1	12,3
CARRIERS:		
TOOLBOX-1	I-1	10,10
TOOLBOX-1	I-1	10,10
TOOLBOX-2	LUMBER-PILE	65,13
TOOLBOX-2	LUMBER-PILE	65,13

From	To	Steps
I-1	I-2	2

JOB LAYOUT - WORK AREAS

I-1	I -3	4
I-1	I - 4	6
I-1	I-5	8
I-1	I-6	0
I-1	A - 1	0
I-1	A-2	0
I-1	A-3	0
I-1		0
I-1	A-4	0
I-1	A-5	0
I - 1	A-6	0
I-1	STORE-1	0
I-1	STORE-2	16
I-1	FIN-PILE	0
I-1	LUMBER-PILE	0
I-1	CR-1	0
I-1	CR-2	0
I-1	TANK-STAGING-PLATFORM	0
I-1	TYPICAL	0
I-1	PLATFORM	0
I-1	35-x-20-FT	0
I-2	I-3	?
I-2	I-4	4
I-2	I-5	6
I-2	I-6	0
I-2	A-1	0
I-2	A-2	0
I-2	A-3	0
I-2	A-4	0
I-2	I-7	0
I-2	A-5	0
I-2	A-6	0
I-2	STORE-1	0
I-2	STORE-2	16
I-2	FIN-PILE	0
I-2	LUMBER-PILE	0
I-2	CR-1	0
I-2	CR-2	0
I-2	TANK-STAGING-PLATFORM	0
I-2	TYPICAL	0
I-2	PLATFORM	0
I-2	35-X-20-FT	0
I-3	I-4	2
I-3	I-5	4
I-3	I-6	0
I-3	A-1	0
I-3	A-2	0

JOB LAYOUT - WORK AREAS

I-3	A-3	0
I-3	A-4	0
I-3	I-7	0
I-3	A-5	0
I-3	A-6	0
I-3	STORE-1	0
I-3	STORE-2	16
I -3	FIN-PILE	0
I-3	LUMBER-PILE	0
I-3	CR-1	0
I-3	CR-2	0
I-3	TANK-STAGING-PLATFORM	0
I-3	TYPICAL	0
I -3	PLATFORM	0
I-3	35-X-20-FT	0
I-3	I-5	2
I-4	I-6	0
I-4	A-1	0
I-4	A-2	0
I-4	A-3	0
I -4	A-4	0
I-4	I-7	0
I -4	A-5	0
I-4	6-6	0
I-4	STORE-1	0
I-4	STORE-2	16
I-4	FIN-PILE	0
I-4	LUMBER-PILE	0
I-4	CR-1	0
I-4	CR-2	0
I-4	TANK-STAGING-PLATFORM	0
I-4	TYPICAL	0
I-4	PLATFORM	0
I-4	35-x-20-FT	0
I-5	I-6	0
I-5	A-1	0
I-S	A-2	0
I-5	A-3	0
I-5	A-4	0
I-5	I-7	0
I-S	A-5	0
I-5	A-6	0
I-5	STORE-1	0
I-5	STORE-2	16
I-5	FIN-PILE	0
I-5	LUMBER-PILE	0
I-5	CR-1	0

JOB LAYOUT - WORK AREAS

I-5	CR-2	0
I-5	TANK-STAGING-PLATFORM	0
I-5	TYPICAL	0
I-5	PLATFORM	0
I-5	35-X-20-FT	0
I-6	A-1	4
I-6	A-2	6
I-6	A-3	6
I-6	A-4	8
I-6	I-7	11
I-6	A-S	12
I-6	A-6	2
I-6	STORE-1	0
I-6	STORE-2	30
I-6	FIN-PILE	0
I-6	LUMBER-PILE	0
I-6	CR-1	0
I-6	CR-2	0
I-6	TANK-STAGING-PLATFORM	0
I-6	TYPICAL	0
I-6	PLATFORM	0
I-6	35-X-20-FT	0
A-l	A-2	2
A-1	A-3	2
A-1	A-4	4
A-1	I -7	7
A-1	A-5	8
A-1	A-6	6
A-1	STORE-1	0
A-1	STORE-2	27
A-1	FIN-PILE	0
A-1	LUMBER-PILE	0
A-l	CR-1	0
A-1	CR-2	0
A-1	TANK-STAGING-PLATFORM	0
A-1	TYPICAL	0
A-1	PLATFORM	0
A-1	35-X-20-FT	0
A-2	A-3	16
A-2	A-4	2
A-2	I-7	9
A-2	4-5	10
A-2	A-6	8
A-2	STORE-1	0
A-2	STORE-2	25
A-2	FIN-PILE	0
A-2	LUMBER-PILE	0

A-2	CR-1	0
A-2	CR-2	0
A-2	TANK-STAGING-PLATFORM	0
A-2	TYPICAL	0
A-2	PLATFORM	0
A-2	35-X-20-FT	0
A-2	A-4	2
A-3	I -7	9
A-3	A-5	10
A-3	A-6	8
A-3	STORE-1	0
A-3	STORE-2	25
A-3	FIN-PILE	0
A-3	LUMBER-PILE	0
A-3	CR-1	0
A-3	CR-2	0
A-3	TANK-STAGING-PLATFORM	0
A-3	TYPICAL	0
A-3	PLATFORM	0
A-3	35-X-20-FT	0
A-3	I-7	3
A-4	A-S	4
A-4	A-6	10
A-4	STORE-1	0
A-4	STORE-2	24
A-4	FIN-PILE	0
A-4	LUMBER-PILE	0
A-4	CR-1	0
A-4	CR-2	0
A-4	TANK-STAGING-PLATFORM	0
A-4	TYPICAL	0
A-4	PLATFORM	0
A-4	35-X-20-FT	0
A-4	A-5	1
I -7	A-6	13
I-7	STORE-1	0
I-7	STORE-2	21
I-7	FIN-PILE	0
I-7	LUMBER-PILE	14
I-7	CR-1	0
I-7	CR-2	18
I-7	TANK-STAGING-PLATFORM	0
I-7	TYPICAL	0
I-7	PLATFORM	0
I-7	35-x-20-FT	0
I-7	A-6	14
A-5	STORE-1	0
A-5		

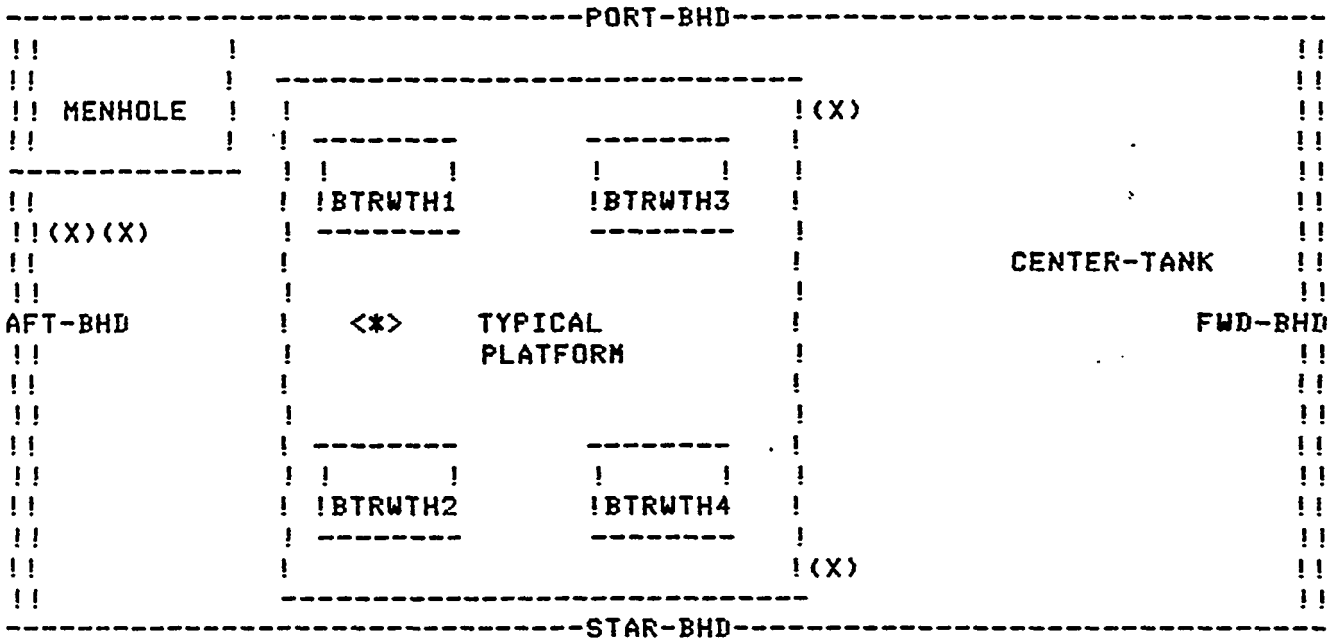
JOB LAYOUT - WORK AREAS

A-5	STORE-2	18
A-5	FIN-PILE	0
A-5	LUHBER-PILE	0
A-5	CR-1	0
A-5	CR-2	0
A-5	TANK-STAGING-PLATFORM	0
A-5	TYPICAL	0
A-5	PLATFORM	0
A-5	35-X-20-FT	0
A-5	STORE-1	0
A-6	STORE-2	32
A-6	FIN-PILE	0
A-6	LUMBER-PILE	0
A-6	CR-1	0
A-6	CR-2	0
A-6	TANK-STAGING-PLATFORM	0
A-6	TYPICAL	0
A-6	PLATFORM	0
A-6	35-X-20-FT	0
STORE-1	STORE-2	60
STORE-1	FIN-PILE	0
STORE-1	LUMBER-PILE	0
STORE-l	CR-1	35
STORE-1	CR-2	0
STORE-1	TANK-STAGING-PLATFORM	0
STORE-1	TYPICAL	0
STORE-1	PLATFORM	0
STORE-1	35-X-20-FT	0
STORE-2	FIN-PILE	0
STORE-2	LUMBER-PILE	0
STORE-2	CR-1	130
STORE-2	CR-2	119
STORE-2	TANK-STAGING-PLATFORM	16
STORE-2	TYPICAL	0
STORE-2	PLATFORM	0
STORE-2	35-X-20-FT	0
FIN-PILE	LUMBER-PILE	0
FIN-PILE	CR-1	0
FIN-PILE	CR-2	97
FIN-PILE	TANK-STAGING-PLATFORM	22
FIN-PILE	TYPICAL	0
FIN-PILE	PLATFORM	0
FIN-PILE	35-X-20-FT	0
LUMBER-PILE	CR-1	0
LUMBER-PILE	CR-2	50
LUMBER-PILE	TANK-STAGING-PLATFORM	119
LUMBER-PILE	TYPICAL	0

JOB LAYOUT - WORK AREAS

LUHBER-PILE	PLATFORM	0
LUMBER-PILE	35-X-20-FT	0
CR-1	CR-2	0
CR-1	TANK-STAGING-PLATFORH	0
CR-I	TYPICAL	0
CR-1	PLATFORM	0
CR-1	35-X-20-FT	0
CR-2	TANK-STAGING-PLATFORM	119
CR-2	TYPICAl	0
CR-2	PLATFORM	0
CR-2	35-X-20-FT	0
TANK-STAGING-PLATFORM	TYPICAL	0
TANK-STAGING-PLATFORM	PLATFORM	0
TANK-STAGING-PLATFORM	35-X-20-FT	0
TYPICAL	PLATFORM	0
TYPICAL	35-X-20-FT	0
PLATFORM	3S-X-20-FT	0

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
TYPICAL	29,10	0,0	
PLATFORM	15,1	28,17	
BTRWTH1	17,13	7,3	BEND
BTRWTH2	17,3	7,3	BEND
BTRWTH3	32,13	7,3	BEND
BTRWTH4	32,3	7,3	BEND
MENHOLE	0,15	12,5	BEND
CENTER-TANK	60,12	0,0	
AFT-BHD	0,0	1,20	
FWD-BHD	70,0	1,20	
PORT-BHD	0,20	71,0	
STAR-BHD	0,0	71,0	
OBJECTS:			
SUSPENSION-CABLE	MENHOLE		FRAG
CABLE-SLEEVE	MENHOLE		FRAG
CABLE	MENHOLE		FRAG
SHACKLE	TOOLBOX-1		FRAG
NUT	TOOLBOX-1		FRAG

JOB LAYOUT - WORK AREAS

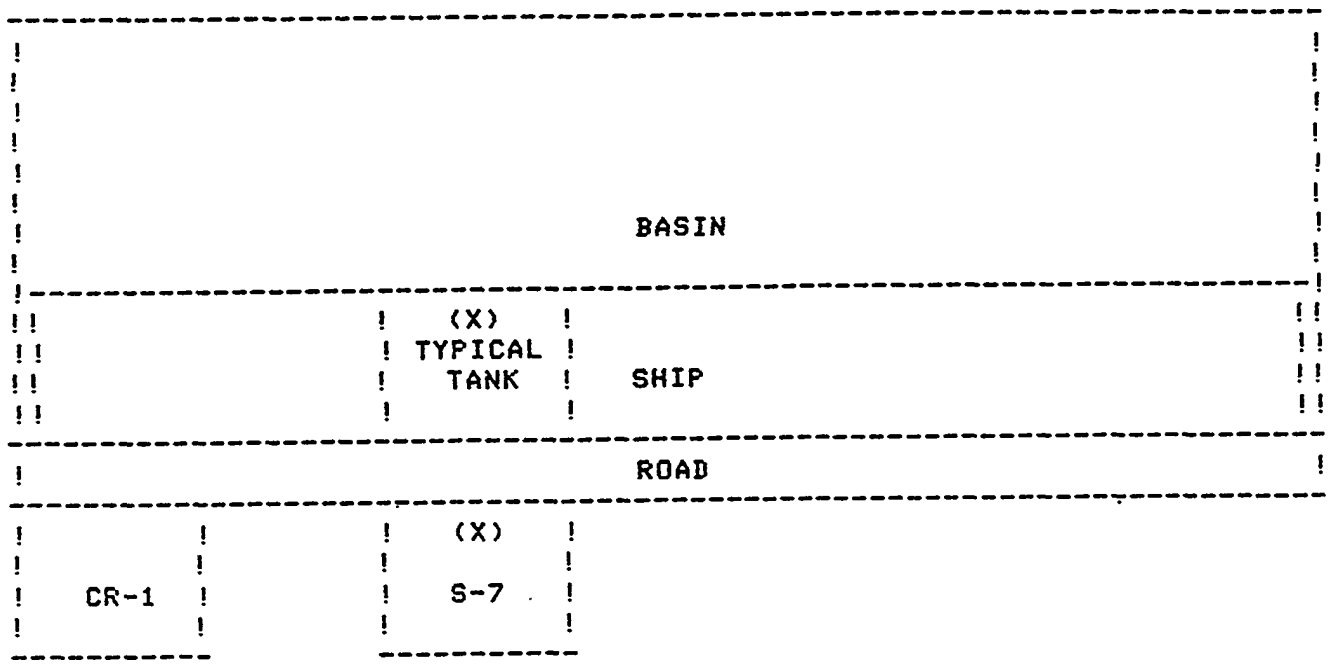
BOLT	TOOLBOX-1	FRAG
OPERATORS:		
CARP-1	CENTER-TANK	45,2
CARP-2	CENTER-TANK	45,17
CARP-3	MENWOLE	3,13 R
CARP-4	MENHOLE	6,13
CARRIERS:		
TOOLBOX-1	PLATFORM	20,10
TOOLBOX-1	PLATFORM	20,10

From	To	Steps
TYPICAL	PLATFORM	0
TYPICAL	BTRWTHl	0
TYPICAL	BTRWTH2	0
TYPICAL	BTRWTH3	0
TYPICAL	BTRWTH4	0
TYPICAL	MENHOLE	0
TYPICAL	CENTER-TANK	0
TYPICAL	AFT-BHII	0
TYPICAL	FWD-BHD	0
TYPICAL	PORT-BHD	0
TYPICAL	STAR-BHD	0
PLATFORM	BTRWTH1	0
PLATFORM	BTRUTH2	0
PLATFORM	BTRWTH3	0
PLATFORM	BTRUTH4	0
PLATFORM	MENHOLE	0
PLATFORM	CENTER-TANK	0
PLATFORM	AFT-BHD	0
PLATFORM	FWD-BHD	0
PLATFORM	PORT-BHD	0
PLATFORM	STAR-BHU	0
BTRUTH1	BTRWTH2	9
BTRUTH1	BTRUTH3	11
BTRUTH1	BTRWTH4	14
BTRWTH1	MENHOLE	5
BTRWTHl	CENTER-TANK	0
BTRWTH1	AFT-EHD	0
BTRWTHI	FWD-BHD	0
BTRWTH1	PORT-BHD	0
BTRWTH1	STAR-BHD	0
BTRWTH2	BTRUTH3	14

JOB LAYOUT - WORK AREAS

BTRUTH2	BTRWTH4	11
RTRWTH2	MENHOLE	9
BTRWTH2	CENTER-TANK	0
BTRblTH2	AFT-BHD	0
BTRUTH2	FWD-BHD	0
BTRWTH2	PORT-BHD	0
BTRWTH2	STAR-BHD	0
BTRWTH3	BTRWTH4	9
BTRUTH3	MENHOLE	13
BTRWTH3	CENTER-TANK	0
BTRWTH3	AFT-BHD	0
BTRWTH3	FWD-BHD	0
BTWTH3	PORT-BHD	0
BTRWTH3	STAR-BHD	0
BTWTH4	MENHOLE	16
BTRWTH4	CENTER-TANK	0
BTRWTH4	AFT-BHD	0
BTRWTH4	FWD-BHD	0
BTRWTH4	PORT-BHD	0
BTRWTH4	STAR-BH	0
MENHOLE	CENTER-TANK	0
MENHOLE	D A F T - R H D	0
MENHOLE	FWD-BHD	0
MENHOLE	PORT-BHD	0
MENHOLE	STAR-BHD	0
CENTER-TANK	AFT-BHD	0
CENTER-TANK	FWD-BHD	0
CENTER-TANK	PORT-BHD	0
CENTER-TANK	STAR-BHD	0
AFT-BHR	FWD-BHD	0
AFT-BHD	PORT-BHD	0
AFT-BHD	STAR-BHD	0
FWD-BHKI	PORT-BHD	0
FWD-BHD	STAR-BHD	0
PORT-BHD	STAR-BHD	0

JOB LAYOUT - WORK AREAS

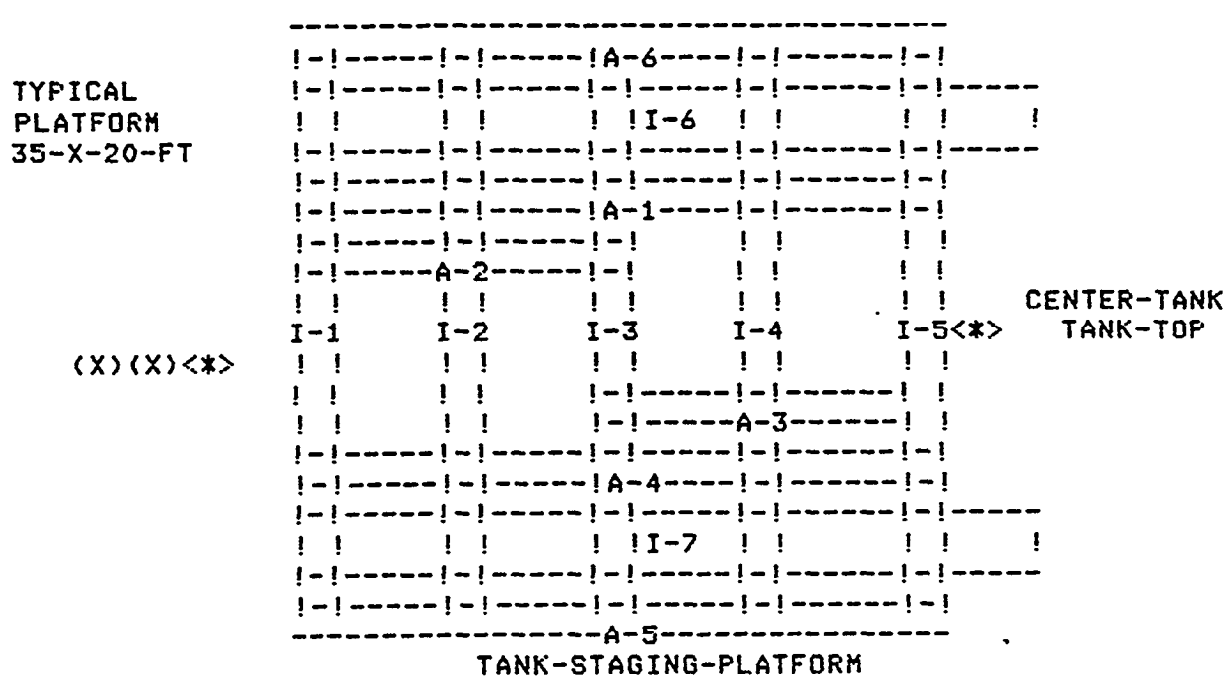


Name	Location		Body/Frag/PT
WORKPLACES:			
BASIN	0,7	71,14	
SHIP	1,7	69,5	
ROAD	0,5	71,2	
TYPICAL	25,10	0,0	
TANK	20,7	10,5	
S-7	20,0	10,5	
CR-1	0,0	10,5	
OBJECTS:			
BOARDS	S-7		FRAG
TANK-STAGING-PLATFORM	S-7		FRAG
EQUIPMENT:			
CRANE-1	CR-1		01F
OPERATORS:			
HOOKER-ON1	S-7		25,4 B
HOOKER-ON2	TANK		25,11

JOB LAYOUT - WORK AREAS

From	To	Stetps
BASIN	SHIP	0
BASIN	ROAD	0
BASIN	TYPICAL	0
RASIN	TANK	0
BASIN	S-7	0
BASIN	CR-1	0
SHIP	ROAD	0
SHIP	TYPICAL	0
SHIP	TANK	0
SHIP	S-7	0
SHIP	CR-1	0
ROAD	TYPICAL	0
ROAD	TANK	0
ROAD	S-7	0 -
ROAD	CR-I	0
TYPICAL	TANK	0
TYPICAL	S-7	0
TYPICAL	CR-1	0
TANK	S-7	80
TANK	CR-1	160
S-7	CR-1	160

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/F
WORKPLACES:			
I-1	15,1	2,20	BEND
I-2	23,1	2,20	BEND
I-3	31,1	2,20	BEND
I-4	39,1	2,20	BEND
I-5	48,1	2,20	BEND
I-6	15,17	40,2	BEND
A-1	15,15	35,1	BEND
A-2	16,13	16,1	BEND
A-3	32,8	16,1	BEND
A-4	15,6	35,1	BEND
I-7	15,3	40,2	BEND
A-5	15,1	35,1	BEND
A-6	15,20	35,1	BEND
TANK-STAGING-PLATFORM	35,0	0,0	
TYPICAL	0,19	0,0	
PLATFORM	0,18	0,0	
35-X-20-FT	0,17	0,0	
CENTER-TANK	60,12	0,0	
TANK-TOP	60,11	0,0	

JOB LAYOUT - WORK AREAS

TOOLS:

WRENCH	CARP-1	
HAMHER	CARP-1	

OBJECTS:

ANGLES	TANK-STAGING-PLATFORM	FRAG
I-BEAMS	TANK-STAGING-PLATFORM	FRAG
BOARDS	TANK-STAGING-PLATFORM	FRAG
FIN-PLATFORM	TANK-STAGING-PLATFORM	FRAG
NUTS	TOOLBOX-1	FRAG
BOLTS	TOOLBOX-1	FRAG
WASHERS	TOOLBOX-1	FRAG
BLOCKS	TOOLBOX-2	FRAG

OPERATORS:

CARP-1	I-1	4910 B
CARP-2	I-6	7,10

CARRIERS:

TOOLBOX-1	I-1	10,10
TOOLBOX-1	1-1	10,10
TOOLBOX-2	I-5	52,11
TOOLBOX-2	I-5	52,11

From	To	Steps
I-1	I-2	2
I-1	I-3	4
I-1	I-4	6
I-1	I - 5	8
I-1	I-6	0
I-1	A-1	0
I-1	A-2	0
I-1	A-3	0
1-1	A-4	0
I-1	I-7	0
I-1	A-5	0
I-1	A-6	0
1-1	TANK-STAGING-PLATFORM	0
I-1	TYPICAL	0
I-1	PLATFORM	0
I-1	35-X-20-FT	0
1-1	CENTER-TANK	0
I-1	TANK-TOP	0

JOB LAYOUT - WORK AREAS

I-2	I-3	2
I-2	I-4	4
I-2	I-5	6
I-2	I-6	0
I-2	A-1	0
I-2	A-2	0
I-2	A-3	0
I-2	A-4	0
I-2	I-7	0
I -2	A-5	0
I-2	A-6	0
I-2	TANK-STAGING-PLATFORM	0
I-2	TYPICAL	0
I-2	PLATFORM	0
I-2	35-X-20-FT	0
I - 2	CENTER-TANK	0
I_2	TANK-TOP	0
I-3	I-4	2
I-3	I-5	4
I-3	I-6	0
I-3	A-1	0
I -3	A-2	0
I-3	A-3	0
I-3	A-4	0
I-3	I-7	0
I-3	A-5	0
I-3	A-6	0
I-3	TANK-STAGING-PLATFORM	0
I-3	TYPICAL	0
I-3	PLATFORM	0
I -3	35-X-20-FT	0
I-3	CENTER-TANK	0
I-3	TANK-TOP	0
I -4	I-5	2
I-4	I-6	0
I-4	A-1	0
I-4	A-2	0
I-4	A-3	0
I-4	A-4	0
I-4	I-7	0
I-4	A-5	0
I-4	A-6	0
I-4	TANK-STAGING-PLATFORM	0
I-4	TYPICAL	0
I-4	PLATFORM	0
I-4	35-X-20-FT	0
I-4	CENTER-TANK	0

I-4	TANK-TOP	0
I-5	I-6	0
I-5	A - 1	0
I-5	A-2	0
I-5	A-3	0
I-5	A-4	0
I-5	I-7	0
I-5	A-5	0
I-5	A-6	0
I-5	TANK-STAGING-PLATFORM	0
I-5	TYPICAL	0
I-5	PLATFORM	0
I-5	35-X-20-FT	0
I-5	CENTER-TANK	0
I-5	TANK-TOP	0
I-6	A-1	4
I-6	A-2	6
I-6	A-3	6
I-6	A-4	8
I-6	I-7	11
I-6	A-5	12
I-6	A-6	2
I-6	TANK-STAGING-PLATFORM	0
I-6	TYPICAL	0
I-6	PLATFORM	0
I-6	35-X-20-FT	0
I-6	CENTER-TANK	0
I-6	TANK-TOP	0
A-1	A-2	2
A-1	A-3	2
A-1	A-4	4
A-1	I-7	7
A-1	A-5	8
A-1	A-6	6
A-1	TANK-STAGING-PLATFORM	0
A-1	TYPICAL	0
A-1	PLATFORM	0
A-1	35-X-20-FT	0
A-1	CENTER-TANK	0
A-1	TANK-TOP	0
A-2	A-3	16
A-2	A-4	2
A-2	I-7	9
A-2	A-5	10
A-2	A-6	8
A-2	TANK-STAGING-PLATFORM	0
A-2	TYPICAL	0

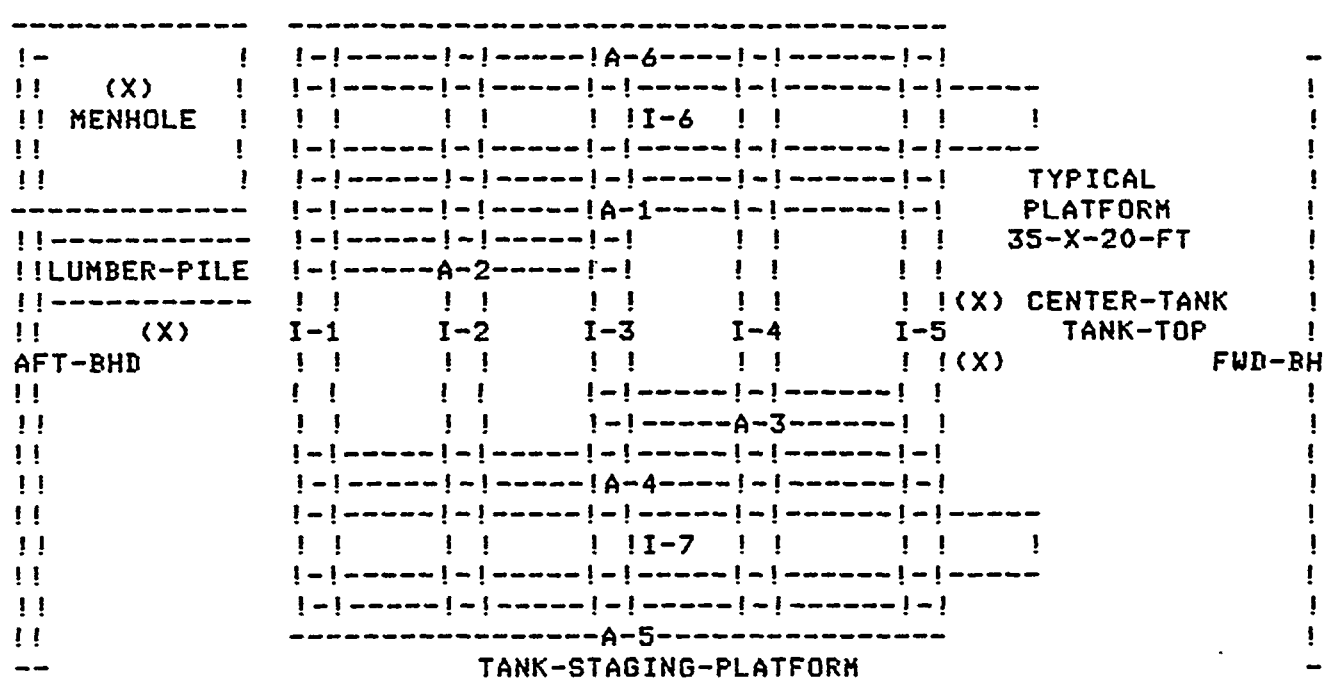
JOB LAYOUT - WORK AREAS

A-2	PLATFORM 0
A-2	35-X-20-FT 0
A-2	CENTER-TANK 0
A-2	TANK-TOP 0
A-3	A-4 2
A-3	1-7 9
A-3	A-5 10
A-3	A-6 8
A-3	TANK-STAGING-PLATFORM 0
A-3	TYPICAL 0
A-3	PLATFORM 0
A-3	35-X-20-FT 0
A-3	CENTER-TANK 0
A-3	TANK-TOP 0
A-4	I-7 3
A-4	A-5 4
A-4	A-6 10
A-4	TANK-STAGING-PLATFORM 0
A-4	TYPICAL 0
A-4	PLATFORM 0
A-4	35-X-20-FT 0
A-4	CENTER-TANK 0
A-4	TANK-TOP 0
A-4	A - 5 1
I-7	A-6 13
I-7	TANK-STAGING-PLATFORM 0
I-7	TYPICAL 0
I-7	PLATFORM 0
I-7	35-X-20-FT 0
I-7	CENTER-TANK 0
I-7	TANK-TOP 0
I-7	A-6 14
A-5	TANK-STAGING-PLATFORM 0
A-5	TYPICAL 0
A-5	PLATFORM 0
A-5	35-X-20-FT 0
A-5	CENTER-TANK 0
A-5	TANK-TOP 0
A-5	TANK-STAGING-PLATFORM 0
A-6	TYPICAL 0
A-6	PLATFORM 0
A-6	35-X-20-FT 0
A-6	cENTER-TANK 0
A-6	TANK-TOP 0
A-6	TYPICAL 0
TANK-STAGING-PLATFORM	PLATFORM 0
TANK-STAGING-FLATFORH	35-x-20-FT 0
TANK-STAGING-PLATFORM	

JOB LAYOUT - WORK AREAS

TANK-STAGING-PLATFORM	CENTER-TANK	0
TANK-STAGING-PLATFORM	TANK-TOP	0
TYPICAL	PLATFORM	0
TYPICAL	35-X-20-FT	0
TYPICAL	C E N T E R - T A N K	0
TYPICAL	TANK-TOP	0
FLATFORM	35-X-20-FT	0
PLATFORM	CENTER-TANK	0
PLATFORM	TANK-TOP	0
35-X-20-FT	CENTER-TANK	0
35-X-20-FT	TANK-TOP	0
CENTER-TANK	TANK-TOP	0

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/P
WORKPLACES:			
I-1	15,1	2,20	BEND
I-2	23,1	2,20	BEND
I-3	31,1	2,20	BEND
I-4	39,1	2,20	BEND
I-5	48,1	2,20	BEND
I-6	15,17	40,2	BEND
A-1	15,15	35,1	BEND
A-2	16,13	16,1	BEND
A-3	32,8	16,1	BEND
A-4	15,6	35,1	BEND
I-7	15,3	40,2	BEND
A-5	15,1	35,1	BEND
A-6	15,20	35,1	BEND
TANK-STAGING-PLATFORM	35,0	0,0	
TYPICAL	58,16	0,0	
PLATFORM	58,15	0,0	
35-X-20-FT	58,14	0,0	
CENTER-TANK	60,12	0,0	
TANK-TOP	60,11	0,0	

JOB LAYOUT - WORK AREAS

MENHOLE	0,15	12,6	
AFT-BHD	0,0	1,20	
FWD-BHD	70,0	1,20	
LUMBER-PILE	2,12	10,2	BEND

OBJECTS:		
ANGLES	TANK-STAGING-PLATFORM	FRAG
I-BEAMS	TANK-STAGING-PLATFORtf	FRAG
BOARDS	TANK-STAGING-PLATFORM	FRAG
CABLE	MENHOLE	FRAG
EQUIPMENT:		
WINCH-UF	MENHOLE	1,5 M
WINCH-DOWN	MENHOLE	0,5 M
WINCH-FREE	MENHOLE	0,38 M
OPERATORS:		
CARP-1	I-5	52,10 B
CARP-2	I-5	52,12
CARP-3	LUMBER-PILE	8,11
WINCH-OPER	MENHOLE	6,19

From	To	Steps
I-1	I-2	2
I-1	I -3	4
I-1	I -4	6
I-1	I -5	8
I-1	I-6	0
I-1	A-1	0
I-1	A-2	0
I-1	A-3	0
I-1	A-4	0
I-1	I -7	0
I-1	A - 5	0
I-1	A-6	0
I-1	TANK-STAGING-PLATFORM	0
I-1	TYPICAL	0
I-1	PLATFORM	0
I-1	35-X-20-FT	0
I-1	CENTER-TANK	0
I-1	TANK-TOP	0
I-1	HENHOLE	0
I-1	AFT-BHD	0
I-1	FWD-BHD	0

JOB LAYOUT - WORK AREAS

I-1	LUMBER-PILE	4
I -2	I-3	2
I-2	I-4	4
I-2	1-5	6
I-2	I-6	0
I -2	A-1	0
I-2	A-2	0
I-2	A-3	0
I-2	A-4	0
I-2	I-7	0
I-2	A-5	0
I-2	A-6	0
I-2	TANK-STAGING-PLATFORM	0
I-2	TYPICAL	0
I-2	PLATFORM	0
I-2	35-X-20-FT	0
I-2	CENTER-TANK	0
I-2	TANK-TOP	0
I-2	MENHOLE	0
I -2	AFT-RHD	0
I-2	FWD-BHD	0
I-2	LUMBER-PILE	6
I-3	I-4	2
I-3	I-5	4
I-3	I-6	0
I -3	A-1	0
I-3	A-2	0
I-3	A-3	0
I-3	A-4	0
I-3	I -7	0
I-3	A-5	0
I-3	A-6	0
I-3	TANK-STAGING-PLATFORM	0
I-3	TYPICAL	0
I-3	PLATFORM	0
I-3	35-X-20-FT	0
I-3	cENTER-TANK	0
I-3	TANK-TOP	0
I-3	MENHOLE	0
I-3	AFT-BHD	0
I-3	FWD-BHD	0
I -3	LUMBER-PILE	8
I-4	I -5	2
I-4	I-6	0
I-4	A-1	0
I-4	A-2	0
I-4	A-3	0

JOB LAYOUT - WORK AREAS

I-4	A-4	0
I-4	I-7	0
I-4	A-5	0
I-4	A-6	0
I-4	TANK-STAGING-PLATFORM	0
I-4	TYPICAL	0
I-4	PLATFORM	0
I-4	35-X-20-FT	0
I-4	CENTER-TANK	0
I-4	TANK-TOP	0
I-4	MENHOLE	0
1-4	AFT-BHD	0
I-4	FWD-BHII	0
I-4	LUMBER-PILE	10
I-5	I-6	0
I-5	A-1	0
I-5	A-2	0
I-5	A-3	0
I-S	A-4	0
I-5	I -7	0
I-5	A-5	0
I-5	A-6	0
I-5	TANK-STAGING-PLATFORM	0
I-5	TYPICAL	0
I-5	PLATFORM	0
I-5	35-X-20-FT	0
I-5	CENTER-TANK	0
I-5	TANK-TOP	0
I-5	MENHOLE	0
I-5	AFT-BHD	0
I-5	FWD-BHD	0
1-5	LUMBER-PILE	12
I-6	A-1	4
I-6	A-2	6
I-6	A-3	6
I-6	A-4	8
I-6	I-7	11
I-6	A-5	12
I-6	A-6	2
I-6	TANK-STAGING-PLATFORM	0
I-6	TYPICAL	0
I-6	PLATFORM	0
I-6	35-X-20-FT	0
I-6	CENTER-TANK	0
I-6	TANK-TOP	0
I-6	MENHOLE	0
I-6	AFT-BHD	0

I-6	FWD-BHD	0
I-6	LUMBER-PILE	0
A-1	A-2	2
A-1	A-3	2
A-1	A-4	4
A-1	I-7	7
A-1	A-5	8
A-1	A-6	6
A-1	TANK-STAGING-PLATFORM	0
A-1	TYPICAL	0
A-1	PLATFORM	0
A-1	35-X-20-FT	0
A-1	CENTER-TANK	0
A-1	TANK-TOP	0
A-1	MENHOLE	0
A-1	AFT-BHD	0
A-1	FWD-BHD	0
A-1	LUMBER-PILE	0
A-1	A-3	16
A-2	A - 4	2
A-2	I-7	9
A-2	A-S	10
A-2	A-6	8
A-2	TANK-STAGING-PLATFORM	0
A-2	TYPICAL	0
A-2	PLATFORM	0
A-2	35-X-20-FT	0
A-2	CENTER-TANK	0
A-2	TANK-TOP	0
A-2	MENHOLE	0
A-2	AFT-BHD	0
A-2	FWD-RHD	0
A-2	LUHMER-PILE	0
A-3	A-4	2
A-3	I -7	9
A-3	A-5	10
A-3	A-6	8
A-3	TANK-STAGING-PLATFORM	0
A-3	TYPICAL	0
A-3	PLATFORM	0
A-3	35-X-20-FT	0
A-3	CENTER-TANK	0
A-3	TANK-TOP	0
A-3	MENHOLE	0
A-3	AFT-BHDl	0
A-3	FWD-RHD	0
A-3	LUMBER-PILE	0

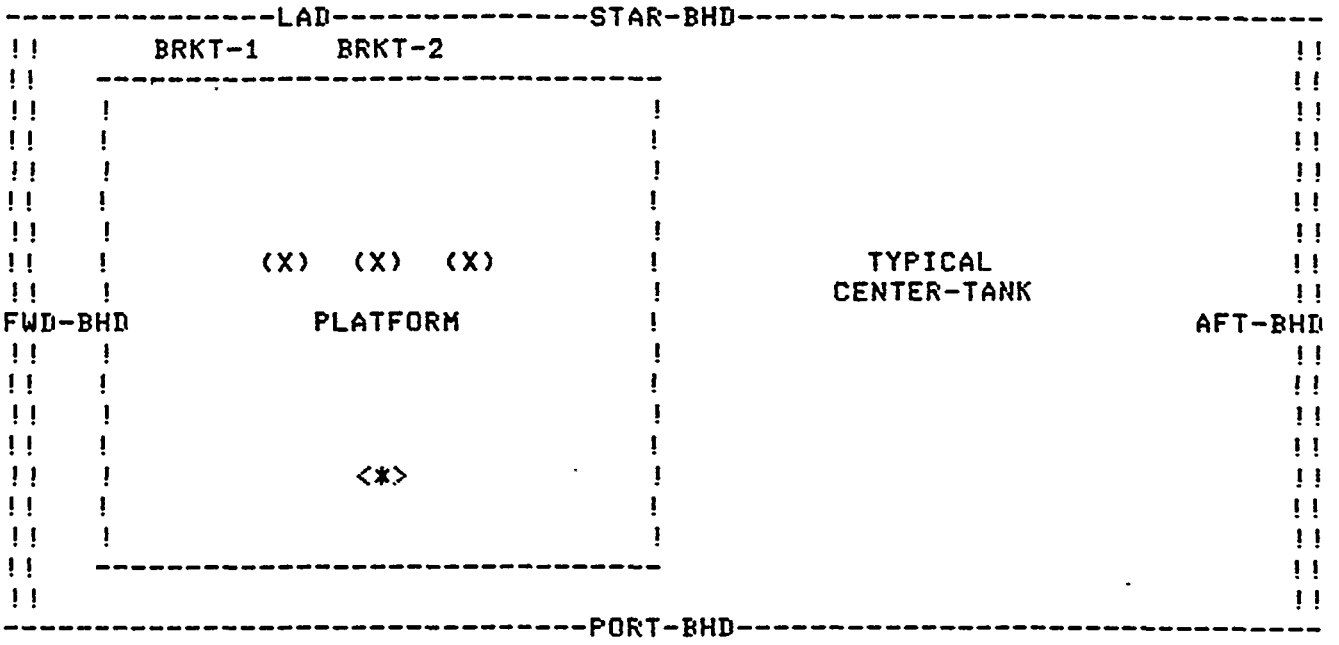
JOB LAYOUT - WORK AREAS

A-4	I -7	3
A-4	A-5	4
A-4	A-6	10
A-4	TANK-STAGING-PLATFORM	0
A-4	TYPICAL	0
A-4	PLATFORM	0
A-4	35-X-20-FT	0
A-4	CENTER-TANK	0
A-4	TANK-TOP	0
A-4	MENHOLE	0
A-4	AFT-BHD	0
A-4	FWD-BHD	0
A-4	LUMBER-PILE	0
I-7	A-S	1
I-7	A-6	13
I-7	TANK-STAGING-PLATFORM	0
I-7	TYPICAL	0
I-7	PLATFORM	0
I-7	35-X-20-FT	0
I-7	CENTER-TANK	0
I-7	TANK-TOP	0
I-7	MENHOLE	0
I-7	AFT-BHD	0
I-7	FWD-BHD	0
I-7	LUMBER-PILE	0
A-5	A-6	14
A-5	TANK-STAGING-PLATFORM	0
A-5	TYPICAL	0
A-5	PLATFORM	0
A-5	35-X-20-FT	0
A-5	CENTER-TANK	0
A-5	TANK-TOP	0
A-5	MENHOLE	0
A-5	AFT-BHD	0
A-5	FWD-BHD	0
A-5	LUMBER-PILE	0
A-6	TANK-STAGING-PLATFORM	0
A-6	TYPICAL	0
A-6	P L A T F O R M	0
A-6	35-X-20-FT	0
A-6	CENTER-TANK	0
A-6	TANK-TOP	0
A-6	MENHOLE	0
A-6	AFT-BHD	0
A-6	FWD-BHD	0
A-6	LUMBER-PILE	0
TANK-STAGING-PLATFORH	TYPICAL	0

JOB LAYOUT - WORK AREAS

TANK-STAGING-PLATFORM	PLATFORM	0
TANK-STAGING-PLATFORH	35-X-20-FT	0
TANK-STAGING-PLATFORM	CENTER-TANK	0
TANK-STAGING-PLATFORll	TANK-TOP	0
TANK-STAGING-F'LATFORH	MENHOLE	0
TANK-STAGING-PLATFORH	AFT-BHB	0
TANK-STAGING-F'LATFORH	FWD-BHD	0
TANK-STAGING-PLATFORM	LUMBER-PILE	0
TYPICAL	PLATFORM	0
TYPICAL	35-X-20-FT	0
TYPICAL	CENTER-TANK	0
TYPICAL	TANK-TOP	0
TYPICAL	MENHOLE	0
TYPICAL	AFT-BHD	0
TYPICAL	FWD-BHD	0
TYPICAL	LUMBER-PILE	0
PLATFORM	35-X-20-FT	0
PLATFORM	CENTER-TANK	0
PLATFORM	TANK-TOP	0
PLATFORM	MENHOLE	0
PLATFORM	AFT-BHD	0
PLATFORM	FWD-BHD	0
PLATFORM	LUMBER-PILE	0
35-X-20-FT	CENTER-TANK	0
35-X-20-FT	TANK-TOP	0
35-X-20-FT	MENHOLE	0
35-X-20-FT	AFT-BHD	0
35-X-20-FT	FWD-BHD	0
35-X-20-FT	LUMBER-PILE	0
CENTER-TANK	TANK-TOP	0
CENTER-TANK	MENHOLE	0
CENTER-TANK	AFT-BHD	0
CENTER-TANK	FUD-BHD	0
CENTER-TANK	LUMBER-PILE	0
TANK-TOP	MENHOLE	0
TANK-TOP	AFT-BHD	0
TANK-TOP	FWD-BHD	0
TANK-TOP	LUMBER-PILE	0
MENHOLE	AFT-BHD	0
MENHOLE	FWD-BHD	0
MENHOLE	LUMBER-PILE	0
AFT-BHD	FWD-BHD	0
AFT-BHll	LUMBER-PILE	0
FWD-BHD	LUMBER-PILE	0

JOB LAYOUT - WORK AREAS



Name	Location	Body/Frag/PT
WORKPLACES:		
TYPICAL	50,12 0,0	
CENTER-TANK	50,11 0,0	
PLATFORM	5,2 30,16	
STAR-BHD	0,20 70,0	
PORT-BHD	0,0 70,0	
AFT-BHD	70,0 1,20	
FWD-BHD	0,0 1,20	
LAD	16,20 0,0	
BRKT-1	10,19 0,0	
BRKT-2	20,19 0,0	
TOOLS:		
WRENCH-1	CARP-1	
HAMMER-1	CARP-1	
WRENCH-2	CARP-2	
HAMMER-2	CARP-2	
OBJECTS:		
BOARDS	PLATFORM	FRAG

JOB LAYOUT - WORK AREAS

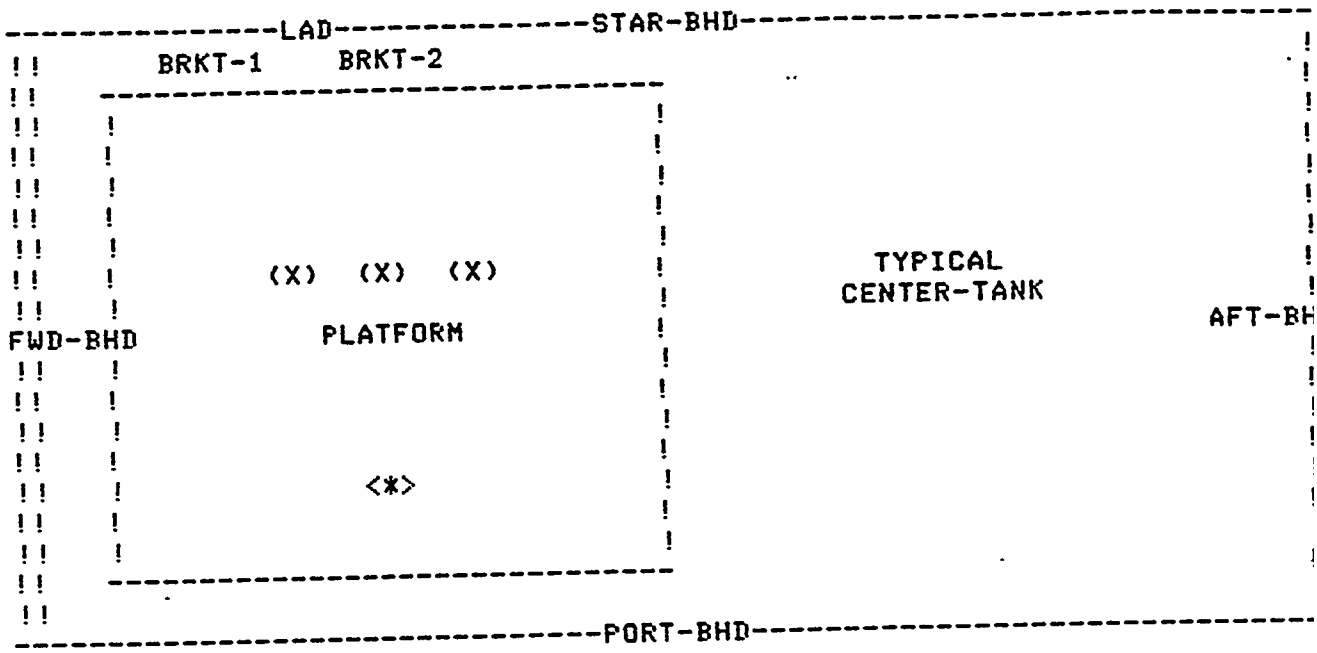
STANCHION	STAR-BHD	FRAG
HANDRAIL	STAR-BHD	FRAG
NAILS	TOOLBOX-1	FRAG
EQUIPMENT:		
TORCH	PLATFORM	1 M
OPERATORS:		
CARP-1	PLATFORM	15,12
CARP-2	PLATFORM	20,12
CARP-3	PLATFORM	25,12
CARRIERS:		
TOOLBOX-1	PLATFORM	20,5
TOOLBOX-l	PLATFORM	20,5

From	To	Steps
TYPICAL	cENTER-TANK	0
TYPICAL	PLATFORM	0
TYPICAL	S T A R - B H D	0
TYPICAL	PORT-BHD	0
TYPICAL	AFT-BHD	0
TYPICAL	FWD-RHD	0
TYPICAL	LAD	0
TYPICAL	BRKT-1	0
TYPICAL	BRKT-2	0
CENTER-TANK	PLATFORM	0
CENTER-TANK	STAR-BHD	0
CENTER-TANK	PORT-BHD	0
CENTER-TANK	AFT-BHD	0
CENTER-TANK	FWD-BHD	0
CENTER-TANK	LAD	0
CENTER-TANK	BRKT-1	0
CENTER-TANK	BRKT-2	0
PLATFORM	STAR-BHD	10
PLATFORM	PORT-BHU	10
PLATFORM	AFT-BHD	0
PLATFORM	FWD-BHD	13
PLATFORM	LAD	10
PLATFORM	BRKT-1	10
PLATFORM	BRKT-2	10
STAR-BHD	PORT-BHD	0
STAR-BHD	AFT-BHD	0
STAR-BHD	FWD-BHD	0

JOB LAYOUT - WORK AREAS

STAR-BHD	LAD	0
STAR-BHD	BRKT-1	0
STAR-BHD	BRKT-2	0
PORT-BHD	AFT-BHD	0
PORT-BHD	FUD-BHD	0
PORT-BHD	LAD	0
PORT-BHD	BRKT-1	0
PORT-BHD	BRKT-2	0
AFT-BHD	FUD-BHD	0
AFT-BHD	LAD	0
AFT-BHD	BRKT-1	0
AFT-BHD	BRKT-2	0
FWD-BHD	LAD	0
FWD-BHD	BRKT-1	0
FWD-BHD	BRKT-2	0
LAD	BRKT-1	3
LAD	BRKT-2	3
BRKT-1	BRKT-2	6

JOB LAYOUT - WORK AREAS



Name	Location	Body/Frag/I
WORKPLACES:		
TYPICAL	50,12	0,0
CENTER-TANK	50,11	0,0
PLATFORM	5,2	30,16
STAR-BHD	0,20	70,0
PORT-BHD	0,0	70,0
AFT-BHD	70,0	1,20
FWD-BHD	0,0	1,20
LAD	16,20	0,0
BRKT-1	10,19	0,0
BRKT-2	20,19	0,0
TOOLS:		
PRYBAR	STAR-BHD	
HAMMER-1	CARP-1	
WRENCH-1	CARP-1	
HAMMER-2	CARP-2	
WRENCH-2	CARP-2	
OBJECTS:		

JOB LAYOUT - WORK AREAS

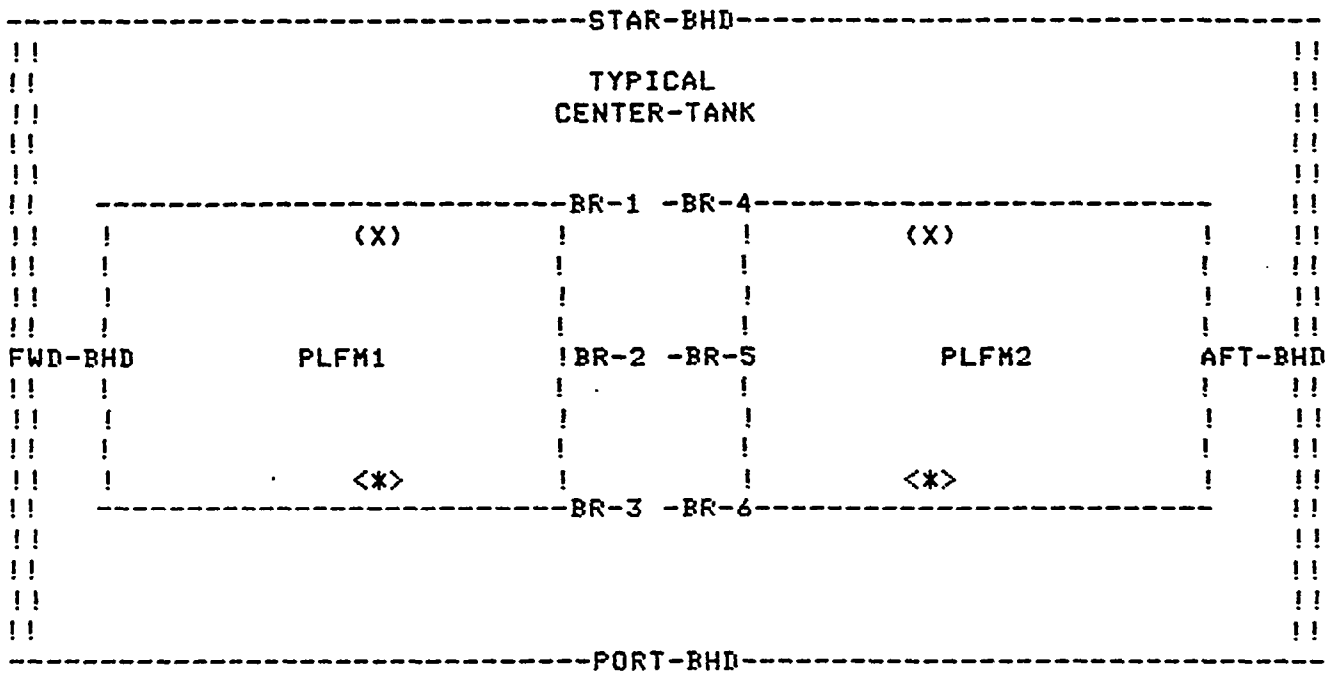
BOARDS	PLATFORM	FRAG
STANCHION	STAR-BHD	FRAG
HANDRAIL	STAR-BHU	FRAG
NAILS	TOOLBOX-1	FRAG
EQUIPMENT:		
TORCH	PLATFORM	1 M
OPERATORS:		
CARP-1	PLATFORM	15,12
CARP-2	PLATFORM	20,12
CARP-3	PLATFORM	25,12 B
CARRIERS:		
TOOLBOX-1	PLATFORM	20,5
TOOLBOX-1	PLATFORM	20,5

From	To	Steps
TYPICAL	CENTER-TANK	0
TYPICAL	PLATFORM	0
TYPICAL	STAR-BHD	0
TYPICAL	PORT-BHD	0
TYPICAL	AFT-BHD	0
TYPICAL	FWD-BHD	0
TYPICAL	LAD	0
TYPICAL	BRKT-1	0
TYPICAL	BRKT-2	0
CENTER-TANK	PLATFORM	0
CENTER-TANK	STAR-BHD	0
CENTER-TANK	PORT-BHD	0
CENTER-TANK	AFT-BHD	0
CENTER-TANK	FWD-BHD	0
CENTER-TANK	LAD	0
CENTER-TANK	BRKT-1	0
CENTER-TANK	BRKT-2	0
PLATFORM	STAR-BHD	10
PLATFORM	PORT-BHD	10
FLATFORM	AFT-BHD	0
PLATFORM	FWD-BHD	13
PLATFORM	LAD	10
PLATFORM	BRKT-1	10
PLATFORM	BRKT-2	10
S T A R - B H D	PORT-BHD	0
STAR-BHD	AFT-RHD	0

JOB LAYOUT - WORK AREAS

STAR-BHD	FWD-BHD	0
STAR-BHD	LAD	0
STAR-BHD	BRKT-1	0
STAR-BHD	BRKT-2	0
PORT-BHD	AFT-BHD	0
PORT-BHD	FWD-BHD	0
PORT-BHD	LAD	0
PORT-BHD	BRKT-1	0
PORT-BHD	BRKT-2	0
AFT-BHD	FWD-BHD	0
AFT-BHD	LAD	0
AFT-BHD	BRKT-1	0
AFT-BHD	BRKT-2	0
FWD-BHD	LAD	0
FWD-BHD	BRKT-1	0
FWD-BHD	BRKT-2	0
LAD	BRKT-1	3
LAD	BRKT-2	3
BRKT-1	BRKT-2	6

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
TYPICAL	35,19	0,0	
CENTER-TANK	35,18	0,0	
STAR-BHD	0,21	71,0	
PORT-BHD	0,0	71,0	
FWD-BHD	0,0	1,21	
AFT-BHD	70,0	1,21	
PLFM1	5,5	25,10	
PLFM2	40,5	25,10	
BR-1	30,15	4,0	BEND
BR-2	30,10	4,0	BEND
BR-3	30,5	4,0	BEND
BR-4	36,15	4,0	BEND
BR-5	36,10	4,0	BEND
BR-6	36,5	4,0	BEND
TOOLS:			
PRYBAR	PLFM1		
HAMMER-1	CARP-1		
WRENCH-1	CARP-1		

JOB LAYOUT - WORK AREAS

HAMMER-2	CARP-2	
WRENCH-2	CARP-2	
OBJECTS:		
BRKTS	PLFH1	FRAG
BOARDS	PLFM1	FRAG
NUTS	PLFM1	FRAG
BOLTS	PLFH1	FRAG
NAILS	TOOLBOX-1	FRAG
OPERATORS:		
CARP-1	PLFM1	20,14
CARP-2	PLFH2	50,14
CARRIERS:		
TOOLBOX-1	BR-1	20,6
TOOLROX-1	BR-1	20,6
TOOLBOX-2	BR-4	50,6
TOOLBOX-2	BR-4	50,6

From	To	Steps
TYPICAL	CENTER-TANK	0
TYPICAL	STAR-BHD	0
TYPICAL	PORT-BHD	0
TYPICAL	FWD-BHD	0
TYPICAL	AFT-BHD	0
TYPICAL	PLFMl	0
TYPICAL	PLFH2	0
TYPICAL	BR-1	0
TYPICAL	BR-2	0
TYPICAL	BR-3	0
TYPICAL	BR-4	0
TYPICAL	BR-5	0
TYPICAL	BR-6	0
CENTER-TANK	STAR-BHD	0
CENTER-TANK	PORT-BHD	0
CENTER-TANK	FWD-EHD	0
CENTER-TANK	AFT-BHD	0
CENTER-TANK	PLFH1	0
CENTER-TANK	PLFM2	0
CENTER-TANK	BR-1	0
CENTER-TANK	BR-2	0
CENTER-TANK	BR-3	0
CENTER-TANK	BR-4	0

JOB LAYOUT - WORK AREAS

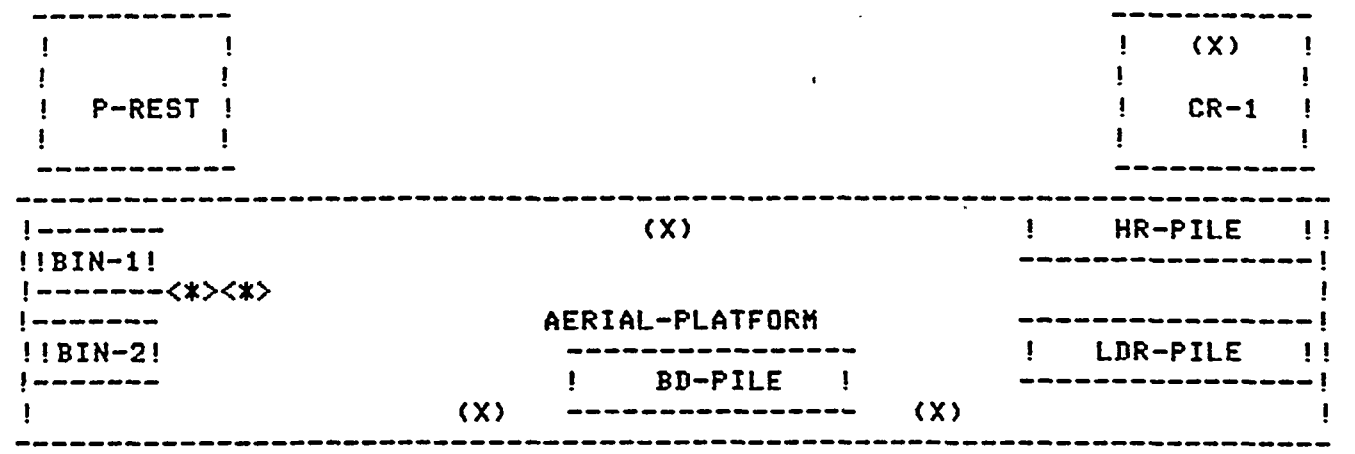
CENTER-TANK	BR-5	0
CENTER-TANK	BR-6	0
STAR-BHD	PORT-BHD	0
STAR-BHD	FUB-BHD	0
STAR-BHD	AFT-BHD	0
STAR-BHD	PLFMl	0
STAR-BHD	PLFM2	0
STAR-BHD	BR-1	0
STAR-BHD	BR-2	0
STAR-BHD	BR-3	0
STAR-BHD	BR-4	0
STAR-BHD	BR-S	0
STAR-BHD	BR-6	0
PORT-BHD	FUD-BHD	0
PORT-BHD	AFT-BHD	0
PORT-BHD	PLFH1	0
PORT-BHD	PLFM2	0
PORT-BHD	BR-1	0
PORT-BHD	BR-2	0
PORT-BHD	BR-3	0
PORT-BHD	BR-4	0
PORT-BHD	BR-5	0
PORT-BHD	BR-6	0
FWD-BHD	AFT-BHD	0
FWD-BHD	PLFM1	0
FWI-BHD	PLFM2	0
FWD-BHD	BR-1	0
FWD-BHD	BR-2	0
FWD-BHD	BR-3	0
FWD-BHD	BR-4	0
FWD-BHU	BR-5	0
FWB-BHD	BR-6	0
AFT-BHD	PLFH1	0
AFT-BHD	PLFH2	0
AFT-BHD	BR-1	0
AFT-BHD	BR-2	0
AFT-BHD	BR-3	0
AFT-BHD	BR-4	0
AFT-BHD	BR-5	0
AFT-BHD	BR-6	0
PLFMH1	PLFH2	20
PLFM1	BR-1	7
PLFM1	BR-2	7
PLFM1	BR-3	7
PLFM1	BR-4	0
PLFM1	BR-5	0
PLFM1	BR-6	0

JOB LAYOUT - WORK AREAS

PLFM2	BR-1	0
PLFM2	BR-2	0
PLFH2	BR-3	2
PLFM2	BR-4	7
PLFM2	BR-5	7
PLFM2	BR-6	7
BR-1	BR-2	6
BR-1	BR-3	12
BR-1	BR-4	0
BR-1	BR-5	0
BR-1	BR-6	0
BR-2	BR-3	6
BR-2	BR-4	0
BR-2	BR-5	0
BR-2	BR-6	0
BR-3	BR-4	0
BR-3	BR-S	0
BR-3	RR-6	0
BR-4	BR-5	6
BR-4	BR-6	12
BR-5	BR-6	6

SECTION 2
JOB LAYOUT - WORK AREAS

2.1 WORK AREAS



Name	Location		Body/Fras/PT
WORKPLACES:			
BRKT-1	20,0	0,5	
BRKT-2	50,0	0,5	
BIN-1	1,12	6,2	BEND
BIN-2	1,9	6,2	BEND
BD-PILE	30,8	15,2	BEND
HR-PILE	55,13	15,2	BEND
LDR-PILE	55,9	15,2	BEND
AERIAL-PLATFORM	0,7	71,8	
CR-1	60,16	10,5	
P-REST	1,16	10,5	
SIDE-SHELL	0,0	71,0	
TOOLS:			
WRENCH-1	CARP-1		
HAMMER-1	CARP-1		
STEEL-TAPE-1	CARP-1		
WRENCH-2	CARP-2		

JOB LAYOUT - WORK AREAS

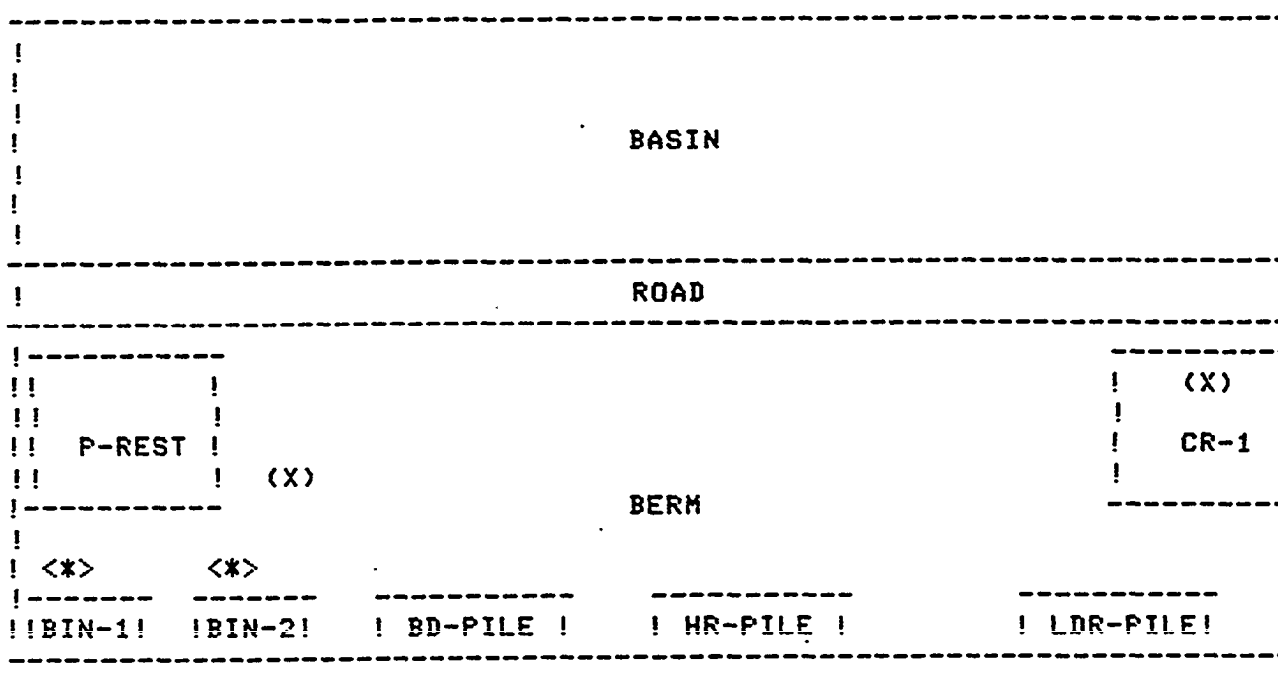
HAMMER-2	CARP-2	
STEEL-TAPE-2	CARP-2	
OBJECTS:		
BRKT	BIN-1	FRAG
STAN	BIN-2	FRAG
BOARD	BD-PILE	FRAG
HANDRAIL	HR-PILE	FRAG
LARD	LDR-PILE	FRAG
PLATFORM	P-REST	FRAG
NUT	TOOLBOX-l	FRAG
BOLT	TOOLBOX-1	FRAG
SCLIP	TOOLBOX-2	FRAG
LCLIP	TOOLBOX-2	FRAG
EQUIPtfENT:		
CRANE	CR-1	01P
OPERATORS:		
C-OPER	CR-1	65,20
CARP-1	BRKT-1	25,8
CARP-2	BRKT-2	50,8
CARP-3	BIN-1	35,14
CARRIERS:		
TOOLBOX-1	BIN-1	12,12
TOOLBOX-l	BIN-1	12,12
TOOLBOX-2	BIN-2	9,12
TOOLBOX-2	BIN-2	9,12

From	To	steps
BRKT-1	BRKT-2	6
BRKT-1	BIN-1	8
BRKT-1	B I N - 2	7
BRKT-1	BD-PILE	12
BRKT-1	HR-PILE	13
BRKT-1	LDR-PILE	12
BRKT-1	AERIAL-PLATFORM	0
BRKT-1	CR-1	0
BRKT-1	P-REST	0
BRKT-1	sIDE-SHELL	0
BRKT-1	BIN-I	13
BRKT-2	BIN-2	12
BRKT-2	BD-PILE	12
BRKT-2		

JOB LAYOUT - WORK AREAS

BRKT-2	HR-PILE	8
BRKT-2	LDR-PILE	7
BRKT-2	AERIAL-PLATFORH	0
BRKT-2	CR-1	0
B R K T - 2	P-REST	0
BRKT-2	SIDE-SHELL	0
BIN-1	BIN-2	2
BIN-1	BD-PILE	7
BIN-1	HR-PILE	12
BIN-I	LDR-PILE	13
BIN-1	AERIAL-PLATFORM	0
BIN-1	CR-1	0
BIN-1	P-REST	0
BIN-1	SIDE-SHELL	0
BIN-2	BD-PILE	8
BIN-2	HR-PILE	12
BIN-2	LDR-PILE	11
BIN-2	AERIAL-PLATFORM	0
BIN-2	CR-1	0
BIN-2	P-REST	0
BIN-2	SIDE-SHELL	0
BD-PILE	HR-PILE	7
BD-PILE	LDR-PILE	6
ED-PILE	AERIAL-PLATFORM	0
BD-PILE	CR-1	0
BD-PILE	P-REST	0
BD-PILE	SIDE-SHELL	0
HR-PILE	LDR-PILE	2
HR-PILE	AERIAL-PLATFORM	1
HR-PILE	CR-1	0
HR-PILE	P-REST	0
HR-PILE	SIDE-SHELL	0
LDR-PILE	AERIAL-PLATFORM	0
L D R - P I L E	CR-1	0
LDR-PILE	P-REST	0
LIIR-PILE	SIDE-SHELL	0
AERIAL-PLATFORM	CR-1	160
AERIAL-PLATFORM	P-REST	46
AERIAL-PLATFORM	SIDE-SHELL	0
CR-1	P-REST	157
CR-1	SIDE-SHELL	60
P-REST	SIDE-SHELL	46

JOB LAYOUT - WORK AREAS



Name	Location		Body/Fras.
WORKPLACES:			
CR-1	60,5	10,5	
P-REST	1,5	10,5	
BIN-1	1,0	6,2	BEND
BIN-2	10,0	6,2	BEND
BD-PILE	20,0	10,2	BEND
HR-PILE	35,0	10,2	BEND
LDR-PILE	55,0	10,2	BEND
BASIN	0,13	71,8	
ROAD	0,11	71,2	
BERM	0,0	71,11	
OBJECTS:			
BRKT	BIN-1		FRAG
STAN	BIN-2		FRAG
BOARD	BD-PILE		FRAG
HANDRAIL	HR-PILE		FRAG
LADR	LDR-PILE		FRAG
EQUIPMENT:			

JOB LAYOUT - WORK AREAS

CRANE	CR-1	01P
OPERATORS:		
CARP-1	P-REST	15,6 B
C-OPER	CR-1	65,9
CARRIERS:		
TOOLBOX-1	BIN-1	3,3
TOOLBOX-1	BIN-1	3,3
TOOLBOX-2	BIN-2	12,3
TOOLBOX-2	BIN-2	12,3

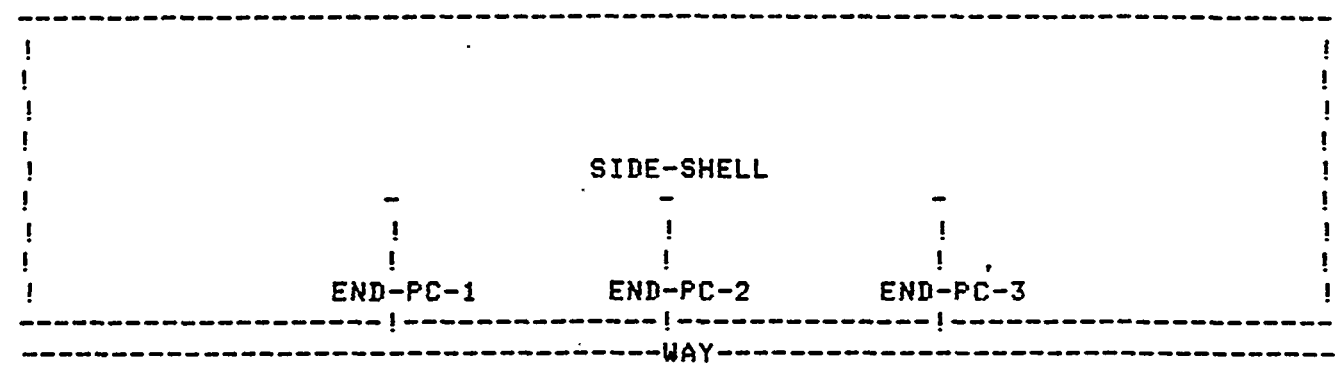
From	To	Steps
CR-1	P-REST	76
CR-1	BIN-I	84
CR-1	BIN-2	76
CR-1	BD-PILE	68
CR-1	HR-PILE	60
CR-1	LDR-PILE	52
CR-1	BASIN	0
CR-1	ROAD	0
CR-1	BERM	0
P-REST	BIN-1	19
P-REST	BIN-2	16
P-REST	BD-PILE	17
P-REST	HR-PILE	21
P-REST	LDR-PILE	25
P-REST	BASIN	0
P-REST	ROAD	0
P-REST	BERM	0
BIN-1	BIN-2	8
BIN-1	BD-PILE	16
BIN-1	HR-PILE	
BIN-1	LDR-PILE	24
BIN-1	BASIN	0
BIN-1	ROAD	0
BIN-1	BERH	0
BIN-2	BD-PILE	8
BIN-2	HR-PILE	16
BIN-2	LDR-PILE	24
BIN-2	BASIN	0
BIN-2	ROAD	0
BIN-2	BERM	0
BD-PILE	HR-PILE	8

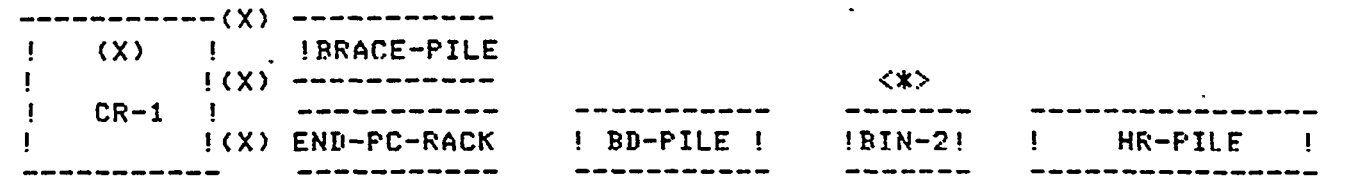
JOB LAYOUT - WORK AREAS

BD-PILE	LDR-PILE	16
BD-PILE	BASIN	0
BD-PILE	ROAD	0
ED-PILE	BERM	0
HR-PILE	LDR-PILE	8
HR-PILE	BASIN	0
HR-PILE	ROAD	0
HR-PILE	BERM	0
LDR-PILE	BASIN	0
LDR-PILE	ROAD	0
LDR-PILE	BERM	0
BASIN	ROAD	0
BASIN	BERM	0
ROAD	BERM	0

SECTION 2
JOB LAYOUT - WORK AREAS

2.1 WORK AREAS





Name	Location		Body/Frag/PT
WORKPLACES:			
END-PC-1	20,10	0,5	
END-PC-2	35,10	0,5	
END-PC-3	50,10	0,5	
SIDE-SHELL	0,11	71,10	
WAY	0,10	71,0	
CR-1	0,0	10,5	
END-PC-RACK	15,0	10,2	
BRACE-PILE	15,3	10,2	BEND
BD-PILE	30,0	10,2	BEND
BIN-2	45,0	6,2	BEND
HR-PILE	55,0	15,2	BEND
TOOLS:			
WRENCH-1	CARP-1		
WRENCH-2	CARP-2		
OBJECTS:			

JOB LAYOUT - WORK AREAS

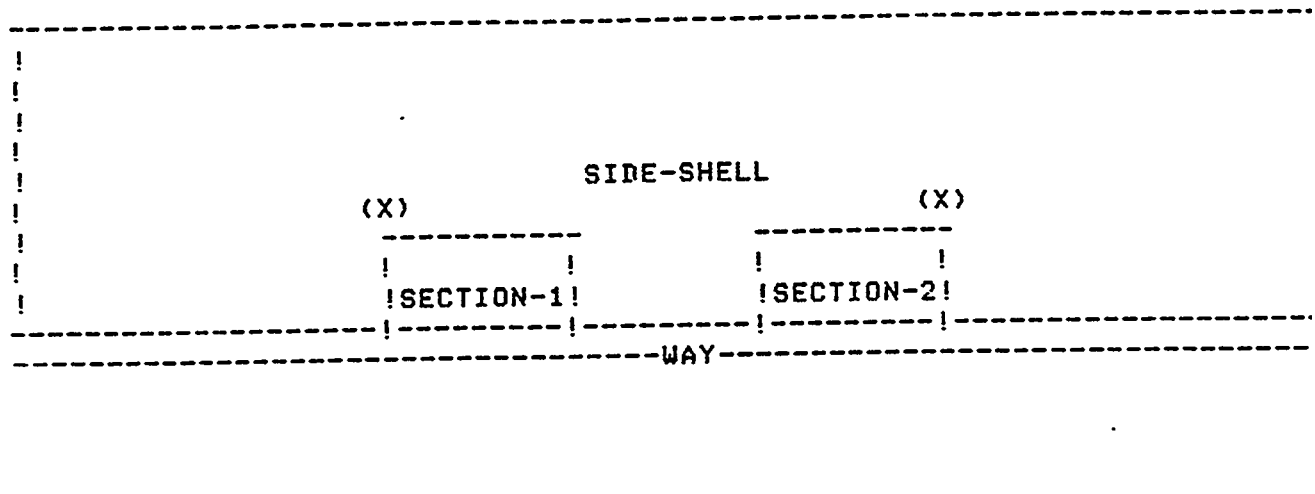
END-PIECE	END-PC-RACK	FRAG
BRACE	BRACE-PILE	FRAG
BOARD	BD-PILE	FRAG
STAN	BIN-2	FRAG
HANDRAIL	HR-PILE	FRAG
NUT	TOOLBOX-1	FRAG
BOLT	TOOLBOX-I	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS:		
CARP-1	END-PC-RACK	12,1
CARP-2	END-PC-RACK	12,3
CARP-3	END-PC-RACK	12,5
C-OPER	CR-1	5,4
CARRIERS:		
TOOLBOX-1	BIN-2	45,3
TOOLBOX-1	BIN-2	48,3

From	To	steps
END-PC-1	END-PC-2	3
END-PC-1	END-PC-3	6
END-PC-1	SIDE-SHELL	0
END-PC-1	WAY	0
END-PC-1	CR-1	180
END-PC-1	END-PC-RACK	22
END-PC-1	BRACE-FILE	19
END-PC-1	BD-PILE	20
END-PC-1	BIN-2	24
END-PC-1	HR-PILE	28
END-PC-2	END-PC-3	3
END-PC-2	SIDE-SHELL	0
END-PC-2	WAY	0
END-PC-2	CR-1	180
END-PC-2	END-PC-RACK	23
END-PC-2	RRACE-PILE	20
END-PC-2	BU-PILE	19
END-PC-2	BIN-2	23
END-PC-2	HR-PILE	27
END-PC-3	SIDE-SHELL	0
END-PC-3	WAY	0
END-PC-3	CR-1	180

JOB LAYOUT - WORK AREAS

END-PC-3	END-PC-RACK	23
END-PC-3	BRACE-PILE	20
END-PC-3	BD-PILE	19
END-PC-3	BIN-2	23
END-PC-3	HR-PILE	27
SIDE-SHELL	WAY	0
SIDE-SHELL	CR-1	180
SIDE-SHELL	END-PC-RACK	23
SIDE-SHELL	BRACE-PILE	20
SIDE-SHELL	BD-PILE	19
SIDE-SHELL	BIN-2	23
SIISE-SHELL	HR-PILE	27
WAY	CR-1	0
WAY	END-PC-RACK	0
WAY	BRACE-FILE	0
WAY	B1l-PILE	0
WAY	BIN-2	0
WAY	HR-PILE	0
CR-1	END-PC-RACK	170
CR-1	BRACE-PILE	180
CR-1	BD-PILE	186
CR-1	BIN-2	192
CR-1	HR-PILE	200
END-PC-RACK	BRACE-PILE	8
END-PC-RACK	RD-PILE	16
END-PC-RACK	RIN-2	24
END-PC-RACK	HR-PILE	32
BRACE-PILE	BD-PILE	8
BRACE-PILE	BIN-2	16
BRACE-PILE	HR-PILE	24
BD-PILE	BIN-2	8
BD-FILE	HR-PILE	16
BIN-2	HR-PILE	8

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/
WORKPLACES:			
SECTION-1	20,10	10,4	
SECTION-2	40,10	10,4	
SIDE-SHELL	0,11	71,10	
WAY	0,10	71,0	
CR-1	0,0	10,5	
END-PC-RACK	15,0	10,2	
BRACE-PILE	15,3	10,2	BEND
BD-PILE	30,0	10,2	BEND
BIN-2	45,0	6,2	BEND
HR-PILE	55,0	15,2	BEND
TOOLS:			
WRENCH-1	CARP-1		
WRENCH-2	CARP-2		
OBJECTS:			
END-PIECE	END-PC-RACK		FRAG
BRACE	BRACE-PILE		FRAG
BOARD	BD-PILE		FRAG

JOB LAYOUT - WORK AREAS

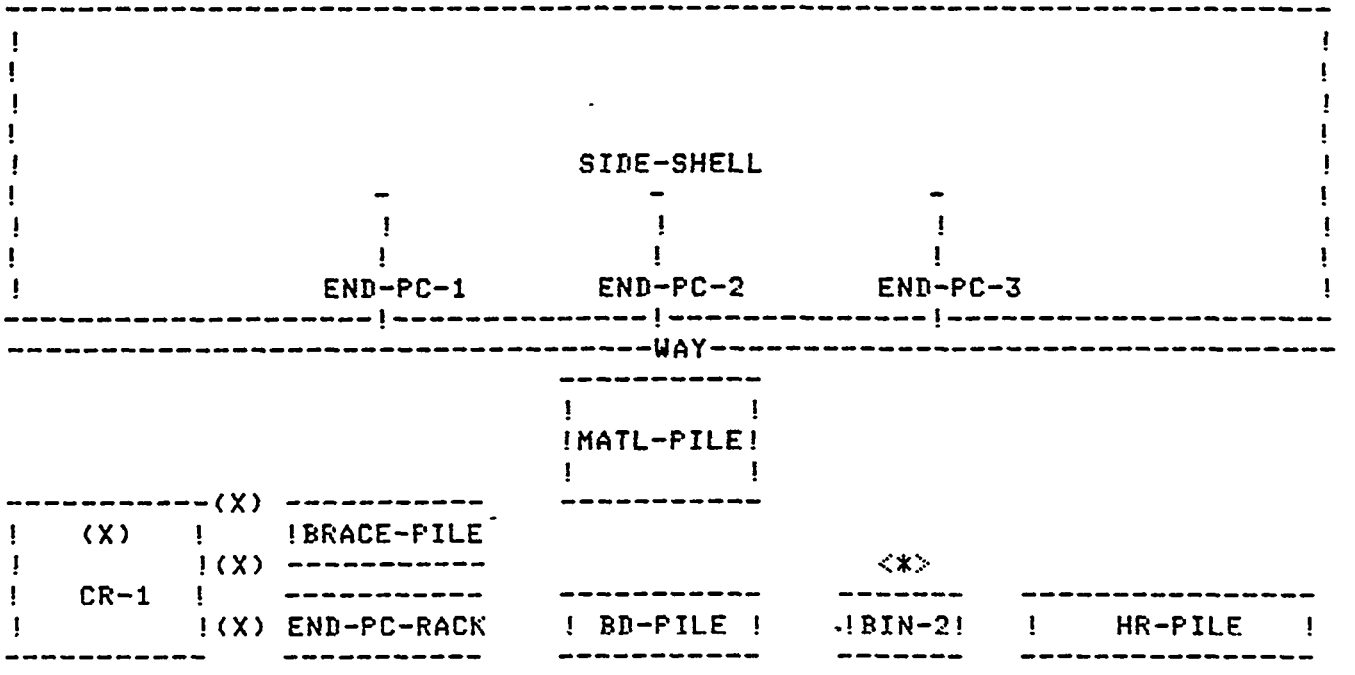
STAN	BIN-2	FRAG
HANDRAIL	HR-PILE	FRAG
NUT	TOOLBOX-1	FRAG
BOLT	TOOLBOX-1	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS:		
CARF-1	SECTION-1	20,15 B
CARP-2	SECTION-2	50,15
CARP-3	END-PC-RACK	12,5
C-OPER	CR-1	5,4
CARRIERS:		
TOOLBOX-1	BIN-2	48,3
TOOLBOX-1	BIN-2	48,3

From	To	Steps
SECTION-1	SECTION-2	6
SECTION-1	SIDE-SHELL	0
SECTION-1	UAY	0
SECTION-1	CR-1	180
SECTION-1	END-PC-RACK	22
SECTION-1	BRACE-PILE	19
SECTION-1	BD-PILE	20
SECTION-1	BIN-2	24
SECTION-1	HR-PILE	28
SECTION-2	SIDE-SHELL	0
SECTION-2	WAY	0
SECTION-2	CR-1	180
SECTION-2	END-PC-RACK	23
SECTION-2	BRACE-PILE	20
SECTION-2	BD-PILE	19
SECTION-2	BIN-2	23
SECTION-2	HR-PILE	27
SIDE-SHELL	WAY	0
SIDE-SHELL	CR-1	180
SIDE-SHELL	END-PC-RACK	23
SIDE-SHELL	BRACE-PILE	20
SIDE-SHELL	BD-PILE	19
SIDE-SHELL	BIN-2	23
SIDE-SHELL	HR-PILE	27
WAY	CR-1	0

JOB LAYOUT - WORK AREAS

WAY	END-PC-RACK	0
WAY	BRACE-FILE	0
WAY	BD-PILE	0
WAY	BIN-2	0
WAY	HR-PILE	0
CR-1	END-PC-RACK	170
CR-1	BRACE-PILE	180
CR-1	BD-PILE	186
CR-I	BIN-2	192
CR-1	HR-PILE	200
END-PC-RACK	BRACE-PILE	8
END-PC-RACK	BD-PILE	16
END-PC-RACK	BIN-2	24
END-PC-RACK	HR-PILE	32
BRACE-PILE	BD-PILE	8
BRACE-PILE	BIN-2	16
BRACE-PILE	HR-PILE	24
BD-PILE	BIN-2	8
BD-PILE	HR-PILE	16
B I N - 2	HR-PILE	8

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/PT
WORKPLACES:			
END-PC-1	20,10	0,5	
END-PC-2	35,10	0,5	
END-PC-3	50,10	0,5	
SIDE-SHELL	0,11	71,10	
WAY	0,10	71,0	
CR-1	0,0	10,5	
END-PC-RACK	15,0	10,2	
BRACE-PILE	15,3	10,2	BEND
BD-PILE	30,0	10,2	BEND
BIN-2	45,0	6,2	BEND
HR-PILE	55,0	15,2	BEND
MATL-PILE	30,5	10,4	BEND
TOOLS:			
WRENCH-1	CARP-1		
WRENCH-2	CARP-2		
OBJECTS:			
TORCH	SIDE-SHELL		FRAG

JOB LAYOUT - WORK AREAS

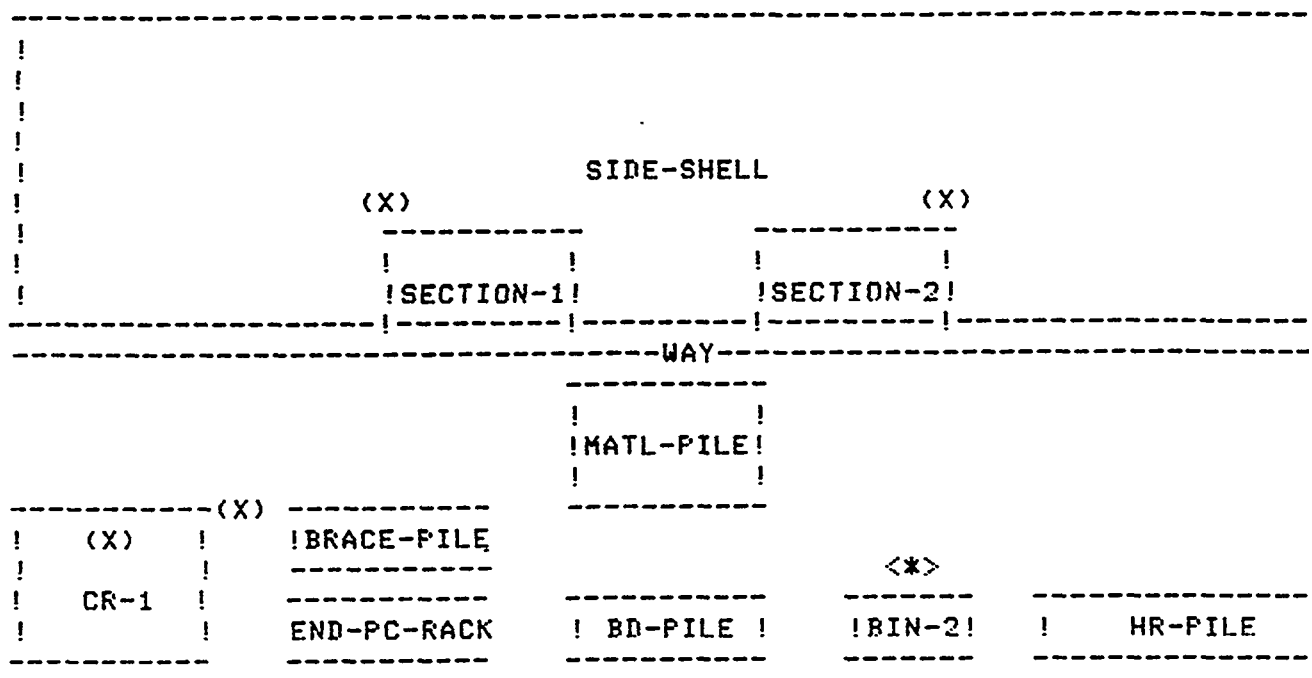
END-PIECE	END-PC-RACK	FRAG
BRACE	BRACE-PILE	FRAG
BOARD	BD-PILE	FRAG
STAN	BIN-2	FRAG
HANDRAIL	HR-PILE	FRAG
BOLT	TOOLROX-1	FRAG
NUT	TOOLBOX-1	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS:		
CARP-1	END-PC-RACK	12,1 R
CARP-2	END-PC-RACK	12,3
CARP-3	END-PC-RACK	12,5
C-OPER	CR-1	5,4
CARRIERS:		
TOOLBOX-1	BIN-2	48,3
TOOLBOX-1	BIN-2	48,3

From	To	steps
END-PC-I	END-PC-2	3
END-PC-l	END-PC-3	6
END-PC-1	SIDE-SHELL	0
END-PC-1	WAY	0
END-PC-1	CR-1	180
END-PC-1	END-PC-RACK	22
END-PC-1	BRACE-PILE	19
END-PC-1	BD-PILE	20
END-PC-1	BIN-2	24
END-PC-1	HR-PILE	28
END-PC-1	MATL-PILE	2
END-PC-2	END-PC-3	3
END-PC-2	SIDE-SHELL	0
END-PC-2	WAY	0
END-PC-2	CR-1	180
END-PC-2	END-PC-RACK	23
END-PC-2	BRACE-PILE	20
END-PC-2	BD-PILE	19
END-PC-2	BIN-2	23
END-PC-2	HR-PILE	27
END-PC-2	MATL-PILE	9
END-PC-3	SIDE-SHELL	0

JOB LAYOUT - WORK AREAS

END-PC-3	WAY	0
END-PC-3	CR-1	180
END-PC-3	END-PC-RACK	23
END-PC-3	BRACE-PILE	20
END-PC-3	BD-PILE	19
END-Fc-3	BIN-2	23
END-PC-3	HR-PILE	27
END-PC-3	HATL-PILE	2
SIDE-SHELL	UAY	0
SIDE-SHELL	CR-1	180
SIDE-SHELL	END-PC-RACK	23
SIDE-SHELL	BRACE-PILE	20
SIDE-SHELL	BD-PILE	19
SIDE-SHELL	BIN-2	23
SIDE-SHELL	HR-PILE	27
SIDE-SHELL	MATL-PILE	2
WAY	CR-1	0
WAY	END-PC-RACK	0
WAY	BRACE-PILE	0
WAY	BD-PILE	0
WAY	BIN-2	0
WAY	HR-PILE	0
WAY	MATL-PILE	0
CR-1	END-PC-RACK	170
CR-1	BRACE-PILE	180
CR-1	BD-PILE	186
CR-I	BIN-2	192
CR-l	HR-PILE	200
CR-1	MATL-PILE	180
END-PC-RACK	BRACE-PILE	8
END-PC-RACK	BD-PILE	16
END-PC-RACK	BIN-2	24
END-PC-RACK	HR-PILE	32
EN1l-PC-RACK	MATL-PILE	2l
BRACE-PILE	BD-PILE	8
BRACE-PILE	BIN-2	16
BRACE-PILE	HR-PILE	24
BRACE-PILE	MATL-PILE	18
BD-PILE	BIN-2	8
BD-PILE	HR-PILE	16
BD-PILE	MATL-PILE	17
BIN-2	HR-PILE	8
BIN-2	MATL-PILE	21
HR-PILE	MATL-PILE	25

JOB LAYOUT - WORK AREAS



Name	Location		Body/Frag/
WORKPLACES:			
SECTION-1	20,10	10,4	
SECTION-2	40,10	10,4	
SIDE-SHELL	0,11	71,10	
WAY	0,10	71,0	
CR-1	0,0	10,5	
END-PC-RACK	15,0	10,2	
BRACE-PILE	15,3	10,2	BEND
BD-PILE	30,0	10,2	BEND
BIN-2	45,0	6,2	BEND
HR-PILE	55,0	15,2	BEND
MATL-PILE	30,5	10,4	BEND
TOOLS:			
WRENCH-1	CARP-1		
WRENCH-2	CARP-2		
OBJECTS:			
TORCH	SIDE-SHELL		FRAG
END-PIECE	END-PC-RACK		FRAG

JOE LAYOUT - WORK AREAS

BRACE	BRACE-PILE	FRAG
BOARD	BD-PILE	FRAG
STAN	BIN-2	FRAG
HANDRAIL	HR-PILE	FRAG
BOLT	TOOLBOX-1	FRAG
NUT	TOOLBOX-1	FRAG
EQUIPMENT:		
CRANE	CR-1	01P
OPERATORS :		
CARP-1	SECTION-1	20,15 B
CARP-2	SECTION-2	50,15
CARP-3	END-PC-RACK	12,5
C-OPER	CR-1	5,4
CARRIERS:		
TOOLBOX-I	BIN-2	48,3
TOOLBOX-1	BIN-2	48,3

From	To	StePs
SECTION-1	SECTION-2	6
SECTION-1	SIDE-SHELL	0
SECTION-1	WAY	0
SECTION-I	CR-1	180
SECTION-I	END-PC-RACK	22
SECTION-I	BRACE-PILE	19
SECTION-1	BD-PILE	20
SECTION-I	BIN-2	24
SECTION-1	HR-PILE	28
SECTION-I	MATL-PILE	2
SECTION-2	SIDE-SHELL	0
SECTION-2	WAY	0
SECTION-2	CR-1	180
SECTION-2	END-PC-RACK	23
SECTION-2	BRACE-PILE	20
SECTION-2	BD-PILE	19
SECTION-2	BIN-2	23
SECTION-2	HR-PILE	27
SECTION-2	MATL-PIL.E	2
SIDE-SHELL	WAY	0
SIDE-SHELL	CR-1	180
SIDE-SHELL	ENB-PC-RACK	23
SIDE-SHELL	BRACE-PILE	20

JOB LAYOUT - WORK AREAS

SIDE-SHELL	BD-PILE	19
SIDE-SHELL	BIN-2	23
SIDE-SHELL	HR-PILE	27
SIDE-SHELL	MATL-PILE	2
WAY	CR-1	0
WAY	END-PC-RACK	0
WAY	BRACE-PILE	0
WAY	BD-PILE	0
WAY	BIN-2	0
WAY	HR-PILE	0
WAY	HATL-PILE	0
CR-1	END-PC-RACK	170
CR-1	BRACE-PILE	180
CR-1	BD-PILE	186
CR-1	BIN-2	192
CR-1	HR-PILE	200
CR-1	MATL-PILE	180
END-PC-RACK	BRACE-PILE	8
END-PC-RACK	BD-PILE	16
END-PC-RACK	BIN-2	24
END-PC-RACK	HR-PILE	32
END-PC-RACK	MATL-PILE	21
BRACE-PILE	BD-PILE	8
BRACE-FILE	BIN-2	16
BRACE-PILE	HR-PILE	24
BRACE-PILE	MATL-F'ILE	18
BD-PILE	BIN-2	8
BD-PILE	HR:PILE	16
BD-FILE	MATL-PII.E	17
BIN-2	HR-PILE	8
BIN-2	MATL-PILE	21
HR-PILE	MATL-PILE	25

SECTION 3
MANUAL METHODS

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (10" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELD HORIZONTAL 1/4" FILLET WELD (5" PER CONNECTION) USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

378. TRANSPORT STAGING BRACKET WITH (GROVE CRANE) AT TANK (OR WAY) CAR
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-I TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROM BIN-I TO BULKHEAD ARE AVERAGE...
* ...DISTANCES IN A CENTER TANK 98'X50'
* MASXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT BRKT FROM BIN-1 USING CRANE WITH HOOK+SLING TO BULKH
BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

381, TRANSPORT LADDERS WITH (GROVE CRANE) AT TANK CARPENTER
PER LADDER. OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADDERS FROM....
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE...
* ...AND FROM LDR-PILE TO BULKHEAD ARE...
* ...AVERAGE DISTANCES IN A CENTER TANK...
* ...98'X50'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT LADR FROM LDR-PILE USING CRANE WITH HOOK+SLING TO BU
(AT. LDR PLACE+ADJUST RETURN TO CR-1 F 1 / 3

384. POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDER CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER T0 THE.....
* ....BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A.....
* .....SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON BHD AT LDR 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKING UPON PLACEMENT) PF 4 (6)

387. TRANSPORT STAGING PLANK WITH (GROVE CRANE) AT TANK CARPENTER.
PER STAGING PLANK OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM+*,+*
* ....LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* .....FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ....DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM LU-PILE USING CRANE WITH HOOK+SLING TO BULKHEAD (BTWN BRKTS) PLACE+MANEUVER RETURN TO CR-1 F 1 / 3

392. TRANSPORT STANCHION WITH (GROVE CRANE) AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM...
* ....BIN-2 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND...
* ....FROM BIN-2 TO BULKHEAD ARE AVERAGE..
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SLING TO BULKHEA
BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

395. TRANSPORT HANDRAIL WITH (GROVE CRANE) AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM....
* ....HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ....FROM HR-FILE TO BULKHEAD ARE AVERAGE
* ....DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO
BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

404. (CLIMB UP AND DOWN) DOWN OPERATOR (ON LADDER) ON BULKHEAD AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND....
* ....DOWN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MALT
* ....PILE ON TANKTOP TO DECK (GOING THRU
* ....MASNHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

1 CARP-3 GET+SLIDE HANDRAIL (ONTO BOLSTER) AT MATL-PILE
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
3 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND HANDRAIL) F 1 / 6
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOI
CARPENTER
PER STANCHION (OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM.....
* ....MATL-PILE ON TANKTOP TO DECK (GOING
* ....THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM MATL-PILE TO MATL-PILE WITH BEND
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND STANCHION) F 1 / 6
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AI
VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* .... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND BRKT FROM MATL-PILE TO MATL-PILE WITH BEND
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND BRACKET) F 1 / 3
WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
6 WINCH-OPER PUSH WINCH-IJP PROCESS (TO MENHOLE) F 1 / 3

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARD...
* ...PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE),
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+SLIDE BOARD (ONTO BOLSTER) AT BD-PILE AND ADJUST
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT BD-PILE (HOOK AROUND
BOARDS) (ALLOW FOR 2 ATTEMPTS) F 2 / 3
6 WINCH-C)PER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REFMOVING LADDERS FROM LADDER
* ....PILE ON TANKTOP TO DECK (GOES THRU..
* ....MANJOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

1 CARP-3 GET+SLIDE LADR (ONTO BOLSTER) AT LDR-PII.E AND ADJUST
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT LDR-PILE (HOOK AROUND
LADDERS.) (ALLOW FOR 2 ATTEMPTS) F 2 / 3
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER TOOLBOX OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL...
* ...-PILEON TANKTOP TO DECK (GOES THRU....
* ...MANHOLE).
(TOOLBOX CONTAINS:
* ...28 BOLTS
* ...28 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

1 CARP-3 GET+PLACE 7 NUTS AND 7 BOLTS FROM MALT-PILE TO TOOLBOX-I BEND (TOTAL OF 28)PF 4(23456)
2 CARP-3 GET+PLACE WITH BEND 4 LCLIPS FROM MALT-PILE TO TOOLBOX-1 BEND (TOTAL OF 28) F 7
3 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP)
4 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS
5 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3
6 CARP-3 GET+MANPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND TOOLBOX)
7 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
8 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE)

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ....A SET OF INCLINED STAIRS. AVERAGE
* ....NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

1 CARP-1 WALK TO LEVEL-2
2 CARP-2 WALK TO LEVEL-2 SIMO

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TIME. MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1), ...
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE ....
* ....FORHULA: FREQ = 1+ C(N-1) X .23 ....
* ...WHERE "N" = THE NUMBER OF CUTS(BURNS)

Combined sub-operetion elements	
9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP	
10, IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK	

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TANK CARPENTER
PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT TANKTOP

1 CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1
2 CARP-1 LOOSEN PAINT ON BHD AT BRKT-1 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1
3 CARP-1 GET+PLACE WITH BEND SCLIP FROH TOOLBOX-2 TO BRKT-1 (TACKING UPON PLACEMENT)

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR MAY) CARPENTER

PER STAGING BRACKET OFG: 3 02-FEB-82 .
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ..OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BIN-1
2 CARP-3 GET+PLACE MITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSEF BOLT IN BRKT
3 CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS
4 CARP-3 GET+PLACE BRKT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR TRANSFORMATION)

379. SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH AT TANK CARPENTER

PER STAGING BRACKET OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A BRACKET ON AN...
* ...EXISTING STAGING CLIP
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+HOLD WITH BEND BRKT FROM TANKTOP TO CARP-1
2 CARP-1 LOOSEN NUT AT BRKT-1 4 WRIST-TURNS USING HANDS
3 CARP-1 REMOVE BOLT FROM BRKT-1 (BRKT.) TO CARP-1
4 CARP-1 GET+PLACE BRKT FROM CARP-1 TO BRKT-1 AND INSERT BOLT
5 CARP-1 FASTEN NUT AT BRKT-1 13 WRIST-TURNS USING HANDS
6 CARP-1 FASTEN NUT AT BRKT-I 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1
7 CARP-1 WALK TO BRKT-2 (TO DO NEXT BRKT)

MANUAL METHOD

380, HAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY)
CARPENTER
PER LADUER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIHE
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE LADR AT LDR-PILE AND ADJUST (ON BOLSTERS)

382. SET-UP LADDER ON BULKHEAD (AT BRACKET LOCATION) WITH HAND AT TANK
CARPENTER
PER LADDER OFG: 4 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A LADDER AT A.....
* ...BRACKET LOCATION SO THE CARPENTER CAN
* ...PUT UP A BRACKET APPLIES ONLY FOR...
* ...FIRST LEVEL OF STAGING. CARPENTER IS
* ...WORKING FROM THE TANKTOP.
* ALSO INCLUDES CLIMBING UP & DOWN LADDER
CARP-1 BEGINS AT BRKT-1

1 CARP-I GET+PLACE WITH BEND LADR FROM TANKTOP TO BRKT-1
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT BRKT-1 (4 RUNGS) PF 4 (1) PF 4(34)
3 CARP-1 PULL (CLIHB-DOWN) LADDER AT BRKT-1 (4 RUNGS) PF 4 (1) PF 4 (34)
4 CARP-1 GET+PLACE LADR FROM BRKT-1 TO TANKTOP WITH BEND

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER,,
* ...ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER.**
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ..LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+PLACE WITH BEND LADR FROM TANKTOP TO LDR
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) 12 (34)
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) 12 (34)

385. POSITION (SECURE) (ACCESS) LADDER FOR BRACKET STAGING WITH PLIER (AN WIRE ROPE) AT TANK CARPENTER
PER LADDER OFG: 4 03-FEB-82
* REPRESENTS ELAPSED TIME
* REPRESENTS SECURING LADDER TO STAGING...
* ...BOARIIS USING WIRE ROPE
CARP-1 BEGINS AT LDR

1 CARP-1 GET+HANIPULATE WIRE-ROPE AT LDR (PUT AROUNII BOARDS AND LADDER,)
2 CARP-1 TWIST WIRE-ROPE AT LDR USING PLIER-1 ASIDE TO CARP-1

386. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT TANK (OR WA CARPENTER
PER STAGING PLANK OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE BOARD AT LU-PILE AND ADJUST (ON BOLSTERS)

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED-TIHE
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS* THEY BOTH LIFT THE BOARD....
* ..TOGETHER AND SLIDE IT INTO POSITION,
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS.
CARP-1 BEGINS AT BRKT-1

1 CARP-1CARP-2 GET+SLIDE WITH 1 STEP BOARD AT BRKT-1 AND ALIGN
2 CARP-1 WALK TO BRKT-2 (TO DO NEXT SECTION OF BOARDS, CARP2 ALSO MOVES TO ANOTHER BRACKET)

389. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH PICK-UP THE BOARD
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT BRKT-1

1 CARP-1+CARP-2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT BRKT-1 AND ALIGN
2 CARP-1 WALK TO BRKT-2 (TO DO NEXT SECTION OF BOARDS, CARP2 ALSO MOVES TO ANOTHER BRACKET)

390. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STAGING PLANK OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS,
* ONE MAN OPERATION:
* USUALLY OCCURS WHEN CRANE CANNOT PLACE..
* ...BOARD ON BRACKETS.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+HANIPULATE WITH BEND BOARD AT BRKT-2 AND ALIGN RETURN BRKT-1
2 CARP-1 GET+POSITION WITH BEND BOARD FROM TANKTOP TO BRKT-1 AND SE

391. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED.
CARP-3 BEGINS AT LU-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM BIN-2 TO BIN-2

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE.....
* ...BRACKET SLEEVE.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PLACE WITH BEND STAN FROM TANKTOP TO BRKT-1 AND INSERT
2 CARP-1 WALK TO BRKT-2 (DO NEXT STANCHION)

394. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY)
CARPENTER
PER HANDRAIL OFG: 3 02-FER-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...S0 THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

1 CARP-3 GET+SLIDE HANDRAIL AT HR-PIL.E AND ADJUST (ON BOLSTERS)

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OF13: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR.....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT BRKT-2 AND ALIGN (THRU 2 EYELETS ON THE STANCHIONS AT, BRKT1 8 BRKT2) RETURN TO BRKT-1 PF 2 (4 5 6)
2 CARP-1 WALK TO BRKT-2 (DO NEXT SECTION)

397. SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND A TANK CARPENTER

PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)....
* ...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+HOLD WITH BEND HANDRAIL FROM TANKTOP TO CARP-1
2 PTIME 1.02 M (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)
3 CARP-2 GET+PLACE 2 HANDRAIL (END PIECES) FROM CARP-1 TO BRKT-1

398. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH AT (CENTER) MID TANKS AND VOIDS CARPENTER

PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...CENTER TANK. HANDRAIL IS THROWN TO A
* ...MATERIAL PILE ON THE TANKTOP.
* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....
* ...MOVING TO NEXT SECTION.
CARP-1 BEGINS AT BULKHEAD

1 CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME 0.26 M (BURN OFF HANDRAIL
3 CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO CARP-2 SIHO
4 CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO MATL-PILE
5 CARP-1 AND CARP2 WALK TO BRKT-2 F 1 / 2

399. TEAR DOWN HANURAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...HATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SHALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....
* ...MOVING TO THE NEXT SECTION.
* MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
CARP-1 BEGINS AT BULKHEAD

i CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-I PTIME 0.26 M (BURN OFF HANDRAIL)
3 CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO BRKT-1 SIMO
4 CARP-2 HOLD+PLACE HANDRAIL FROM BRKT-1 TO BRKT-PILE
5 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
6 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-2 F 1 / 6
7 CARP-2 GET+HANIPULATE WITH BEND CARLE AT BRKT-PIL.E (HOOK CABLE AROUND HANDRAIL) F 1 / 6
8 WNCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO HENHOLE) F 1 / 6
11 CARP-2 AND CARP1 WALK TO BRKT-2 F 1 / 2

400. TEAR DOWN STANCHION ON BULKHEAD WITH HAND AT (CENTER) MID TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STANCHION FROM.....
* ...STAGING BRACKETS IN A CENTER TANK,
* ...STANCHION IS THROWN TO A MATERIAL....
* ...PILE ON THE TANKTOP
CARP-2 BEGINS AT BRKT-1

1 CARP-2 LOOSEN STAN AT BRKT-1 4 ARM-STROKES USING HANDS
2 CARP-2 HOLD+THROW STAN FROM BRKT-1 TO MATL-PILE
3 CARF-2 WALK TO BRKT-2

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT TANKS AND VOIDS CARPENTER
PER STAGING FLANK OFG: 3 04-FER-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER BOARD TO.....
* ...BD-PILE ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

1 CARP-1 AND CARP2 GET+HANIPULATE WITH BEND BOARD AT BRKT-1 (FLIP BOARDS ONTO 3RD BOARD)
2 WINCH-OPER LOOSEN (=SWING) WITH BEND CABLE AT BTRWTH 5 ARM-STRO USING HANDS F 2 / 3
3 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-1 WITH BEND F 1 / 3
4 CARP-1 GET+MANIPULATE WITH BEND CABLE AT BRKT-1 (HOOK CABLE AROU BOARD ALLOW FOR 2 ATTEMPTS) F 2 / 3
S WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
6 WINCH-OPER PUSH WINCH-DOUN PROCESS (TO BD PILE) F 1 / 3
7 WINCH-OPER PUSH WINCH-IJP PROCESS (TO BTRWTH) F 1 / 3
8 CARP-1 AND CARP2 WALK TO BRKT-2

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD WITH TORCH (AND WINCH) AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER.
* ...LADDER LOUERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 PULL TORCH AT LDR
2 CARP-1 OPERATE TORCH AT LDR PTIME 0.47 M F 4 (BURN OFF 4 CLIPS)
3 CARP-1 GET+THROW 4 LDLIPS FROM LDR TO MATL-PILE WITHOUT BEND F 4
4 CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN ON BOARDS)
5 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS
6 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BEND
7 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND LADR)
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE)
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH)
11 CARP-1 WALK TO BRKT-2

405. TEAR DOWN LADDER (AND WIRE ROPE) ON BULKHEAD WITH PLIER (AND WINCH
ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE IS 1 WIRE ROPE PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...WIRE-ROPE IS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 TWIST WIRE-ROPE AT LDR USING PLIER-1 ASIDE TO CARP-1
2 CARP-1 GET+MANIPULATE WIRE-ROPE AT LDR (PULL. WIRE ROPE OFF BOA
AND LADDER.)
3 CARP-1 HOLD+THROW WIRE-ROPE FROM LDR TO MATL-PILE WITHOUT BEND
4 CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN
BOARDS)
5 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STR
USING HANDS
6 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BENII
7 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE)
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH)
11 CARP-1 WALK TO BRKT-2

406. TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK. BRACKETS ARE LOWERED TO
* ...MATL-PILE BY WINCH.
* MAXMUH NUMBER OF BRACKETS IN LIFT = 3
CARF-1 BEGINS AT BRKT-2

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOI.D
2 CARP-1 HOLD+LOOSEN NUT AT BRKT-1 13 WRIST-STROKES USING WRENCH-1 ASIDE TO CARP-I
3 CARP-1 GET+REMOVE BOLT FROM BRKT-1 TO CARP-1
4 CARP-1 THROW NUT AND BOLT FROM CARP-1 TO MATL-PILE WITHOUT BEND
5 CARP-2 GET+PLACE BRKT FROM BRKT-I TO BRKT-PILE
6 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS F 1 / 3
7 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 F 1 / 3
8 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK AROUND BRACKETS) F 1 / 3
9 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
10 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 3
11 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3
12 CARP-2 AND CARP1 WALK TO BRKT-2

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH S ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE IN MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (10 PER CLIP) WITH 10% OVERWEL USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 C RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT A TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDR (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELD HORIZONTAL 1/4" FILLET WELD (5" PER CONNECTION) USING 601 ELECTRODE OR COMPARABLE (7018 3/32).

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND...
* ...DOWN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

1 CARP-3 GET+SLIDE HANDRAIL (ONTO BOLSTER) AT MATL-PILE
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT HENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-FILE (HOOK AROUND HANDRAIL) F 1 / 6
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND V
CARPENTER
PER STANCHION OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM...
* ...MATL-PILE ON TANKTOP TO DECK (GOING
* ...THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM MATL-FILE TO MATL-PILE WI
BEND
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
3 WINCH-OFER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 6
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUI
STANCHION) F 1 / 6
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
7 WINCH-OFER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS
VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND BRKT FROM MATL-FILE TO MATL-PILE WI
BEND
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUI
BRACKET) F 1 / 3
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3

410. REMOVE STAGING FLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARD...
* ...PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1 CARF-3 GET+SLIDE BOARD (ONTO BOLSTER) AT BD-PILE AND ADJUST
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3
3 CARP-3 GET+MANIPULATE WITH BEND CARLE AT BD-PILE (HOOK AROUND
BOARDS) (ALLOW FOR 2 ATTEMPTS) F 2 / 3
6 WINCH=OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING LADDERS FROM LADDER
* ..PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

1 CARF-3 GET+SLIDE LADR (ONTO BOLSTER) AT LDR-PILE AND ADJUST
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT HENHOLE 5
ARM-STROKES USING HANDS F 1 / 3
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARF-3 F 1 / 3
3 CARP-3 GET+MANIPULATE WITH BEND CABLE AT LDR-PILE (HOOK AROUND
LADDERS.) (ALLOW FOR 2 ATTEMPTS) F 2 / 3
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3

412. REMOVE TOOLBOX ON (MATERIAL FILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER TOOLBOX OFG: 3 08-FER-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL...
* ...PILEON TANKTOP TO DECK (GOES THRU...
* ...MANHOLE),
* TOOLBOX CONTAINS:
* ...28 BOLTS
* ...28 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

1 CARP-3 GET+PLACE 7 NUTS AND 7 BOLTS FROM MATL-PILE TO TOOLBOX-1 W
BEND (TOTAL 0F 28) PF 4 (2 3 4 5 6)
2 CARF-3 GET+PLACE WITH BEND 4 LCLIPS FROM MATL-PILE TO TOOLBOX-1 W
BEND (TOTAL OF 28) F 7
3 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP)
4 WINCH-OPER LOOSEN (=SWING) CABLE WITH REND AT MENHOLE 5
ARM-STROKES USING HANDS
5 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3
6 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND
TOOLBOX)
7 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
8 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE)

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT A
TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREABS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

1 CARP-1 WALK TO LEVEL-2
2 CARP-2 WALK TO LEVEL-2 SIMO

563. TRANSPORT STAGING BRACKET WITH (TOUER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROH BIN-1 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES FROM THE SIDE OF A BASIN
* ..1200'X200'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT BRKT FROM BIN-1 USING CRANE WITH HOOK+SLING TO BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

564. TRANSPORT LADDER WITH (TOUER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADERS FROM
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE
* ...AND FROM LDR-PILE TO BULKHEAD ARE
* ...AVERAGE DISTANCE FROM SIDE OF BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT LADR FROM LDR-PILE USING CRANE WITH HOOK+SLING TO BULKHEAD (AT, LDR) PLACE+ADJUST RETURN TO CR-1 F 1 / 3

565. TRANSPORT STAGING PLANK WITH (TOUER CRANE) AT (WING) TANKS AND VOID CARPENTER
PER STAGING PLANK OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM LU-FILE USING CRANE WITH HOOK+SLING TO BULK (BTWN BRKTS) PLACE+MANEUVER RETURN TO CR-1 F 1 / 3

566. TRANSPORT STANCHION WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM..
* ...BIN-2 TO BULKEHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND..
* ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
* ..DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SLING TO BULKHEA BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

567. TRANSPORT HANDRAIL WITH (TOWER CRANE) AT (WING) TANKS ANU VOIBS
CARPENTER
PER HANDRAIL OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM...
* ...HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO BULKHEAD (BTUN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK ANB 3 BELOW). RATE IN ELAPSED TIME, MULT BY 6 TO OBTAIN TOTAL TIME,
PER 8-HR SHIFT ANII (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS ANLI 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO BETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .231 ....
* ...UHERE 'N' = THE NUMBER OF CUTS(BURNS)

Combined sub-operation elements

9, HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT T
CARPENTER
PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELIDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT TANKTOP

1 CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1
2 CARP-1 LOOSEN PAINT ON BHD AT BRKT-1 4 STRIKES USING HAMMER-1 A
TO CARP-1
3 CARP-1 GET+PLACE WITH BEND SCLIP FROM TOOLBOX-2 TO BRKT-1 (TACH
UPON PLACEMENT)

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR
WAY) CARPENTER
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR RULKIHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-I TO BIN-1
2 CARP-3 GET+PLACE WITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSE
BOLT IN BRKT
3 CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS
4 CARP-3 GET+PLACE BRNT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR
TRANSPORTATION)

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ....ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER.
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ...LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+PLACE WITH BEND LADR FROM TANKTOP TO LDR
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)

384. POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDER CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE.....
* ...BULKHEAXI USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON BHD AT LDR 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKING UPON PLACEMENT) PF 4 (6)

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS, THEY BOTH LIFT THE BOARD....
* ..TOGETHER AND SLIDE IT INTO POSITION,
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS,
CARP-1 BEGINS AT BRKT-1

1 CARF-1+CARF-2 GET+SLIDIE WITH 1 STEP BOARD AT BRKT-1 AND ALIGN
2 CARF-1 WALK TO BRKT-2 (TO DO NEXT SECTION O BOARDs, CARP2 ALSO
MOVES TO ANOTHER BRACKET)

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENT'S ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE.....
* ...BRACKET SLEEVE.
CARP-1 BEGINS AT BRKT-1

1 CARP-I GET+PLACE WITH BEND STAN FROM TANKTOP TO BRKT-1 AND INSER
2 CARP-1 WALK TO BRKT-2 (NO NEXT STANCHION)

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-I GET+SLII.IE WITH BEND HANDRAIL AT BRKT-2 ANSI ALIGN (THRU 2 EYELETS ON THE STANCHIONS AT. RRKT1 & BRKT2) RETURN TO BRKT-1 PF 2 (4 5 6)
2 CARP-1 WALK TO BRKT-2 (DO NEXT SECTION)

397. SET-UP HANBRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)....
* ...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+HOLD WITH BEND HANDRAIL FROM TANKTOP TO CARP-1
2 PTIME 1.02 K (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)
3 CARP-1 GET+PLACE 2 HANDRAIL (END PIECES) FROM CARP-I TO BRKT-1 F 2

399. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TAI
AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK, HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....
* ...MOVING TO THE NEXT SECTION.
* MAXIHUM NUMBERS OF HANDRAIL IN LIFT = 6
CARF-1 BEGINS AT BULKHEAD

1 CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-1 PTINE 0.26 M (BURN OFF HANDRAIL
3 CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO BRKT-1 SIMO
4 CARP-2 HOLD+PLACE HANDRAIL FROM BRKT-1 TO BRNT-PILE
5 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 1 / 6
6 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-2 F 1 / 6
7 CARP-2 GET+MANIPULATE-WITH BEND CARLE AT BRKT-PILE (HOOK CABLE
AROUND HANDRAIL) F 1 / 6
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO NENHOLE) F 1 / 6
11 CARP-2 AND CARP1 WALK TO BRKT-2 F I / 2

401. TEAR DOWN STANCHION ON BULKHEAD WITH HAND (AND WINCH) AT (WING) TANKS ANII VOIDS CARPENTER

PER STANCHION OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION IN A..
* ...WING TANK. STANCHION IS LOWERED TO...
* ...THE MATL-PILE WITH A WINCH BECAUSE...
* ...THE TANK IS TO SHALL FOR THE.....
* ...STANCHION TO BE THROWN.
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
CARP-2 BEGINS AT BRKT-PILE

1 CARP-2 LOOSEN STAN AT BRKT-1 4 ARM-STROKES USING HANUS
2 CARP-2 HOLD+PLACE STAN FROM BRKT-1 TO BRKT-PILE
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-2 F 1 / 6
5 CARP-2 GETH+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK CABLE AROUND STANCHIONS) F 1 / 6
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
7 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6
8 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6
9 CARP-2 WALK TO BRKT-2

402. TEAR DOWN STAGING PLANK ON STAGING BRACKETT WITH HAND (AND WINCH) AT TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER ROARU TO.....
* ...BD-PILE ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

1 CARP-1 AND CARP2 GET+HANIPULATE WITH BEND BOARD AT BRKT-1 (FLIP BOARDS ONTO 3RD BOARD)
2 WINCH-OPER LOOSEN (=SWING) WITH BEND CABLE AT BTRWTH 5 ARM-STR USING HANDS F 1 / 3
3 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-1 WITH BEND F 1 / 3
4 CARP-1 GET+MANIPULATE WITH BEND CABLE AT BRKT-I (HOOK CABLE ARO BOARD ALLOW FOR 2 ATTEMPTS) F 2 / 3
5 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
6 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO BD PILE) F 1 / 3
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3
8 CARP-1 AND CARP2 WALK TO BRKT-2

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAKI WITH TORCH (AND WINCH AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER,
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 PULL TORCH AT LDR
2 CARP-1 OPERATE TORCH AT LDR PTIME 0.47 N F 4 (BURN OFF 4 CLIPS)
3 CARP-1 GET+THROW 4 LCLIPS FROM LDR TO MATL-PILE WITHOUT BEND F 4
4 CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN ON BOARDS)
5 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS
6 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BEND
7 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND LADR)
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE)
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH)
11 CARP-1 WALK TO BRKT-2

406. TEAR DOUN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS ANII
VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK BRACKETS ARE LOWERED TO
* ...MATL-PILE BY WINCH.
* MAXIMUM NUMRER OF BRACKETS IN LIFT = 3
CARP-1 BEGINS AT BRKT-2

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOLI
2 CARP-1 HOLD+LOOSEN NUT AT BRKT-1 13 WRIST-STROKES USING WRENCH-
ASIDE TO CARP-1
3 CARP-1 GET+REMOVE BOLT FROM BRKT-1 TO CARP-1
4 CARP-1 THROW NUT AND BOLT FROM CARP-1 TO MATL-PILE WITHOUT BEND
5 CARP-2 GET+PLACE BRKT FROM BRKT-1 TO BRKT-PILE
6 WINCH-OF'ER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STI
USING HANDS F 1 / 3
7 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 F 1 / 3
8 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK AROUNI
BRACKETS) F 1 / 3
9 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3
10 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 3
11 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3
12 CARP-2 AND CARP1 WALK TO BRKT-2

426. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING BRACKET OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BIN-1
2 CARP-3 GET+PLACE WITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSERT BOLT IN BRKT
3 CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS
4 CARP-3 GET+PLACE BRKT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR TRANSPORTATION)

427. MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER LADDER OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT,
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE LADR_ AT LDR-PILE AND ADJUST (ON BOLSTERS)

428. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE BOARD AT LU-PILE AND ADJUST (ON BOLSTERS)

429 MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPE
PER STANCHION OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED,
CARP-3 BEGINS AT LU-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM BIN-2 TO BIN-2

430. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPEN
PER HANDRAIL OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...SO THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

1 CARP-3 GET+SLIDE HANDRAIL AT HR-PILE AND ADJUST (ON BOLSTERS)

569. SET-UP STAGING BRACNET ON WEB FRAME WITH WRENCH AT (WING) TANKS A
VOIDS CARPENTER
PER STAGING BRACKET OFG: 4 24-MAY-83
REF'RESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING BRACKET
* ...ON A EXISTING STAGING CLIP (LOCATED
* ...ON A WEB FRAME)
CARP-1 BEGINS AT WING-TANK

1 CARP-1 GET+HOLD WITH BEND BRKT FROM WING-TANK TO CARP-1
2 CARP-1 LOOSEN NUT AT WEB-1 4 WRIST-TURNS USING HANDS
3 CARP-1 REMOVE BOLT FROM WEB-1 ON BRKT TO CARF-1
4 CARP-1 GET+PLACE BRKT FROM CARP-1 TO WEB-1 AND INSERT BOLT
5 CARP-1 FASTEN NUT AT WEB-I 13 WRIST-TURNS USING HANDS
6 CARP-1 FASTEN NUT AT WEB-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO
CARP-I
7 CARP-1 WALK TO WEB-2 (TO 110 NEXT BRKT)

MANUAL METHODS

570. SET-UP (ACCESS) LADDER ON (INBOARD OR OUTBOARD) BULKHEAD WITH HAND AT (WING) TANKS AND VOIDS CARPENTER

PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER
* ...ON THE INBOARD OR OUTBOARD BULKHEAD
* ...SO THAT THE CARPENTER CAN CLIMB TO
* ...THE NEXT LEVEL OF STAGING
* ALSO INCLUDES CLIMBING UP AND DOWN THE
* ...LADDER
CARF'-1 BEGINS AT WING-TANK

1 CARP-1 GET+PLACE WITH BEND LADR FROM MING-TANK TO LDR
2 CARP-1 SLIDE (CLIME-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)

571. POSITION (SECURE) (ACCESS) LADDER ON (INBOARD OR OUTROARD) BULKHEAD WITH HAMMER AT (WING) TANKS AND VOIDS CARPENTER

PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSEKI TIME
* REPRESENTS SECURING A LADDER TO THE
* ...INEOARD OR OUTBOARD BULKHEAD USING
* ...FOUR LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON (INBOARD OR OUTBOARD) BULKHEAD AT LDR 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKING UPON PLACEMENT) PF 4 (6)

573. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT (MING) TANKS VOIDS CARPENTER
PER STAGING FLANK OFG: 4 24-MAY-83
REPRESEHTS ELAPSED TIME
* REPRESENTS SPREAIIING BOARDS BETWEEN WEBS
* 2 HAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ...WEBS+ THEY BOTH PICK UP THE BOARD
* ...TOGETHER AND SLIDE IT INTO POSITION,
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT WEB-1

1 CARP-1 AND CARP2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT WEB-1 ALIGN
2 CARP-1 WALK TO WEB-2 (TO DO NEXT SECTION OF BOARDS, CARP2 ALSO MOUES TO ANOTHER BRACKET)

575. SET-UP STAGING PLANK ON (EXISTING) BRACKET STAGING WITH HAND AT (UING) TANKS AND VOIDS CARPENTER
PER STAGING FLANK OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN
* ...EXISTING STAGING AND INBOARD OR
* ...OUTBOARD BULKHEAD
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT DIFFERENT WEBS
* ...EACH CARPENTER SPREADS TWO BOARDS
* ...SIMULTANEOUSLY
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-I BEGINS AT WEB-1

1 CARP-1 GET-I-MANIPULATE (FLIP) WITH BEND WITH 1 STEP BOARD AT WE AND ALIGN
2 CARP-I WALK TO WEB-2

577. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT (WING) TANKS AND VOIUS CARPENTER
PER STANCHION CIFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE
* ...HRACKET SLEEVE IN A WING TANK
CARP-1 BEGINS AT WEB-1

1 CARP-1 GET+PLACE WITH BEND STANCHION FROM WING-TANK TO WEB-1 AND INSERT
2 CARP-1 WALK TO WEB-2 (TO DO NEXT STANCHION)

573. SET-UP HANDRAIL IN STANCHION WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL WILL BE DONE IN
* ...A SEPARATE SUB OPERATION
CARP-1 BEGINS AT WEB-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT WEB-2 AND ALIGN (THRU 2 EYELETS (IN THE STANCHIONS AT. WER AND WEB2) RETURN TO WEB-1 PF 2 4 5 6)
2 CARF-1 WALK To WEB-2 (TO DO NEXT SECTION OF HANDRAIL)

579. SET-UP HANDRAIL (END PIECES) ON (HAND`RAIL AND) BULKHEAII WITH HA
AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)
* ...CONNECTIONS WILL HE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT WEB-1

1 CARP-1 GET+HOLD WITH BEND HANDRAIL FROM WING-TANK TO CARP-1
2 FTIME 1,02 M (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)
3 CARP-1 GET+PLACE 2 HANDRAIL (END PIECES) FROM CARP-1 TO WEB-1

568. SET-UP (STAGING CLIP) ON WEB FRAME WITH HAMMER (AND STEEL-TAPE)
(WING) TANKS AND VOIUS CARPENTER
PER STAGING CLIP OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...A WEB FRAME.
* WELDING OF THE CLIP WILL BE DONE IN A.
* ...SEPARATE SUB OPERATION.
CARP-1 BEGINS AT WING-TANK

1 CARP-1 MEASURE AT WEB-1 USING STEEL-TAPE-1 ASIDE TO CARP-1
2 CARP-1 LOOSEN PAINT ON WEB AT WEB-1 4 STRIKES USING HAMMER-1 ASI
TO CARP-1
3 CARP-1 GET+PLACE WITH BEND SCLIP FROM TOOLBOX-2 TO WEB-1 (TACKI
UPON PLACEMENT)

SECTION 3
MANUAL METHODS

545. ASSEMBLE i-BEAMS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY FLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE BOLTING I-BEAMS
* STEPS:
* 1-4 ARE FOR THE CONNECTIONS OF I-6 & I-7
* ...AT I-1,1-2,I-3,I-4, AND 1-5
* 3-6 ARE FOR MOVEMENT OF THE CARPENTER
* ...BETUEEN THE CONNECTIONS
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 GET+POSITION 4 BOLTS FROM TOOLBOX-1 TO 1-1 WITH BEND AND INSERT BOLT PF 4 (456 7)F 10
2 CARP-1 GET+POSITION WITH BEND 4 UASHERS AND NUTS FROM TOOLBOX-1 TO I-1 WITH BEND PF 8 (456)F10
3 CARP-1 FASTEN 4 NUTS AT 1-1 13 SPINS DIFFICULT USING FINGERS F 10
4-CARP-1 FASTEN 4 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
S CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO 10 PF 10 (2) PF1O (56)
6 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-5 (AT. I-6) TO I-5 (AT. I-7) WITH 10 STEPS WITH BEND

546. ASSEMBLE ANGLE-EARS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PL
CARPENTER
PER FLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE ASSEMBLING ANGLES
* STEPS:
* 1-6 ARE FOR CONNECTIONS OF A-4 AND A-1
* ...AT I-1,I-2,I-3,I-4, AND I-S
* 7-13 ARE FOR CONNECTIONS OF
* ...A-3 AT I-5,I-4, AND I-3 AND
* ...A-I AT I-3,I-2, AND I-1
* 14-20 ARE FOR CONNECTIONS OF A-5 AND A-6
* ...AT I-1.I-2.I-3.I-4. AND I-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 GET+POSITION ANGLE FROM A-4 TO I-1 WITHOUT BEND F 10
2 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-1 TO 1-1 WITH
BEND AND INSERT BOLT PF 2 (4 3 6 7) F 10
3 CARP-1 GET+POSITION WITH BEND 2 WASHERS AND NUTS FROM TOOLEfoX-1
1-1 WITH BEND PF 2 (456) F 10
4 CARP-1 FASTEN 2 NUTS AT I-1 13 SPINS DIFFICULT USING FINGERS F 1
5 CARP-1 FASTEN 2 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WREI
ASIDE TO CARP-1 F 10
6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WIT
STEPS PF 10 (2) PF 10 (56)
7 CARP-1 GET+POSITION ANGLE FROM A-3 TO I-5 WITHOUT BEND F 6
8 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-1 TO I-5 WITH
BEND AND INSERT BOLT PF 2 (4 5 6 7) F 6
9 CARP-1 GET+POSITION WITH BEND 2 WASHERS AND NUTS FROM TOOLBOX-1
1-3 WITH BEND PF 2 (4 5 6) F 4
10 CARP-1 FASTEN 2 NUTS AT I-5 13 SPINS DIFFICULT USING FINGERS F
11 CARP-1 FASTEN 2 NUTS AT I-5 13 WRIST-STROKES DIFFICULT USING WRE
ASIDE TO CARP-1 F 6
12 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-5 TO I-3 WI
10 STEPS PF 3 (2) PF 3 (56)
13 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-3 TO I-1 WI
10 STEPS PF 3 (2) PF 3 (5 6)
14 CARP-1 GET+POSITION ANGLE FROM A-4 TO I-1 (AT+ A-6) F 10
15 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-I TO I-1 WIT
BEND AND INSERT BOLT PF 2 (4 5 6 7) F 10
16 CARP-1 GET+PLACE WITH BEND 2 WASHERS AND NUTS FROM TOOLBOX-1 T
WITH BEND PF 2 (4 5 6) F 10
17 CARP-1 FASTEN 2 NUTS AT I-1 13 SPINS DIFFICULT USING FINGERS F
18 CARP-1 FASTEN 2 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WRE
ASIDE TO CARP-1 F 10
19 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-1 TO I-5 PF 10 (2)
10 (56)

20 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-5 (AT. A-6) TO I-5 (AT+ A-5) WITH 10 STEPS WITH BEND

539. READ MATERIAL LIST (PRINT) FOR TANK STAGING PLATFORM WITH (EYES) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER READS PRINT BEFORE LAYING OUT
* ...TABLE. READS 48 DIGITS PER LOCATION
CARP-I BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 OPEN+SHUT PRINT F 6
2 CARP-1 READ 12 DIGITS F 24
3 CARP-1 HOLD+PLACE PRINT TO CARP-1 (IN POCKET) F 6

540. MEASURE (PLATEN) FOR TANK STAGING PLATFORM WITH (STEEL) TAPE AT ANY PLATEN CARPENTER
PER PLATFORIl OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS MEASURING TABLE FOR LAYOUT
* ANALYSIS INCLUDES ALL THE WALKING....
* ...DISTANCES FOR THE LAYOUT.
* STEPS:
* 2,3,4 ARE FOR I-1,1-2,1-3,I-4, AND 1-5
* ...AT A-5 AND A-6.
* 5,6,7 ARE FOR A-5,I-7,A-4,A-3,A-1,I-6,
* ...AND 6-6 AT I-5
* 5,6,7 ARE FOR A-5,I-7,A-4,A-2,A-1,1-6,
* ...AND A-6 AT I-1
* 9,10,11 ARE FOR A-2 AND A-3 AT I-3
CARP-1 BEGINS AT STORE-2

1 CARP-1 WALK TO TANK-STAGING-PLATFORM (AT. I-1) WITH CLIMB (ON TABLE)
2 CARP-1 MEASURE AT I-1 USING STEEL-TAPE ASIDE TO CARP-1 F 10
3 CARP-1 WALK TO 1-5 WITHOUT BEND F 2
4 CARP-1 WALK TO I-1 WITHOUT BEND AND RETURN TO I-5 WTTHOUT BEND F 2
5 CARP-1 MEASURE AT A-5 USING STEEL-TAPE ASIDE TO CARP-1 F 14
6 CARP-1 WALK TO A-6 WITHOUT BEND F 2
7 CARP-1 WALK TO A-5 WITHOUT BEND AND RETURN TO A-6 WITHOUT BEND F 2
8 CARP-1 WALK TO I-3 WITH 6 STEPS WITHOUT BEND
9 CARP-1 MEASURE WITH 8 STEPS AT A-2 USING STEEL-TAPE ASIDE TO CARP-1
10 CARP-1 MEASURE AT A-3 USING STEEL-TAPE ASIDE TO CARP-1

11 CARP-1 WALK TO STORE-2 WITH DESCEND (OFF TABLE)

541. MARK (PLATEN) FOR TANK STAGING PLATFORM WITH MARKER AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* REPRESENTS MARKING THE LAYOUT FOR A TANK
* ..STAGING PLATFORM AND INSPECTING WORK.
* THE FOLLOWING PLACES ARE LAID OUT:
* ...AT A-5 AND A-6:
* ...I-1,I-2,1-3,1-4, AND 1-5
* ...AT I-1 AND I-5:
* ...A-6,1-6,A-1,A-4,1-7, AND A-5
* ...A-2 IS LAID OUT AT I-3 AND I-1
* ...A-3 IS LAID OUT AT I-3 AND 1-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 MARK AT 1-1 5 DIGITS USING MARKER ASIDE TO CARP-1 F 25
2 CARP-1 INSPECT 5 POINTS F 25

542. TRANSPORT PALLET (I-BEAMS AND ANGLES) FOR TANK STAGING PLATFORM WI
(CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* MATERIAL NEEDED FOR ONE PLATFORM:
* ...I-BEAMS - 7
* ...ANGLES - 6
HOOKER-ON BEGINS AT CR-1

1 HOOKER-ON TRANSPORT PALLET FROM STORE-1 USING CRANE-1 WITH 2
HOOK+SLING TO STORE-2 PLACE+ADJUST RETURN TO CR-1

547. TRANSPORT STAGING FLANKS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* BOARDS ARE TRANSPORTED FROM LUMBER PILE
* ...WHICH IS LOCATED ON THE PLATEN,
* TOTAL NUMBER OF BOARDS IN LIFT = 64
* TOTAL LIFTS = 2 (PORT AND STARBOARD)
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT BOARDS FROM LUMBER-FILE USING CRANE-2 WITH 2 HOOK+SLING TO TANK-STAGING-PLATFORM (AT+ A-5) PLACE+NANEUVER RN CRANE-2 TO CR-2 RETURN HOOKER-ON TO STORE-2 F 2

549. TRANSPORT (FINISHED) TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* TRANSPORT FINISHED PLATFORM TO A STORAGE
* ...PILE
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT FIN-PLATFORM FROM TANK-STAGING-PLATFORM USING CRANE-2 WITH 2 HOOK+SLING TO FIN-PILE PLACE+HANEUUER RETURN CRANE-2 TO CR-2 AND RETURN HOOKER-ON TO STORE-2

555. POSITION (RAISE) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AN
VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS RAISING TYPICAL PLATFORM IN A
* ...CENTER TANK AND SECURING IT TO THE
* ...MAIN DECK.
* 2 carpenters WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ..HOLES ON MAIN DECK
* 7-12 CONNECTION OIF SHACKLES ON PLATFORM
* 14-19 CONNECTION OF SUSPENSION CABLES ON
* ...PLATFORM AND MAIN DECK
* 21-26 REMOVING SHACKLES FROM FLATFORM
* 27-29 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

1 CARP-3 GET+PLACE WITH BEND CABLE-SLEEVE FROM MENHOLE TO BTRWTH4
INSERT
2 CARP-3 GET+PLACE CABLE-SLEEVE FROM MENHOLE TO BTRWTH2 AND INSERT
3 CARP-3 GET+MANIPULATE CABLE AT BTRUTH4 AND ADJUST
4 CARP-3 GET+MANIPULATE CABLE AT BTRWTH2 AND ADJUST
5 WAIT 5 M (CRANE LOWERS 4 CABLES TO PLATFORM)
6 CARP-1 AND CARP2 WALK TO PLATFORM WITH 24 STEPS WITH CLIMB-OBJEC
7 CARP-1 LOOSEN NUT (ON SHACKEL) AT BTRUTH4 8 WRIST-TURNS USING
HANDS F 2
8 CARP-1 GET+REMOUE BOLT FROM BTRWTH4 TO CARP-1 F 2
9 CARP-1 GET+MANIPULATE WITH BEND SHACKLE AT BTRWTH4 AND ALIGN F 2
10 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
11 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HAHDS F 2
12 CARP-1 WALK TO BTRWTH2 WITHOUT BEND
13 WAIT 15 M (CRANE RAISES PLATFORM JUST BELOW MAIN DECK)
14 CARP-1 LOOSEN WITH BEND+STAND NUT (ON SUSPENSION CABLE SHACKE
AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
15 CARP-1 GET+REMOVE BOLT FROM BTRWTH2 TO CARP-1 F 4
16 CARP-1 GET+MANIPULATE WITH BEND+STAND SUSPENSION-CABLE AT BTRWT
AND ALIGN F 4
17 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRUTH2 F 4
18 CARP-1 FASTEN WITH BEND+STAND NUT AT BTRWTH2 8 WRIST-TURNS USIN
HANDS F 4
19 CARP-1 WALK TO BTRWTH4 WITH FLAT-CRAWL
20 WAIT 1 H (CRANE TO LOWER PLATFORM TO TIGHTEN SLACK ON SUSPENS
CABLE)

21 CARP-1 LOOSEN NUT WITH BEND (ON SHACKEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
22 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
23 CARP-1 GET+PICKUP WITH BEND SHACKLE FROM PLATFORM F 2
24 CARP-1 GET+PLACE BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
23 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
26 CARP-1 WALK TO BTRUTH2 WITH FLAT-CRAWL
27 WAIT 5 M (CRANE RAISES 4 CARLES OUT OF THE CENTER TANK)
28 CARF-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH4 TO MENHOLE
29 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH2 TO MENHOLE

554. POSITION (LOWER) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS LOWERING TYPICAL PLATFORM IN
* ...A CENTER TANK AND REMOVING IT FROM
* ...THE MAIN DECK,
* 2 CANPENTERS WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ...HOLES ON MAIN DECK
* 6-11 CONNECTION OF SHACKLES ON PLATFORM
* 13-18 REMOVAL OF SUSPENSION CABLES FROM
* ...PLATFORIl AND MAIN DECK
* 23-28 REMOVING SHACKLES FROM PLATFORM
* 29-31 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

1 CARP-3 GET+PLACE WITH BEND CABLE-SLEEVE FROM MENHOLE TO BTRUTH4 AND INSERT
2 CARP-3 GET+PLACE CABLE-SLEEVE FROM MENHOLE TO BTRWTH2 AND INSERT
3 CARP-3 GET+MANIPULATE CABLE AT BTRWTH4 AND ADJUST
4 CARP-3 GET+MANIPULATE CABLE AT BTRWTH2 AND ADJUST
5 WAIT 3 M (CRANE LOWERS 4 CABLES TO PLATFORM)
6 CARP-1 LOOSEN NUT (ON SHACKEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
7 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
8 CARP-1 GET+MANIPULATE WITH BEND SHACKLE AT BTRWTH4 AND ALIGN F 2
9 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
10 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
11 CARP-I WALK TO BTRWTH2 WITH FLAT-CRAUL

12 WAIT 1 M (CRANE RAISES PLATFORM JUST ENOUGH TO PUT SLACK ON SUSPENSION CABLES)
13 CARP-1 LOOSEN WITH BEND+STANB NUT (ON SUSPENSION CABLE SHACKEL AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
14 CARP-1 GET+REMOVE BOLT FROM BTRWTH2 TO CARP-1 F 4
15 CARP-1 GET+MANIPULATE WITH BEND+STAND SUSPENSION-CABLE AT BTRWT AND ALIGN F 4
16 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH2 F 4
17 CARP-1 FASTEN WITH BEND+STAND NUT AT BTRWTH2 8 WRIST-TURNS USIN HANDS F 4
18 CARP-1 WALK TO BRWTH4 WITH FLAT-CRAUL
19 WAIT 15 M (CRANE TO LOWER PLATFORM TO APPROXIMATELY 3 FEET ABC THE TANK-TOP)
20 CARP-1 AND CARP2 WALK TO MENHOLE WITH CLIMB-OBJECT
21 CARP-I GET+MANIPULATE BLOCK FROM MENHOLE TO PLATFORM WITH 12 ST AND ADJUST F 2
22 WAIT 1 M (CRANE LOWERS PLATFORM ON 4 WOODEN BLOCKS)
23 CARP-1 LOOSEN NUT WITH CLIMB-OBJECT (ON SHACNEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
24 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
25 CARP-1 GET+PICKUP WITH BEND SHACKLE FROM PLATFORM F 2
26 CARP-1 GET+PLACE BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
27 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNs USING HANDS F 2
28 CARP-1 WALK TO ETRWTH2 WITHOUT BEND
29 WAIT 5 H (CRANE RAISES 4 CABLES OUT OF THE CENTER TANK)
30 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH4 TO MENHOLE
31 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH2 TO MENHOLE
32 CARP-1 AND CARP2 WALK TO MENHOLE WITH CLIMB-OBJECT

557. POSITION (PLACE) TANK STAGING FLATFORM (AND BOARDS) IN (TYPICAL TANK) WITH (CRANE) AT ANY SHIP CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING TANK STAGING PLATFORM
* ...IN A TYPICAL TANK ON THE SHIP. ALSO
* ...THE BOARDS NEEDES TO EXTEND THE
* ...PLATFORM UNDER THE MAIN DECK,
* 2 HOONER-ONS: ONE AT THE MATERIAL AND
* ...ONE ON THE SHIP IN THE TANK.
* TOTAL OF 280 FOR TYPICAL TANK
* 7 LIFTS (40 BOARDS PER LIFT)
HOOKER-ON1 BEGINS AT S-7

1 TRANSPORT TANK-STAGING-PLATFORM FROM S-7 USING CRANE-1 WITH 2-HOOK+SLING TO TANK POSITION+MANEUVER RETURN TO S-7 PF 4 (3)
2 TRANSPORT BOARDS FROM S-7 USING CRANE-1 WITH HOOK+SLING TO TANK PLACE+ADJUST RETURN TO S-7 F 6
3 TRANSPORT BOARDS FROM S-7 USING CRANE-1 WITH HOON+SLING TO TANK PLACE+ADJUST RETURN TO CR-1

343. SET-UP I-BEAMS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 3 INCLUDES SPREADING I-BEAMS AT:
* ...I-2,1-3,I-4, AND I-5
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT I-READ FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO 1-6 PLACE+HANEUVER RETURN TO STORE-2
2 HOOKER-ON TRANSPORT I-BEAM FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO I-7 PLACE+HANEUVER RETURN TO STORE-2
3 HOOKER-ON TRANSPORT I-BEAM FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO I-1 PLACE-I-MANEUVER RETURN TO STORE-2 F 5

544. SET-UP ANGLE-BARS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLA
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 1 INCLUDES SPREADING ANGLES AT:
* ...A-6,A-1, AND A-2
* STEP 2 INCLUDES SPREADING ANGLES AT:
* ...A-3,A-4, AND A-5
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT ANGLE FROM STORE-2 USING CRANE-2 WITH HOOK+S
TO A-6 PLACE+MANEUVER RETURN TO STORE-2 F 3
2 HOOKER-ON TRANSPORT ANGLE FROM STORE-2 USING CRANE-2 WITH HOOK+S
TO A-4 PLACE+MANEUUER RETURN TO STORE-2 F 3

548. SET-UP STAGING PLANKS ON TANK STAGING PLATFORM WITH HANDS AT ANY PL
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTERS SPREAE BOARDS SIMULTANEOUSLY
* BOARDS ARE SPREAE ON PORT SIDE FIRST....
* ...THEN STARBOARD SIDE.
* TOTAL BOARDS PER SIDE = 32
* STEPS:
* 2-5 SPREAD BOARDS BETWEEN A-6 & I-6 P/S
* 6-8 SPREAD BOARDS BETWEEN I-6 & A-1 P/S
* 9-11 SPREAD BOARDS BETWEEN A-1 & A-3 S
* ...AND A-1 & A-2 P
* 12-14 SPREAD BOARDS BETWEEN A-3 & A-4 S
* ...AND A-2 & A-4 P
* 15-17 SPREAD BOARDS BTWN A-4 & I-7 P/S
* 18-20 SPREAD BOARDS BTWN I-7 & A-5 P/S
* 21-22 SPREAD BOARD AT A-5 P/S
CARP-I BEGINS AT STORE-2

1 CARP-1+CARP-2 WALK TO TANK-STAGING-PLATFORM WITH CLIMB (ONTO
PLATFORM)
2 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-6 F 2
3 CARF-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-6 F 6
4 CARP-1+CARF'-2 GET+SLIDE WITH BEND BOARD AT A-6 AND ALIGN F 8
5 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-6 WI
BEND F 16
6 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO I-6 F 2

7 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT I-6 AND ALIEN F 2
8 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO 1-6 WITH BEND F 4
9 CARP-I+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-1 F 8
10 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT A-1 AND ALIGN F 8
11 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-1 WITH BEND F 16
12 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-3 (PORT OR A-2 STAR) F 6
13 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT A-3 (PORT OR A-2 STAR) AND ALIGN WITH BEND F 6
14 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-3 (PORT OR A-2 STAR) WITH BEND F 12
15 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-4 F 6
16 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT A-4 AND ALIGN F 6
17 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-4 WITH BEND F 12
18 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO I-7 F 2
19 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT I-7 AND ALIGN F 2
20 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO I-7 WITH BEND F 4
21 CARP-1+CARP-2 GET+SLIDE BOARD AT A-5 AND ALIGN F 2
22 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-5 WITH BEND F 4
23 CARP-1+CARP-2 WALK TO STORE-2 WITH DESCEND (OFF PLATFORM)

550. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS A VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING ANGLES
* STEPS:
* 1-5 ARE FOR REMOVING BOLTS ON A-4 2 A-1
* ...AT I-1,I-2,I-3,I-4,AND I-5
* 7-11 ARE FOR REMOVING BOLTS
* ...ON A-3 AT I-1,I-2, & I-3
* ...ON A-1 AT I-3,I-4~ & I-5
* 14-18 FOR REMOVING BOLTS ON A-5 & A-6
* ...AT I-1,I-2,I-3,I-4 & I-3
CARP-1 BEGINS AT I-1

1 CARP-1 LOOSEN 2 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
2 CARP-I LOOSEN 2 NUTS AT I-1 20 SPINS USING FINGERS F 10
3 CARP-1 GET+PLACE 2 NUTS AND WASHERS FROM I-1 TO TOOLBOX-1 WITH BEN F 20
4 CARP-1 LOOSEN 2 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CAR F 10
5 CARP-I GET+PLACE 2 BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 20
6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WITH STEPS PF 10 (2) PF 10 (56)
7 CARP-1 LOOSEN 2 NUTS AT I-5 5 WRIST-TURNS DIFFICULT USING WRENCH ASIDE TO CARP-1 F 6
8 CARP-1 LOOSEN 2 NUTS AT I-5 20 SPINS USING FINGERS F 6
9 CARP-1 GET+PLACE NUTS AND WASHERS FROM I-5 TO TOOLBOX-1 WITH BEND 12
10 CARP-1 LOOSEN 2 BOLTS AT I-5 3 STRIKES USING HAMMER ASIDE TO CARP F 6
11 CARP-1 GET+PLACE 2 BOLTS FROM I-5 TO TOOLBOX-1 WITH BEND F 12
12 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-5 TO I-3 WIT 10 STEPS PF 3 (2) PF 3 (5 6)
13 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-3 TO I-1 WI 10 STEPS PF 3 (2) PF3 (56)
14 CARP-1 LOOSEN 2 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENC ASIDE TO CARP-1 F 10
15 CARP-1 LOOSEN 2 NUTS AT I-1 20 SPINS USING FINGERS F 10
16 CARP-1 GET+PLACE 2 NUTS AND WASHERS FROM I-1 TO TOOLROX-1 WITH BE F 20
17 CARP-1 LOOSEN 2 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CARP F 10
18 CARP-1 GET+PLACE BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 20
19 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WIT 14 STEPS PF 10 (2) PF 10 (56)

551. TEAR DOWN I-BEANS ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING I-BEAMS
* STEPS:
* I-5 ARE FOR REMOVING BOLTS ON I-6 & I-7
* ...AT I-1,I-2,I-3, I-4, AND I-5
* 6,7 ARE FOR MOVEMENT OF THE CARPENTER
* ...BETWEEN THE CONNECTIONS
CARP-1 BEGINS AT I-1

1 CARP-1 LOOSEN 4 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
2 CARP-1 LOOSEN 4 NUTS AT I-1 20 SPINS USING FINGERS F 10
3 CARP-1 GET+PLACE 4 NUTS AND MASHERS FROM I-1 TO TOOLBOX-1 WITH BEND F 40
4 CARP-1 LOOSEN 4 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CARP-1 F 10
5 CARP-1 GET+PLACE 4 BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 40
6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WITH 1. STEPS PF 10 (2) PF 10 (5 6)
7 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-5 (AT, I-6) TO I-5 (AT. I-7) WITH 10 STEPS WITH BEND

552. TEAR DOWN STAGING PLANKS ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 18-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL BOARDS = 64 (22 LIFTS)
* 2 CARPENTERS MOVE BOARDS FROM THE TANK
* ...STAGING PLATFORM TO A LUMBER-PILE
* ...LOCATED NEAR A MANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ...BOARDS FROM THE TANK. THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ...BOARDS ON THE DECK, THEIR TIME IS
* ...INTERNAL TO THE WINCH PROCESS TIME.
CARP-1 BEGINS AT I-5

1 CARP-1 AND CARP2 LOOSEN BOARD AT I-5 WITH BEND 2 ARM-STROKES USING HANDS F 32
2 CARP-1 AND CARP2 GET+MANIPULATE BOARD WITH CLIMB-OBJECT AT LUMBER-PILE ALIGN AND RETURN TO I-5 WITH CLIMB-OBJECT F 32
3 CARP-I AND CARP2 WALK TO 1-3 WITH CLIMB-OBJECT
4 CARP-1 AND CARP2 LOOSEN BOARD AT I-3 WITH BEND 2 ARM-STROKES USING HANDS F 32
5 CARP-1 AND CARP2 GET+llANIPULATE WITH CLIMB-OEJECT BOARD AT LUMBER-PILE ALIGN AND RETURN TO I-3 WITH CLIMB-OBJECT F 32
6 CARP-3 GET+SLIDE WITH BEND BOARD (ONTO BOLSTER) AT LUMBER-PILE ADJUST F 64
7 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 22
8 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 22
9 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 22
10 CARP-3 GET+MANIPULATE WITH BEND CABLE AT LUMBER-FILE (HOOK AROU BOARDS) (ALLOW FOR 2 ATTEMPTS) F 44
11 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 22
12 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 22

553. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER

PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF ANGLES ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL ANGLES = 6 (1 LIFT)
* 1 CARPENTER MOVES ANGLES TO ONE AREA ON
* ...THE TANK STAGING PLATFORM
* ...LOCATED NEAR A MIANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ...ANGLES FROM THE TANK, THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ...ANGLES ON THE DECK, THEIR TIME IS
* ...INTERNAL TO THE WINCH PROCESS TIME.
CARP-3 BEGINS AT LUMRER-PILE

1 CARP-3 WALK TO A-5 WITH 12 STEPS WITH CLIMB-OBJECT
2 CARP-3 GET+MANIPULATE ANGLE WITH BEND+CLIMB-STEP AT A-6 ALIGN AND RETURN TO A-4 WITH CLIME-STEP
3 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN AND RETURN TO A-3 WITH CLIMB-STEP
4 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEFF ANGLE AT A-6 ALIGN AND RETURN TO A-2 WITH CLIMB-STEP
5 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN AND RETURN TO A-1 WITH CLIMB-STEP
6 CARP-3 GET+MANIPULATE WITH BEND+CLIMII-STEP ANGLE AT A-6 ALIGN
7 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP)
8 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS
9 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3
10 CARP-3 GET+MANIPULATE WITH BEND CABLE AT A-6 (HOOK AROUND ANGLES (ALLOW FOR 2 ATTEMPTS) F 2
11 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
12 WINCH-OPER PUSH WINCH-up PROCESS (To MENHOLE)

554. TEAR DOWN I-BEAMS FOR TANK STAGING PLATFORM WITH WINCH AT MID TANKS VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF I-BEAMS FROM THE
* ...TANK STAGING PLATFORM
* TOTAL I-BEAMS = 7 (7 LIFTS)
* A CARPENTER AND WINCH OPERATOR REMOVE
* ...THE I-BEAMS FROM THE TANK. THERE ARE
* ...2 CARPENTERS WHO RECEIVE AND STACK
* ...THE I-BEAMS ON THE BECK, THEIR TIME
* ...IS INTERNAL TO THE WINCH PROCESS TIME
CARP-3 BEGINS AT A-6

1 CARP-3 WALK TO 1-5 WITH & STEPS WITH CLIMB-STEP PF 4 (2)
2 WINCH-OPER PUSH WINCH-DOWN PROCESS F 7
3 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT, MENHOLE 5 ARM-STROKES USING HANDS F 7
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 7
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT 1-5 (HOOK AROUND I-BEAM (ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
6 CARP-3 GET+MANIPULATE CABLE AT 1-4 (HOOK AROUND I-BEAM) (ALLOW FOR 2 ATTEMPTS) FOR 2 (2 3 4)
7 CARP-3 GET+MANIPULATE CABLE AT I-3 (HOOK AROUND I-BEAM) (ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
8 CARP-3 GET+MANIPULATE CABLE AT I-2 (HOOK AROUND I-BEAM) (ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
9 CARP-3 GET+MANIPULATE CABLE AT I-1 (HOOK AROUND I-BEAM) (ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
10 CARP-3 GET+MANIPULATE WITH 13 STEPS CABLE AT I-7 (HOOK AROUND I-BEAM) (ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
11 CARP-3 GET+MANIPULATE CABLE AT I-6 (HOOK AROUND I-BEAM) (ALLO FOR 2 ATTEMPTS) PF 2 (2 3 4)
12 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 7
13 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 7

538. (BRUSH) CLEAN (PLATEN) FOR TANK STAGING PLATFORM WITH BROOM AT ANY PLATEN CARPENTER
PER PLATFORtf OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS CLEANING THE TABLE BEFORE THE
* ...TANK STAGING PLATFORM IS ASSEMBLED.
* SQUARE FOOTAGE OF AREA CLEANEE = 700
CARP-1 BEGINS AT STORE-2

1 CARP-1 BRUSHCLEAN TANK-STAGING-PLATFORM (TABLE) WITH CLIMB (ON TABLE) 7 SQ.FT. USING BROOM RETURN TO STORE-2 WITH DESCEND (OFF B L E) P F 9 9 (7)

559. SET-UP STAGING PLANKS FOR TANK STAGING PLATFORM WITH HAMMER AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 20-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOADS FROM A TANK
* ...STAGING PLATFORM TO EXISTING STAGING
* ...ON THE BULKHEADS.
* 2 CARPENTERS WHO ARE NOT WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT STAR-BHD

1 CARP-2 GET+MANEUVER WITH BEND BOARD AT STAR-BHD AND RETURN TO PLATFORM
2 CARP-1 GET+MANIPULATE WITH 1 STEP WITH BEND BOARD AT STAR-BHD AND ALIGN
3 CARP-2 GET+PLACE WITH 6 STEPS WITH BEND NAILS FROM TOOLBOX-1 TO CARP-2 WITH 6 STEPS (POCKET)
4 CARP-1 GET+PLACE WITH BEND NAILS FROM TOOLBOX-1 TO CARP-1 (POCKET)
5 CARP-2 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-2 TO PLATFORH (0 BOARDS) WITH BEND PF 3 (2 3 4 5 6 7)
6 CARP-1 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-1 TO STAR-BHD (01 BOARDS) WITH BEND PF 3 (2 3 4 5 6 7)
7 CARP-2 FASTEN 3 NAILS AT PLATFORM 16 STRIKES USING HAMMER-2 ASIDE TO CARP-2 F 2
8 CARP-1 FASTEN 3 NAILS AT STAR-BHD 16 STRIKES USING HAMMER-1 ASIDE TO CARP-I F 2

560. TEAR DOWN HANDRAIL (AND STANCHION) ON (LONGITUDINAL) BULKHEAD
TORCH AT MID TANKS AND VOIDS CARPENTER
PER ASSEMBLY OFG; 4 20-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM TOP
* ...LEVEL OF BULKHEAD STAGING IN A CENTER
* ...TANK, THIS IS DONE AFTER BOARDS HAVE
* ...BEEN SPREAD TO TANK STAGING PLATFORM
* CARPENTER WORKS ALONE
* HOOKUP, IGNITE AND EXTINGUISH TORCH ARE
* ...IN A SEPARATE SUB-OP
CARP-3 BEGINS AT FLATFORM

1 CARP-3 GET+MOVE WITH BEND TORCH FROM PLATFORM TO BRKT-1
2 CARP-3 OPERATE TORCH FROM BRKT-1 TO BRKT-2 AND BURN OFF 2 HANDR
PROCESS PF 4 (5)
3 CARP-3 HULD+PLACE TORCH FROM BRNT-2 TO STAR-BHD
4 CARP-3 GET+MANIPULATE 2 HANDRAIL AT STAR-BHD F 2
5 CARP-3 HOLD+PLACE 2 HANDRAIL FROM STAR-BHD TO PLATFORM WITH BENI
RETURN TO STAR-BHD
6 CARP-3 LOOSEN 2 STANCHIONS AT STAR-BHD WITH 6 STEPS (AT. BRKT1
BRKT2) 4 ARM-STROKES USING HANDS
7 CARP-3 GET+PLACE 2 STANCHIONS FROM STAR-BHD TO PLATFORM WITH BEI
RETURN TO STAR-BHD PF 2 (1 2 3)
9 CARP-3 GET+MOVE WITH BEND TORCH FROM STAR-BHD TO PLATFORM WITH E

561. SET-UP STAGING BRACKETS FOR (BETWEEN) TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BRACKETS ON 2 TANK
* ...STAGING PLATFORMS, BOARDS ARE SPREAD
* ...BETWEEN THE BRACKETS.
* THIS ASSEMBLY IS USED TO CONNECT THE TWO
* ...TANK STAGING PLATFORMS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM.
* STEPS:
* 1-6 REPRESENTS SETTING UP BRACKETS AT
* ...BR-1, BR-2, AND BR-3
* 7 REPRESENTS SFREADING BOARDS BETWEEN
* ...BR-1 AND BR-2; BR-2 AND BR-3
CARP-1 BEGINS AT PLFM1

1 CARP-1 GET+HOLD WITH BEND BRKT FROM PLFM1 TO CARP-1 F 3
2 CARP-1 LOOSEN NUT AT PLFH1 4 WRIST-TURNS USING HANDS F 3
3 CARP-1 GET+POSITION BRKT FROM CARP-1 TO BR-1 AND INSERT BOLT F 3
4 CARP-I FASTEN NUT AT BR-1 13 WRIST-TURNS USING HANDS F 3
5 CARP-1 FASTEN NUT AT BR-I 4 ARM-TURNS USING WRENCH-1 ASIDE TO CARP-1 F 3
6 CARP-1 WALK TO PLFM1 F 3
7 CARP-1 GET+MANEUVER 3 BOARBS AT BR-1 AND ALIGN RETURN TO PLFM1 WITH BEND F 6

562. SET-UP STAGING PLANKS FOR (BETWEEN) TANK STAGING PLATFORMS WITH HAMI
AT HID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN TWO
* ...TANK STAGING PLATFORMS
* 2 CARPERNTERS ARE NOT WORKING
* ...SIMULTANEOUSLY
CARP-1 BEGINS AT PLFMI

1 CARP-1 GET+MANEUVER WITH BEND BOARD AT CARP-2 RETURN TO PLFM1
2 CARP-2 GET+MANIFULATE WITH 1 STEP WITH BEND BOARD AT PLFM2
3 CARP-1 GET+PLACE NAILS FROM TOOLBOX-1 TO CARP-1
4 CARP-2 GET+PLACE NAILS FROM TOOLBOX-2 TO CARF-2
5 CARP-1 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-1 TO PLFM1 (O BOARD) WITH REND PF 3 (2 3 4 5 6 7)
6 CARP-2 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-2 TO PLFM2 (O BOARD) WITH BEND PF 3 (2 3 4 5 6 7)
7 CARP-1 FASTEN 3 NAILS AT PLFM1 16 STRIKES USING HAMMER-1 ASIDE T CARP-1 F 2
8 CARP-2 FASTEN 3 NAILS AT PLFM2 16 STRIKES USING HAMMER-2 ASIDE CARP-2 F 2

9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP
PER EA OFG: 1 31-JUL-81
* TORCH AND HOSE LOCATED AT MANIFOLD
* UNHOOK IS THE REVERSE OF HOOKUP
CARP4 BEGINS AT HOOK-UP

1 FASTEN HOSE TO MANIFOLD 4 SPINS USING FINGERS
2 FASTEN HOSE TO MANIFOLO 2 WRIST-STROKES USING WRENCH4 AND ASIDE

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK
PER EA OFG: 1 03-AUG-81
* HOOK-UP NOT INCLUDED
FITTER BEGINS AT JOB

1 LOOSEN 2 KNOBS ON TORCH AT JOB CLOSE 1 SPIN USING FINGERS
2 PRESS STRIKER AT TORCH FOR IGNITING AND CLEAR
3 PULL GOGGLES AT SELF OVER EYES
4 TURN KNOB AT TORCH AND ADJUST FLAME F 3
5 HOLD+PLACE TORCH ON TO JOB WITH BEND
6 FASTEN 2 KNOBS AT TORCH CLOSE 1 SPIN USING FINGERS
7 PULL GOGGLES AT SELF OFF EYES

582. TEAR DOWN STAGING PLANK FOR TANK STAGING PLATFORM WITH (PRYRAR) AND HAND AT HID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BELOW
* ...THE MAIN DECK. BOARDS ARE CONNECTED
* ...TO THE TANK STAGING PLATFORM AND THE
* ...EXISTING PERIMETER STAGING BY NAILS.
* 2 NAN OPERATION: (WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH.
* ...END OF THE BOARD, THEN PICK UP THE.
* ...BOARD AND PLACE IT ON A FILE ON THE
* ...TANK STAGING PLATFORM.
CARP-1 BEGINS AT STAR-BHD

1 CARP-1 PUSH AND LOCATE PRYBAR WITH 1 STEP AT STAR-BHD UNDER BOARD
2 CARP-1 LOOSEN 3 NAILS AT STAR-BHD 3 ARM-STROKES USING PRYBAR AND ASIDE TO STAR-BHD
3 CARP-1 LOOSEN BOARD WITH BEND AT STAR-BHD 3 ARM-STRONES USING HAND
4 CARP-1 GET+MANIPULATE WITH REND BOARD AT PLATFORM AND ADJUST RETU TO STAR-BHD

583. TEAR DOWN STAGING PLANK FOR (BETWEEN) TANK STAGING PLATFORM WITH PRYBAR) AND HAND AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BETWEEN
* ...THE TWO TANK STAGING PLATFORMS, THE
* ...BOARDS ARE CONNECTED TO THE PLATFORMS
* ...BY NAILS.
* 2 MAN OPERATION: (MORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH
* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON ONE
* ...OF THE TANK STAGING PLATFORMS.
CARP-1 BEGINS AT PLFM1

1 CARP-1 PUSH AND LOCATE PRYEIAR WITH 1 STEP AT PLFM1 (UNDER BOARD
2 CARP-1 LOOSEN 3 NAILS AT PLFM1 3 ARM-STROKES USING PRYEAR AND AS

3 CARP-1 LOOSEN BOARD WITH BEND AT PLFM1 3 ARM-STROKES USING HANDS
4 CARP-1 GET+MANIPULATE WITH BEND BOARD AT PLFM2 AND ADJUST RETURN PLFM1

584. TEAR DOWN STAGING BRACKETS ON TANK STAGING PLATFORM WITH WRENCH AT HID
TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. ALSO REMOVAL OF
* ...BOARDS THAT ARE SPREAD BETWEEN THE
* ...BRACKETS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM.
* STEPS:
* 1 REPRESENTS REMOVAL OF BOARDS BETWEEN
* ...BR-1 AND RR-2; BR-2 AND BR-3
* 2-5 REPRESENTS REMOVAL OF BRACKETS FROM
* ...BR-1, BR-2 AND BR-3, BRACKETS ARE
* ...PLACED ON A PILE ON THE PLATFORM.
CARP-1 BEGINS AT BR-1

1 CARP-1 GET+MANEUVER WITH BEND BOARD AT PLFM1. AND ADJUST RETURN TO BR-1 F 6
2 CARP-1 LOOSEN NUT AT BR-1 1 -ARM-STROKE USING WRENCH-1 AND HOLD F 3
3 CARP-1 HOLD+LOOSEN NUT AT BR-1 13 WRIST-TURNS USING WRENCH-1 ASIDE TO CARP-1 F 3
4 CARP-1 GET+PLACE WITH BEND BRKT FROM BR-1 TO PLFMI WITH BEND RETURN TO BR-1 WITHOUT BEND F 3
5 CARP-1 GET+PLACE NUT AND BOLT FROM CARP-1 TO TOOLBOX-1 F 3

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUD MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (10" PER CLIP) WITH 10% OVERUELD USING 6011 3/16 ELECTRODE OR COHFARABLE (7018 5/32)+

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) W STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD USI 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32),

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS, RATE PER 100 PIECES OF AHNDRAIL (AVG+ 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEHENTS.

1 WELD HORIZONTAL 1/4. FILLET WELD (5" PER CONNECTION) USING 6011 3/ ELECTRODE OR COMPARABLE (7018 5/32),

516. TRANSPORT AREIAL PLATFORM FOR SIDE SHELL (STAGING) WITH (CRANE) AT AN WAY CARPENTER
PER AERIAL-PLATFORM OFG: 4 18-MAR-S2
REPRESENTS ELAPSED TIME
* REPRESENTS MOVING AERIAL PLATFORM FROM A
* ...WAY TO A SECTION OF SIDE SHELL
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT PLATFORM FROM P-REST USING CRANE WITH 2-HOOK+SLIN TO AERIAL-PLATFORM POSITION+MANEUVER PF 2 (3)

521. 0(CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON SIDE SHELL AT ANY WAY
CARPENTER
PER LADDER OFG: 4 17-MAR-82
REPRESENTS ELAPSED TIHE
* REPRESENTS CARPENTERS CLIMBING UP AND
* ...DOWN LADDERS TO GET ON AND OFF
* ..STAGING AT OUTSIDE SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT BRKT-1 (12 RUNGS) PF 12 (1)
PF 12 (34)
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT BRKT-1 (12 RUNGS) PF 12 (1)
PF 12 (34)

529. TRANSPORT AERIAL PLATFORM FOR SIDE SHELL (STAGING) WITH CRANE AT ANY
WAY. CARPENTER
PER AERIAL PLATFORM OFG: 4 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS MOVING AERIAL PLATFORM
* ...FROM A SECTION OF THE SIDE SHELL
* ...TO A WAY,
C-OPER BEGINS AT CR-I

1 C-OPER TRANSPORT PLATFORM FROM AERIAL-PLATFORM USING CRANE TO P-REST
POSITION+MANEUVER RETURN TO CR-1

580. LOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATE
CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING MATERIAL ON AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:
* ...5 BRACKETS PER LEVEL,.
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
CARP-1 REGINS AT P-REST

1 CARP-1 GET+PLACE 15 BRKTS FROM BIN-1 TO BIN-1 (PILE UP BRKTS) F
15 (2 3 4 5 6)
2 C-OPER TRANSPORT 15 BRKTS FROM BIN-1 USING CRANE WITH HOOK+SLING
P-REST PLACE+ADJUST RETURN TO BIN-2
3 CARP-1 GET+PLACE 15 STAN FROM BIN-2 TO BIN-2 AND RETURN TO BD-PIL
WITHOUT BEND PF 15 (2 3 4 5 6)
4 C-OPER TRANSPORT 15 STANS FROM BIN-2 USING CRANE WITH HOOK+SLING
P-REST PLACE+ADJUST RETURN TO BD-PILE
5 CARP-1 GET+SLIDE WITH BEND 36 BOARDS FROM BD-PILE TO BD-PILE WITH
STEPS AND ADJUST (ON BOLSTERS) PF 2 (2 3 4 5 6) F 36
6 C-OPER TRANSPORT 36 BOARDS FROM BD-PILE USING CRANE WITH
2-HOOK+SLING TO P-REST PLACE+MANEUVER RETURN TO HR-PILE
7 CARP-1 GET+SLIDE 24 HANDRAIL AT HR-PILE AND ADJUST '(ON BOLSTERS
AND RETURN TO LDR-PILE WITHOUT BEND PF 24 (2 3 4 5 6)
8 C-OPER TRANSPORT 24 HANDRAIL FROM HR-PILE USING CRANE WITH
2-HOOK+SLING TO P-REST PLACE+ADJUST RETURN TO LDR-PILE
9 CARP-1 GET+SLIDE WITH BEND 5 LADRS FROM LDR-PILE TO LIIR-PILE WITH
STEPS AND ADJUST (ON BOLSTERS) PF 2 (2 3 4 5 6) F 5
10 C-OPER TRANSPORT 5 LADRS FROM LDR-PILE USING CRANE UITH 2
-HOOK+SLING TO P-REST PLACE+MANEUVER RETURN TO CR-1
11 CARP-1 GET+PLACE TOOLBOX-1 FROM BIN-1 TO P-REST WITH B
END+CLIMB-STEP
12 CARP-1 GET+PLACE TOOLBOX-2 FROM BIN-2 TO P-REST WITH B
END+CLIMB-STEP

581. UNLOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOUAL OF MATERIAL FROM AN
* ...ARIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS (IF STAGING:
* ...5 BRACKETS PER LEVELO
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT 15 HRKTS FROM P-REST USING CRANE WITH HOOK+SLING TO BIN-1 PLACE+ADJUST RETURN TO P-REST
2 CARP-1 GET+PLACE 15 BRKTS FROM BIN-1 TO BIN-1 (PUT INTO BIN) PF 15 (2 3 4 5 6)
3 C-OPER TRANSPORT 15 STANS FROM P-REST USING CRANE WITH HOOK+SLING TO BIN-2 PLACE+ADJUST RETURN TO P-REST
4 CARP-1 GET+PLACE 15 STANS FROM BIN-2 TO BIN-2 (PUT INTO BIN) RETURN TO RB-PILE WITHOUT BEND PF 15 { 2 3 4 5 6)
5 C-OPER TRANSPORT 36 BOARDS FROM P-REST USING CRANE WITH 2-HOOK+SLINE TO BD-PILE PLACE+MANEUVER (ONTO BOLSTERS) RETURN TO P-REST
6 CARP-1 GET+SLIDE WITH BEND 36 BOARDS FROM BD-PILE TO BD-PILE WITH 8 STEPS AND ADJUST (ONTO PILE) PF 2 (2 3 4 5 6) F 36
7 C-OPER TRANSPORT 24 HANDRAIL FROM P-REST USING CRANE WITH 2-HOOK+SLING TO HR-PILE PLACE+ADJUST RETURN TO P-REST
8 CARP-1 GET+SLIDE 24 HANDRAIL AT HR-PILE AND ADJUST (ON PILE) RETURN TO LDR-PILE WITHOUT BEND OF 24 (2 3 4 5 6)
9 C-OPER TRANSPORT 5 LADRS FROM P-REST USING CRANE WITH 2-HOOK+SLING TO LDR-PILE PLACE+MANEUVER (ONTO BOLSTERS) RETURN TO CR-1
10 CARP-1 GET+SLIDE WITH BEND 15 LADRS FROM LDR-PILE TO LDR-PILE WITH 5 STEPS AND ADJUST (ONTO PILE) PF 2 (2 3 4 5 6) F 5
11 CARP-1 GET+PLACE WITH BEND+CLIMB-STEP TOOLBOX1 FROM P-REST TO BIN-I
12 CARP-1 GET+PLACE WITH BEND+CLIMB-STEP TOOLBOX2 FROM P-REST TO BIN-2

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW)+ RATE IN ELAPSED MULT BY 6 TO OBTAIN TOTAL TIME,
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1) 4* .....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE ANIJ .....
* ...EXTINGUISH TORCH
* --TO, DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1 USE THE •.....
* ...FORMULA: FREQ = 1+ [(N-1) X .233 . . . .
* ....WHERE 'N' = THE NUMBER OF CUTS(BURNS)

Combined sub-operation elements

9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK

517. SET-UP (STAGING CLIP) ON SIDE SHELL WITH HAMMER AT ANY WAY CARPENTE
PER STAGING CLIP OFG: 3 16-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ...PLATFORM,
* WELDING OF THE CLIP IS DONE IN A
* ...SEFERATE SUB OPERATION,
CARP-1 BEGINS AT BRKT-2

1 CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1
2 CARP-1 LOOSEN PAINT ON SIDE SHELL AT BRKT-1 4 STRIKES USING HAMM ASIDE TO CARP-1
3 CARP-1 GET+PLACE SCLIP FROM TOOLBOX-2 TO BRKT-1 (TACKING UPON PLACEMENT)

518. SET-UP STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY CARPENTER
PER STAGING BRACKET OFG: 3 16-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A BRACKET ON THE
* ...SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ...PLATFORHO
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PICKUP NUT AND BOLT FROM TOOLBOX-1 TO SELF (IN POCKET)
2 CARP-1 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BRKT-1
3 CARP-1 PLACE BOLT FROM CARP-1 TO BRKT-1 AND INSERT
4 CARP-1 FASTEN NUT AT BRKT-1 13 WRIST-TURNS USING HANDS
5 CARP-I FASTEN NUT AT BRKT-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1

519. SET-LIP STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY MAY CARPENTER
PER STAGING PLANK OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING BOARDS UP BETWEEN TWO
* ...STAGING BRACKETS,
* CARPENTERS ARE WORKING ON AN AREIAL
* ...PLATFORH AND THEY ARE WORKING
* ...SIMULTANEOUSLY,
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE BOARDS FROM BD-PILE TO ED-PILE WITH 8 STEPS (ON BOLSTERS) AND ADJUST
2 CARP-1 AND CARP 2 GET+MANEUVER BOARDS FROM BD-PILE TO BRKT-1 SPANNING BRKT2 AND ALIGN

520. SET-UP (ACCESS) LADDER ON SIDE SHELL WITH HAND AT ANY WAY CARPENT
PER ACCESS LAKIUER OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP A LADDER ON THE
* ...SIDE SHELL*.
* CARPENTERS ARE WORKING ON AN AERIAL.
* ...PLATFORM, BUT ARE NOT &JORKING.
* ...SIMULTANEOUSLY.
* WELDING DONE IN A SEPERATE
* ...SUB OPERATION,
CARP-3 BEGINS AT ED-PILE

1 CARP-3 GET+SLIDE LADR FROM LDR-PILE TO LDR-PILE WITH 5 STEPS (ROLSTER) AND ADJUST
2 CARP-1 GET+PLACE LADR FROM LDR-PILE TO BRKT-1
3 CARP-2 LOOSEN 4 PAINT ON SIDE SHELL AT BRKT-1 4 STRIKES USING HAMMER-2 ASIDE TO CARP-2
4 CARP-2 GET+PLACE 4 LCLIPS FROM TOOLBOX-2 TO BRKT-I (TACKING UI PLACEMENT) PF 4 (6)

522. SET-UP STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STANCHION OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN STAGING
* ...EIRACKETS.
* TWO CARPENTERS ARE ON THE STAGING? ONE
* ...REMAINS ON THE AERIAL PLATFORM.
CARP-3 BEGINS AT LDR-PILE

1 CARP-3 GET+PLACE STAN FROM BIN-2 TO BRKT-1
2 CARP-1 GET+PLACE WITH BEND STAN FROM BRKT-1 TO BRKT-1 AND INSE

S23. SET-UP HANDRAIL FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER HANBRAIL OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP HANDRAIL AT THE
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGINGS ONE
* ...REMAINS ON THE AERIAL PLATFORM.
* WELDING IS DONE IN A SEPERATE SUB
* ...OPERATION,
CARP-3 BEGINS AT BIN-2

1 CARP-3 GET+SLIDE HANDRAIL FROM HR-PILE TO CARP-1
2 CARP-1 GET+SLIDE HANDRAIL FROM BRKT-1 TO BRKT-2 AND ALIGN (THRU 2 STANCHION SLEEVES) PF 2 (4 5 6)

524. TEAR DOWN HANDRAIL ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
PER HANDRAIL OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON THE
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING? ONE
* ...REHAINS ON THE AERIAL PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* ...SINULTANEOUSLY.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME 426 M (BURN OFF HANDRAIL)
3 CARP-2 GET+SLIDE HANDRAIL FROM BRKT-2 TO CARP-2
4 CARP-2 HOLD+MOVE HANDRAIL FROM CARP-2 TO CARP-3
5 CARP-3 GET+PLACE HANDRAIL FROM BRKT-2 TO HR-PILE

525. TEAR DOWN STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STANCHION OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING? ONE
* ...REHAINS ON AERIAL PLATFORM.
* THE CARPENTERS DO NOT WORK
* ...SIMULTANEOUSLY,
CARP-3 BEGINS AT BRKT-1

1 CARP-1 LOOSEN STAN AT BRKT-1 4 ARM-STROKES USING HANDS
2 CARP-1 HOLD+HOVE STAN FROM CARP-1 TO CARP-3
3 CARP-3 GET+PLACE STAN FROM BRKT-1 TO BIN-2

526. TEAR DOWN STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPEI
PER STAGING PLANK OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON THE
* ...SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
* THE CARPENTERS ARE WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT BRKT-1

1 CARP-I AND CARP 2 GET+MANIPULATE BOARD FROM BRKT-1 (CARP 2 AT BRKT2) TO BD-PILE

527. TEAR DOWN (ACCESS) LADDER ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTERD
PER LADDER OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF LADDER FROM SIDE
* ...SHELL,
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-I PTIME 0.47 M (BURN OFF 4 CLIPS) F 4
3 CARP-1 GET+PLACE 4 LCLIPS FROM BRKT-I TO TOOLBOX-2 PF 4 (1 2 3)
4 CARP-2 GET+POSITION LADR FROM BRKT-1 TO LDR-PILE

528. TEAR DOWN STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY
CARPENTER
PER STAGING BRACKET OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS
* ...FROM SIDE SHELL.
* CARPENTERS ARE WORKING ON AN
* ...AERIAL PLATFORM.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOLD
2 CARP-1 HOLD+LOOSEN NUT AT BRKT-1 13 WRIST-STROKES USING WRENCH-1
ASIDE TO CARP-1
3 CARP-1 GET+REMOVE BOLT FROH BRKT-1 TO CARP-1
4 CARP-1 PLACE NUT AND BOLT FROM BRKT-1 TO TOOLBOX-1

530. TEAR DOWN (STAGING CLIP) ON SIDE SHELL WITH TORCH AT ANY WAY CARPEN
PER STAGING CLIP OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STAGING CLIPS FROM
* ...THE SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* PLATFORM.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 TO BRKT-1
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME .55 M (BURN OFF STAGING C
3 CARP-1 GET+PLACE SCLIP FROM BRKT-1 TO TOOLBOX-2

446. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY PLATEN (SHOP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF HANDRAIL (AUG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELll HORIZONTAL 1/4' FILLET WELD (5′ PER CONNECTION) USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

454. (CLIMB UP AND DOWN) MOVE OPERATOR (ON PIPE STAGING) FOR SIDE SHELL AT ANY WAYS CARPENTER
PER PIPE STAGING SECTION (16′ LONG) OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER CLIMBING UP AND
* ...DOWN END PIECE OF PIPE STAGING.
* AVERAGE NUMBER OF STEPS NEEDED = 6.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 SLIDE (CLIMB-UP) LADDER (END PIECE) AT END-PC-1 (6 STEPS.) PF6 (1) PF 6 (34)
2 CARP-1 PULL (CLIME-DOWN) LADDER (END PIECE) AT END-PC-1 (6 STEPS.) PF6 (1) PF 6 (34)

456. TRANSPORT STAGING″ PLANK FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OF(3: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...BD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BD-PILE AND
* ...FROM BD-PILE TO SIDE SHELL ARE
* ...AUERAGE DISTANCES FROM, WAY 740′X120′
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM BD-PILE USING CRANE WITH HOOK+SLING TO SIDE-SHELL (ON PIPE STAGING SECTION (16' LONG)) PLACE+MANEUVER ETURN TO CR-1 F 1 / 4

459. TRANSPORT STANCHION FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CR
AT ANY WAYS CARPENTER
PER STANCHION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS TRANSPORTING STANCHION FROM
* ...BIN-2 TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BIN-2 AND.
* ...FROH BIN-2 TO SIDE SHELL ARE AVERAGE
* ...DISTANCES FROM A WAY 740'X120'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SLING TO SIDE-SH
(ON PIPE STAGING) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

461, TRANSPORT HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRA
AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME,
* REPRESENTS TRANSPORTING HANDRAIL FROM
* ...HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROll HR-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO
SIDE-SHELL (ON PIPE STAGING) PLACE+ADJUST RETURN TO CR-1 F 1 /

463. TRANSPORT STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS)
WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...RD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BD-PILE AND
* ...FROM BD-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM BD-PILE USING CRANE WITH HOOK+SLING TO
SIDE-SHELL (BTWN 2 PIPE STAGING SECTIONS) PLACE+MANEUVER RETURN

465, TRANSPORT HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH
(TOWER CRANE) AT ANY WAYS CARPENTER
PER HANDRAIL OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME -
* REPRESENTS TRANSPORTING HANDRAIL FROM
* ...HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER REGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO
SIDE-SHELL; (BTWN 2 PIPE STAGING SECTIONS) PLACE+ADUJST RETURN TO

476. REMOVE HANDRAIL ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
PER HANDRAIL OFG: 3 16-FEE-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM
* ...MATERIAL PILE AT WAY TO HANDRAIL PILE
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MAIL-PILE

I CARP-3 GET+SLIDE WITH BEND HANDRAIL (ONTO BOLSTER) AT MAIL-PI
2 C-OPER TRANSPORT HANDRAIL FROM MAIL-PILE USING CRANE WITH HOOK+S
TO HR-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / 6

477. REMOVE STANCHION ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
PER STANCHION OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* ...MATERIAL PILE AT WAY TO BIN-2
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM MATL-PILE TO MATL-PILE (S
UP FOR TRANSPORTING)
2 C-OPER TRANSPORT STAN FROM MATL-FILE USING CRANE WITH HOOK+SLIN
BIN-2 PLACE+ADJUST RETURN TO CR-1 F 1 / 6

478. REMOVE STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE)
AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS FROM PIPE
* ...STAGING AT SIDE SHELL TO BOARD PILE
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ... WAY 740'X120'.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
* TOWER CRANE IS USED FOR REMOVAL,
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT BOARD FROM SIDE-SHELL USING CRANE WITH HOOK+S1.ING
TO BD-PILE PLACE+MANEUVER RETURN TO CR-1 F 1 / 4

479. REMOVE BRACE ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
PER BRACE OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BRACES FROM MATERIAL
* ...PILE AT WAY TO BRACE PILE.
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF BRACES IN LIFT = 6.
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+SLIDE WITH BEND BRACE (ONTO BOLSTER) AT MATL-PILE
2 C-OPER TRANSPORT BRACE FROM MATL-PILE USING CRANE WITH HOOK+SLING TO
BRACE-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / 6

480. REMOVE END RAIL (END PIECE) ON (MATERIAL PILE) WITH (TOWER CRANE)
ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 f6-FEEf-82
REFPRESENTS ELAPSED TIME
X REPRESENTS REMOVING END PIECES FROM
X ...MATERIAL PILE AT WAY TO END-PC-RACK.
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X 120'.
* MAXIMUM NUMBER OF END PIECES IN LIFT = 3
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+SLIDE WITH BEND END-PIECE (ONTO BOLSTER) AT MATL-P
2 C-OPER TRANSPORT END-PIECE FROM MATL-PILE USING CRANE WITH
HOOK+SLING TO END-PC-RACK PLACE+MANEUVER RETURN TO CR-1 F 1 /
3 CARP-3 GET+MANIPULATE WITH BEND END-PIECE AT END-PC-RACK AND AL

486. TRANSPORT END RAIL (END PIECE) ON (END-PIECE RACK) WITH (TOWER CRA
AT ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING END PIECES FROM
* ...END-PC-RACK TO MATL-PILE.
* DISTANCES FROM CRANE REST TO END-PC-RACK
* ...AND FROM END-PC-RACK TO MATL-PILE ARE
* ...AVERAGE DISTANCES ON A WAY 740'X 120'
* MAXIMUM NUMBER END-PCS IN LIFT = 3
* ...THERE ARE 2 LIFTS DONE PER SECTION OF
* ...PIPE STAGING (16'LONG).
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT END-PIECE FROM END-PC-RACK USING CRANE WITH
HOOK+SLING TO MATL-PILE PLACE+ADJUST RETURN TO END-PC-RACK F 1
2 C-OPER TRANSPORT END-PIECE FROM.END-PC-RACK USING CRANE WITH
HOON+SLING TO MATL-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / 6

1320 COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW)* RATE IN ELAPSED TIME.
MULT BY 6 TO OBTAIN TOTAL TIME,
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* ...(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE . . ....
* ...FORMULA: FREQ = 1+ [(N-1) X .23] ....
* ..WHERE 'N' = THE NUMBER OF CUTS(BURNS)

Comibined sub-operation elements

9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK

455. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT SIDE-SHELL

1 CARP-3 GET+SLIDE BOARD AT BD-PILE AND ADJUST (ON BOLSTERS)

457. SET UP STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT A
WAYS CARPENTER
PER STAGING FLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS CARPENTERS SPREADING BOARDS
* ...ON PIPE STAGING SECTION (l6'LONG).
* . ..CARPENTERS HAVE TO CLIMB UP AND DOWN
* ...THE PIPE STAGING TO SPREAD THE BOARDS
* ...(SEE SEPARATE ANAYLSIS FOR CLIMBING)
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT
SIDE-SHELL AND ALIGN

458. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPE
PER STANCHION OFG: 3 12-FER-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED.
CARP-3 BEGINS AT BD-PILE

1 CARP-3 GET+PLACE STAN FROM BIN-2 TO BIN-2

460, SET UP STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP STANCHIONS ON PIPE
* ...STAGING.
* ...CARPENTERS INSTALL SIMULTANEOUSLY.
* ...CARPENTERS ARE STILL ON PIPE STAGING
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+PLACE WITH BEND STAN FROM END-PC-2 TO END-PC-3 AND INSERT (INTO END PIECE)
2 CARP-2 GET+PLACE WITH BEND WITH 3 STEPS STAN FROM END-PC-2 TO END-PC-3 AND INSERT (INTO END PIECE) SIMO
3 CARP-1 GET+PLACE 2 BOLTS FROH CARP-1 TO END-PC-1 WITH KNEEL AND INSERT BOLT (INTO STANCHION) PF 2 (6 7)
4 CARP-2 GET+PLACE 2 BOLTS FROM CARP-2 TO END-PC-3 WITH KNEEL AND INSERT BOLT (INTO STANCHION) PF 2 (6 7) SIMO
5 CARP-1 FASTEN 2 NUTS AT END-PC-l 13 WRIST-TURNS USING HANDS
6 CARP-1 FASTEN 2 NUTS AT END-PC-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1
7 CARP-2 FASTEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING HANDS SIMO
8 CARP-2 FASTEN 2 NUTS AT END-PC-3 4 ARM-STROKES USING WRENCH-2 ASIDE TO CARP-2 SIMO

462. SET UP HANDRAIL ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEE-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* ...HANDRAIL THRU EYELETS IN STANCHIONS.
* ...CARPENTERS DON'T WORK SIMULTANEOUSLY.
*...WELDING DONE IN A SEPARATE SUB-OP.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT END-PC-3 AND ALIGN (THRU 2 STANCHION EYELETS) PF 2 (4 5 6 7)
2 CARP-2 GET+SLIDE WITH BEND HANDRAIL AT END-PC-1 AND ALIGN (THRU 2 STANCHION EYELETS) PF 2 (4 5 6 7)

464. SET UP STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) W
HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEE-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS SPREADING BOARDS
* ...BETWEEN PIPE STAGING SECTIONS.
* ...THERE IS A 16’ GAP BETWEEN SECTIONS.
* ...CARPENTERS HAVE TO CLIMB UP AND DOWN
* ...THE PIPE STAGING TO SPREAD THE BOARDS
* ...(SEE SEPARATE ANAYLSIS FOR CLIMBING)
CARP-1 BEGINS AT SECTION-1

1 CARP-1 AND CARP 2 GET+SLIIDE WITH BEND WITH 1 STEP BOARD AT
SIDE-SHELL AND ALIGN

466. SET UP HANDRIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH H
AT ANY WAYS CARPENTER
PER SECTION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* ...HANIIRAIL ON EXISTING HANDRAIL.
*...CARPENTERS DON’T WORK SIMULTANEOUSLY.
* ...WELDING DONE IN A SEPARATE SUB-OF.
CARP-1 BEGINS AT SECTION-1

1 CARP-1 GET+PLACE WITH BEND HANDRAIL FROM SECTION-1 TO SECTION-2 A
RETURN TO SECTION-1 (TACKING DONE UPON PLACEMENT) PF 2 (6)
2 CARP-2 GET+PLACE WITH BEND HANDRAIL FROM SECTION-2 TO SECTION-1 A
RETURN TO SECTION-2 (TACKING DONE UPON PLACEMENT) PF 2 (6)

469. TEAR DOWN HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WTTH TORCH AT ANY WAYS CARPENTERS
PER SECTION OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* ...STAGING (BTWN 2 SECTIONS)+ A TORCH IS
* ...USED TO BURN THE HANDRAIL OFF. THE
* ...HANDRAIL IS THROWN TO THE MATERIAL
* ...PILE. CARPENTERS REMOVE 2 HANDRAIL
* ...PIECES BEFORE MOVING TO NEXT SECTION.
CARP-1 BEGINS AT SECTION-1

1 CARP-1 PULL TORCH AT SECTION-1
2 CARP-I OPERATE TORCH AT SECTION-1 PTIME 0426 H (BURN OFF HANDRAIL: 2 CONNECTIONS PER HANDRAIL) F 4
3 CARP-2 GET+HOLD HANDRAIL FROM SECTION-2 TO CARP-2 F 2 SIMO
4 CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO MATL-PILE F 2
5 CARP-1 PULL TORCH AT SECTION-2

470. TEAR DOWN HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* ...STAGING (BTWN 2 STANCHIONS). THE
* ...HANDRAIL IS THROWN TO THE MATERIAL
* ...PILE, CARPENTERS REMOVE 2 HANDRAIL
* ...PIECES BEFORE MIOVING TO NEXT SECTION,
CARP-1 BEGINS AT END-PC-l

1 CARP-1 GET+SLIDE HANDRAIL AT END-PC-3 (OUT OF 2 STANCHION SLEEVES) AND ADJUST PF 2 (4 5 6 7)
2 CARP-1 HOLO+THROW HANDRAIL FROM CARP-I TO MATL-PILE
3 CARP-2 GET+SLIDE,HANDRAIL AT END-PC-1 (OUT OF 2 STANCHION SLEEVES) AND ADJUST PF 2 (4 5 6 7)
4 CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO HATL-PILE

471. TEAR DOWN STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT A
WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION ON
* ...SECTION OF PIPE STAGING (16'LONG).
* ...CARPENTERS WORK SIMULTANEOUSLY.
* ...STANCHIONS ARE THROWN TO MATERIAL
* ...PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 LOOSEN WITH KNEEL 2 NUTS AT END-PC-l 1 ARM-STROKE USING WRENCH-1 AND HOLD
2 CARP-1 HOLD+LOOSEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING WRENCH ASIDE TO CARP-1
3 CARP-2 LOOSEN WITH KNEEL 2 NUTS AT END-PC-3 1 ARM-STROKE USING WRENCH-2 AND HOLD SIMO
4 CARP-2 HOLD+LOOSEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING WRENCH ASIDE TO CARP-2 SIMO
5 CARP-1 GET+REMOVE 2 BOLTS FROM END-PC-1 TO CARP-1 F 2
6 CARP-2 GET+REMOVE 2 BOLTS FROM END-PC-3 TO CARP-2 F 2 SIMO
7 CARP-1 THROW 2 NUTS AND BOLTS FROM CARP-1 TO MATL-PILE WITHOUT BE
8 CARP-2 THROW 2 NUTS AND BOLTS FROM CARP-2 TO MATL-PILE WITHOUT BE SIMO
9 CARP-1 GET+THROW STAN FROM END-PC-1 TO MATL-PILE WITHOUT BEND
10 CARP-2 GET+THROW STAN FROM END-PC-3 TO MATL-PILE WITHOUT BEND SI

472. TEAR DOWN STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS
WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS BETWEEN 2
* ...PIPE STAGING SECTIONS. THERE IS A 16'
* ...GAP BETWEEN SECTIONS. BOARDS ARE
* ...STACKED SO THE CRANE CAN TRANSPORT
* ...THEH, CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT SECTION-1

1 CARP-1 AND CARP 2 GET+HANIPULATE. WITH BEND WITH 1 STEP BOARD AT SECTION-1 (STACK BOARDS)

473. TEAR DOWN STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON PIPE
* ...STAGING SECTION (16'LONG). BOARDS ARE
* ...STACKED SO THE CRANE CAN TRANSPORT
* ...THEM CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+MAINPULATE WITH BEND WITH 1 STEP BOARD AT END-PC-l (STACK BOARDS)

474. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* ...BRANCES ON PIPE STAGING (2ND LEVEL),
* ...END PIECES ARE BOLTED TO END PIECES
* ...ON 1ST LEVEL, BRACES ARE HELD ON BY A
* ...LOCKING PIN. CARPENTERS WORK
* ...SIMULTANEOUSLY. CARPENTER-1 HANDLES
* ...REMOVAL AT END-PC-1 AND END-PC-2.
* ...MATERIAL IS THROWN OR PLACED AT THE
* ...MATERIAL PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE (REMOVE) WITH CLIMB 2 BRACES AT END-pc-2 (ALSO AT. END-PC-1) AND ADJUST (LOCKING PIN) F 2
2 CARP-1 GET+PLACE WITH DESCEND 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3) PF4 (6)
3 CARP-2 AND CARP 1 GET+SLIDE (REMOVE) WITH CLIMB 2 BRACES AT END-PC-2 (ALSO AT. END-PC-3) AND ADJUST (LOCKING PIN) F 2
4 CARP-2 GET+PLACE WITH DESCEND 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3) PF4 (6)
5 CARP-1 LOOSEN 2 NUTS AT END-PC-1 1 ARM-STROKE USING WRENCH-1 AND HOLD (ALSO AT. END-PC-2) F 2
6 CARP-1 HOLD+LOOSEN 2 NUTS AT END-PC-l 13 WRIST-TURNS USING WRENCH-1 ASIDE TO CARP-1 (ALSO AT. END-PC-2) F 2
7 CARP-2 LOOSEN 2 NUTS AT END-PC-3 1 ARM-STROKE USING WRENCH-2 AND HOLD SIMO
8 CARP-2 HOLD+LOOSEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING WRENCH-2 ASIDE TO CARP-2 SIMO
9 CARP-1 GET+REMOVE 2 BOLTS FROM END-PC-2 TO CARP-1 (ALSO AT.

END-PC-1) F 4
10 CARP-2 GET+REMOVE 2 BOLTS FROM END-PC-3 TO CARP-2 F 2 SIMO
11 CARP-1 HOLD+THROW 4 NUTS AND BOLTS FROM CARP-1 TO MATL-PILE
12 CARP-2 HOLD+THROW 2 NUTS AND BOLTS FROM CARP-2 TO MATL-PILE SIM
13 CARP-1 GET+PLACE END-PIECE FROM END-PC-1 TO MATL-PILE (ALSO FR
END-PC-2) RETURN TO END-PC-1 F 2
14 CARP-2 GET+PLACE END-PIECE FROM END-PC-3 TO MATL-PILE RETURN TC
END-PC-3 SIMO

475. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAN
ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* ...BRACES ON PIPE STAGING (1ST LEVEL),
* ...RRACES ARE HELD ON BY A LOCKING PIN
* ...CARPENTERS WORK SIMULTANEOUSLY.
* ...CARPENTER-I HANDLES REMOVAL AT
* ...END-PC-l AND END-PC-2, MATERIAL IS
* ...THROWN OR PLACED AT THE MATERIAL
* ...PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE (REMOVE) 2 BRACES AT END-PC-2 (AL
AT, END-PC-1) AND ADJUST (LOCKING PIN) F 2
2 CARP-1 GET+PLACE 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3) F
(6)
3 CARP-2 AND CARP 1 GET+SLIDE (REMOVE) 2 BRACES AT END-PC-2 (AL
AT. END-PC-3) AND ADJUST (LOCKING PIN) F 2
4 CARP-2 GET+PLACE 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3)
(6)
5 CARP-1 GET+PLACE END-PIECE FROM END-PC-1 TO MATL-PILE (ALSO FRO
END-PC-2) RETURN TO END-PC-1 F 2
6 CARP-2 GET+PLACE END-PIECE FROM END-PC-3 TO MATL-PILE RETURN TO
END-PC-3 SIMO

487. MAKE READY END RAIL (END PIECE) FOR (TRANSPORTING) AT ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING END PIECES ON BOLSTER
* ...S0 THAT CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT END-PC-RACK

1 CARP-3 GET+PLACE END-PIECE FROM END-PC-RACK TO END-PC-RACK WITH BEND

4880 SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND AT ANY WAYS CARPENTER
PER SECTION (16′ LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP 1ST LEVEL OF A 16′
* ...LONG SECTION OF PIPE STAGING. SECTION
* ...INCLUDES 3 END PIECES AND 8 BRACES
* ...WHICH ARE HELD IN PLACE BY A LOCKING
* ...PIN.
* CARP-1 AND CARP-2 ARE WORKING
* ...SIMULTANEOUSLY IN PUTTING UP THE END
* ...PIECES AND BRACES.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+PLACE ENF-PIECE FROM MATL-PILE TO END-PC-1
2 CARP-2 GET+PLACE END-PIECE FROM MATL-PILE TO END-PC-2 SIMO
3 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PILE
4 CARP-1 AND CARP 2 GET+SLIDE WITH BEND 2 BRACES AT END-PC-2 (ALSO AT+ END-PC-l.) AND ADJUST (LOCKING PIN) F 4
5 CARP-1 GET+PLACE END-PIECE FROM MATL-PILE TO END-PC-3
6 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PILE
7 CARP-1 AND CARP 2 GET+SLIDE WITH BEND 2 RRACES AT END-PC-2 (ALSO AT. END-PC-3.) AND ADJUST (LOCKING PIN) F 4

489. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENC
ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPESENTS ELAPSED TIME
* REPRESENTS SETTING UP 2ND LEVEL OF A 16'
* ...LONG SECTION OF PIPE STAGING. SECTION
* . ..INCLUDES 3 END PIECES AND 8 BRACES
* ...WHICH ARE HELD IN PLACE BY A LOCKING
* ...PIN. END PIECES ARE BOLTED TO 1ST
* ...LEVEL END PIECES.
* CARP-1 AND CARP-2 ARE WORKING
* ...SIMULTANEOUSLY IN PUTTING UP THE END
* ...PIECES AND BRACES,
CARP-1 BEGINS AT END-PC-l

1 CARP-1 GET+MANIPULATE WITH BEND WITH 2 STEPS (FROM MATL PILE)
END-PIECE AT END-PC-l AND ALIGN
2 CARP-2 GET+MANIPULATE WITH BEND WITH 2 STEPS (FROM MATL PILE)
END-PIECE AT END-PC-2 AND ALIGN SIMO
3 CARP-1 GET+PLACE 2 BOLTS FROM TOOLBOX-1 TO END-PC-l AND INSERT
(6 7)
4 CARP-2 GET+PLACE 2 BOLTS FROM TOOLBOX-1 TO END-PC-2 AND INSERT
(67) SIMO
5 CARP-1 FASTEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING HANDS
5 CARP-1 FASTEN 2 NUTS AT END-PC-l 4 ARM-STROKES USING WRENCH-1 A
ASIDE TO CARP-1
7 CARP-2 FASTEN 2 NUTS AT END-PC-2 13 WRIST-TURNS USING HANDS SIM
8 CARP-2 FASTEN 2 NUTS AT END-PC-2 4 ARM-STROKES USING WRENCH-2 A
TO CARP-2 SIMO
9 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PlLE
10 CARP-1 AND CARP 2 GET+SLIDE WITH CLIMB 2 RRACES AT END-PC-2 (
AT, END-PC-1.) AND ADJUST (LOCKING PIN) F 4
11 CARP-1 GET+MANIPULATE WITH DESCEND END-PIECE (FROM MATL PILE
END-PC-3 AND ALIGN
12 CARP-1 GET+PLACE 2 BOLTS FROM CARP-1 TO END-PC-3 AND INSERT PF
6 7)
13 CARP-1 FASTEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING HANDS
14 CARP-1 FASTEN 2 NUTS AT END-PC-3 4 ARM-STROKES USING WRENCH-1
TO CARP-1
15 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PILE
16 CARP-1 AND CARP 2 GET+SLIDE WITH CLIMB 2 RRACES AT END-PC-2 (
AT+ END-PC-3+) AND ADJUST (LOCKING PIN) F 4

SECTION 4
STANDARD TIME CALCULATION

4.1 TITLE SHEETS

SET-UP AND TEAR DOWN BRACKET STAGING MID TANKS AND VOIDS CAR

Titlesheet Orgnization List

Join

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 200 CLIPS. RATE INCLUDES MANUAL ELEMENTS,

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLUDES MANUAL ELEMENTS.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

Move

378. TRANSPORT STAGING BRACKET WITH (GROVE CRANE) AT TANK (OR WAY) CARPENTER REPRESENTS ELAPSED TIME

381. TRANSPORT LADDERS WITH (GROVE CRANE) AT TANK CARPENTER REPRESENTS ELAPSED TIME

384. POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMHER (AND LADDER CLIPS) AT TANK CARPENTER
REPRESENTS ELAPSED TIME

387. TRANSPORT STAGING PLANK WITH (GROVE CRANE) AT TANK CARPENTER REPRESENTS ELAPSED TIME

392 . TRANSPORT STANCHION WITH (GROVE CRANE) AT TANK CARPENTER REPRESENTS ELAPSED TIME

395. TRANSPORT HANDRAIL WITH (GROVE CRANE) AT TANK CARPENTER REPRESENTS ELAPSED TIME

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TA
AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOID
CARPENTER
REPRESENTS ELAPSED TIME

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOI
CARPENTER
REPRESENTS ELAPSED TIME

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS A
VOIDS CARPENTER
REPRESENTS ELAPSED TIME

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VO
CARPENTER
REPRESENTS ELAPSED TIME

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
REPRESENTS ELAPSED TIME

412. REMOWE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
REPRESENTS ELAPSED TIME

432. (WALD WP OR DOWN) MOWE OPERATOR (ON INCLINED STAIRS) ON BWLKHEAD AT
TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

OPerate

132. COMBINED SWB-OP

HWOK-WP/WNHOOK AND IGNITE/EXTINGWISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW)+ RATE IN ELAPSED TIM

WLT BY 6 TO OBTAIN TOTAL TIME.

Prepare

376. SET-UP (STAGING CLIP) ON BWLKHEAD WITH HAMMER (AND STEEL-TAPE) AT TA
CARPENTER

REPRESENTS ELAPSED TIME

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

379. SET-WP STAGING BRACKETS ON BWLKHEAD WITH WRENCH AT TANK CARPENTER
REPRESENTS ELAPSED TIME

380. MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

382. SET-WP LADDER ON BWLKHEAD (AT BRACKET LOCATION) WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

383. SET-WP (ACCESS) LADDER ON BWLKHEAD WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

385. POSITION (SECWRE) (ACCESS) LADDER FOR BRACKET STAGING WITH PLIER (AND WIRE ROPE) AT TANK CARPENTER
REPRESENTS ELAPSED TIME

386. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

388. SET-WP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

389. SET-WP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

390. SET-WP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

391. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

393. SET-WP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

394. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

STANDARD TIME CALCULATION

396. SET-WP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSEW TIME

397 . SET-WP HANDRAIL (END PIECES) ON HANDRAIL (AND BWLKHEAD) WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

398 . TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH AT (CENTER) MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

399 、 TEAR DOWN HANDRAIL ON BWLKHEAD WITH TORCH (AND WINCH) AT (WING) TANK AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

400 、 TEAR DOWN STANCHION ON BWLKHEAD WITH HAND AT (CENTER) MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

402 、 TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT A TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BWLKHEAII WITH TORCH (AND WINC AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

405 、 TEAR DOWN LADDER (AND WIRE ROPE) ON BULKHEAD WITH PLIER (AND WINCH) ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

406. TEAR IIOWN STAGING BRACKET ON BWLKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

SECTION 4
STANDARD TIME CALCWLATION

4.1 TITLE SHEETS

SET-UP AND TEAR DOWN BRACKET STAGING (WING) TANKS AND VOIDS

Titlesheet Orgnization List

Join
---

435 . WELD STAGING BRACKET (CLIP) ON BWLKHEAD (OR ANY STRWCT[JRE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQWIREMENTS. RATE PER 100 CLIPS. RATE INCLWDES MANWAL ELEMENTS.

438. WELD LADDER (CLIP) (SECWRES LADDER) ON BULKHEAD (OR ANY STRWCTtJRE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDI?4G
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLWRES MANWAL ELEMENTS,

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQWIREMENTS RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLWDES HANWAL ELEMENTS.

Move
---

404. (CLIMB WP AND KIOWN) MOVE OPERATOR (ON LADDER) ON BWLKHEAD AT ANY TANKS AND voIDs CARPENTER
REPRESENTS ELAPSED TIME

407 . REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDE CARPENTER
REPRESENTS ELAPSED TIME

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS *AND* WOIJIS CARPENTER
REPRESENTS ELAPSED TIME

410. REMOVE STAGING PLANK ON (BOARD FILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND WOIDS
CARPENTER
REPRESENTS ELAPSED TIME

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
REPRESENTS ELAPSED TIME

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BWLKHEAD AT
TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSEW TIME

563 . TRANSPORT STAGING BRACKET WITH (TOWER CRANE) AT (WING) TANKS AND VOI
CARPENTER
REPRESENTS ELAPSED TIME

564. TRANSPORT LADDER WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPEN
REPRESENTS ELAPSED TIME

565. TRANSPORT STAGING PLANK WITH (TOUER CRANE) AT (WING) TANKS AND VODIS
CARPENTER
REPRESENTS ELAPSED TIME

566. TRANSPORT STANCHION WITH (TOUER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
REPRESENTS ELAPSED TIME

567. TRANSPORT HANDRAIL WITH (TOUER CRANE) AT (WING) TANKS AND VODIS
CARPENTER
REPRESENTS ELAPSED TIME

Operete
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132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREDJ SIZE = 6 (3 CARPS AROVE DECK AND 3 BELOW). RATE IN ELAPSED TIME

ULT BY 6 TO OBTAIN TOTAL TIME.

Prepare
---

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TA
CARPENTER

STANDARD TIME CALCULATION

REPRESENTS ELAPSED TIME

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
REPRESENTS ELAPSED TIME

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

384., POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDER CLIPS) AT TANK CARPENTER
REPRESENTS ELAPSED TIME

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

394. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

397. SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND AT TANK CARPENTER
REPRESENTS ELAPSED TIME

399, TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

401. TEAR DOWN STANCHION ON BWLKHEAW WITH HAND (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT ANY TANKS AND VODE CARPENTER
REPRESENTS ELAPSED TIME

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BWLKHEAD WITH TORCH (AND WINCH) AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

406. TEAR DOWN STAGING BRACKET ON BULLKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

426. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH-HAND AT ANY WAYS

CARPENTER
REPRESENTS ELAPSED TIME

427 . MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

428 . MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS
CARPENTER
REPRESENTS ELAPSED TIME

429. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPEN
REPRESENTS ELAPSED TIME

430. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENT
REPRESENTS ELAPSED TIME

569. SET-WP STAGING BRACKET ON WEB FRAME WITH WRENCH AT (WING) TANKS AN
VOIDS CARPENTER
REPRESENTS ELAPSED TIME

570. SET-WP (ACCESS) LADDER ON (INBOARD OR 0WT130ARIJ) BWLKHEAD WITH HA
AT (WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

571. POSITION (SECWRE) (ACCESS) LADDER ON (INBOARD OR OUTBOARD)
BULKHEAD WITH HAMMER AT (WING) TANKS AND VODIS CARPENTER
REPRESENTS ELAPSED TIME

573. SET-WP STAGING PLANK ON STAGING BRACKET WITH HAND AT (WING) TANKS
VOIDS CARPENTER
REPRESENTS ELAPSED TIME

575. SET-UP STAGING PLANK ON (EXISTING) BRACKET STAGING WITH HAND AT (
WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

577. SET-WP STANCHION IN STAGING BRACKET WITH HAND AT (WING) TANKS AND
VODfS CARPENTER
REPRESENTS ELAPSED TIME

578. SET-WP HANDRAIL IN STANCHION WITH HANW AT (WING) TANKS AND VOIDS
CARPENTER
REPRESENTS ELAPSED TIME

579. SET-WP HANDRAIL (END PIECES) ON (HANDRAIL AND) BWLKHEAD WITH HAN
AT (WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED-TIME

STANDARD TIME CALCULATION

568. SET-UP (STAGING CLIP) ON WEB FRAME WITH HADHER (AND STEEL-TAPE) AT (WING) TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

SECTION 4
STANDARD TIME CALCULATION

4.1 TITLE SHEETS

SET UP AND TEAR DOWN TANK STAGING PLATFORM AT ANY SHIPYARD C

Titlesheet Organization List

Assemble/Disassemble
---

545 . ASSEMBLE I-BEAMS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLATEN
CARPENTER
REPRESENTS ELAPSED TIME

546 . ASSEMBLE ANGLE-EARS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLA
CARPENTER
REPRESENTS ELAPSED TIME

Examine
---

539. READ MATERIAL LIST (PRINT) FOR TANK STAGING PLATFORM WITH (EYES) AT A
PLATEN CARPENTER
REPRESENTS ELAPSED TIME

540. MEASWRE (PLATEN) FOR TANK STAGING PLATFORM WITH (STEEL) TAPE AT ANY
PLATEN CARPENTER
REPRESENTS ELAPSED TIME

541. MARK (PLATEN) FOR TANK STAGING PLATFORM WITH MARKER AT ANY PLATEN
CARPENTER
REPRESENTS ELAPSED TIME

Move
---

542. TRANSPORT PALLET (I-BEAMS AND ANGLES) FOR TANK STAGING PLATFORMl WITH
(CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

547 、 TRANSPORT STAGING PLANKS FOR TANK STAGING PLATFORM WITH (CRANE) AT AI
PLATEN CARPENTER
REPRESENTS ELAPSED TIME

549. TRANSPORT (FINISHED) TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEI
CARPENTER
REPRESENTS ELAPSED TIME

STANDARD TIME CALCULATION

555 POSITION (RAISE) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

556. POSITION (LOWER) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

557. POSITION (PLACE) TANK STAGING PLATFORM (AND BOARDS) IN (TYPICAL TANK) WITH (CRANE) AT ANY SHIP CARPENTER
REPRESENTS ELAPSED TIME

Operate
---

9. HOOK-WP AND WNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP

10. IGNITE AND EXTINGWISH TORCH FOR BWRNING WITH HAND AT TANK

Prepare
---

543. SET-WP I-BEAMS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

544. SET-WP ANGLE-BARS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

548. SET-WP STAGING PLANKS ON TANK STAGING PLATFORM WITH HANDS AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

550. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

551. TEAR DOWN I-BEAMS ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

552. TEAR DOWN STAGING PLANKS ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

STANDARD TIME CALCULATION

553. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WNCH AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

554. TEAR DOWN I-BEAMS FOR TANK sTAGING PLATFORM tDTH WINCH AT KID TANKS Al VOIDS CARPENTER
REPRESENTS ELAPSED TIME

559. SET-WP STAGING PLANKS FOR TANK STAGING PLATFORM WITH HAMMER AT MID TANKS AND WOIlkS CARPENTER
REPRESENTS ELAPSED TIME

560. TEAR DOWN HANWRAIL (AND STANCHION) ON (LONGITWDINAL) BWLKHEAD WIT TORCH AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

561. SET-WP STAGING BRACKETS FOR (BETWEEN) TANK ***STAGING*** PLATFORM WITH WREN AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

562. SET-UP STAGING PLANKS FOR (BETWEEN) TANK STAGING PLATFORMS WITH HAMME AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

582. TEAR DOWN STAGING PLANK FOR TANK STAGING PLATFORM WITH (PRYBAR) AND) HAND AT MID TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

583. TEAR DOWN STAGING PLANK FOR (BETWEEN) TANK STAGING PLATFORM WITH (PRYBAR) AND HAND AT MID TANKS AND VODIS CARPENTER
REPRESENTS ELAPSED TIME

584. TEAR DOWN STAGING BRACKETS ON TANK STAGING PLATFORM WITH WRENCH AT MI TANKS AND VOIDS CARPENTER
REPRESENTS ELAPSED TIME

Surface Treat
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538. (BRWSH) CLEAN (PLATEN) FOR TANK STAGING PLATFORM WITH BROOM AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

SECTION 4
STANDARD TIME CALCULATION

4.1 TITLE SHEETS

SET-UP AND TEAR DOWN PIPE STAGING AT SIDE SHELL AND/OR PLATE

Titlesheet 0rganization List

Join
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446. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY PLATEN (SHOP) WELDING
WELW TO MEET SAFETY REQWIREMENTS. RATE PER 100 PIECES OF HANDRAIL (AVG. 1 CONNECTION EACH). RATE INCLWDES HANWAL ELEMENTS.

Hove
---

454. (CLIMB WP AND DOWN) MOVE OPERATOR (ON PIPE STAGING) FOR SIDE SHELL AT ANDY WAYS CARPENTER
REPRESENTS ELAPSED TIME

456. TRANSPORT STAGING PLANK FOR PIPE STAGING (AT SDIE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME"

459. TRANSPORT STANCHION FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME.

461. TRANSPORT HANDRAIL FOR PIPE STAGING (AT SDIE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME.

463. TRANSPORT STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

465. TRANSPORT HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

476. REMOVE HANDRAIL ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

477. REMOVE STANCHION ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS

CARPENTER
REPRESENTS ELAPESED TIME

478. REMOVE STAGING PLANK ON PIPE STAGING (AT SDIE SHELL) WITH (TOWER, CRAI
AT ANY WAYS CARPENTER
REPRESENTS ELAPSEW TIME

479. REMOVE BRACE ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
REPRESENTS ELAPSED TIME

480. REMOVE END RAIL (END PIECE) ON (MATERIAL FILE) WITH (TOWER CRANE) AT
ANY WAYS CARPENTER
REPRESENTS ELAPSEW TIME

486. TRANSPORT END RAIL (ENW PIECE) ON (END-PIECE RACK) WITH (TOWER CRANE)
AT ANY WAYS CARPENTER
REPRESENTS ELAPSEW TIME

Operate

132, COMEDNED SUB-OP

HOCIK-WF/WNHOOK AND IGNITE/EXTINGWISH TORCH FOR BWRNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 EELOW)C RATE IN ELAPSED TIME

WLT BY 6 TO OBTAIN TOTAL TIME,

Prepare
---

455. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS
CARPENTER
REPRESENTS ELAPSED TIME

457. SET WP STAGING PLANK ON PIPE STAGING (AT SDIE SHELL) WITH HAND AT ANY
WAYS CARPENTER
REPRESENTS EL#tPSED TIME.

458. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENT
REPRESENTS ELAPSED TIME

460. SET WF STANCHION ON PIPE STAGING (AT SDIE SHELL) WITH WRENCH AT ANY
WAYS CARPENTER
REPRESENTS ELAPSED TIME,

STANDARD TIME CALCULATION

462. SET UP HANDRAIL ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

464. SET UP STAGING PLANK FOR SIDE SHELL (BTwN 2 PIPE STAGING SECTIONS) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

466. SET UP HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

469. TEAR DOWN HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH TORCH AT ANY WAYS CARPENTERS
REPRESENTS ELAPSED TIME

470. TEAR DOWN HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

471. TEAR DOWN STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

472. TEAR DOWN STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

473. TEAR DOLDN STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WTTH HAND AT a ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

474 . TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

475. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

487. MAKE READY END RAIL (END PIECE) FOR (TRANSPORTING) AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

480. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND AT ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME.

489. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SDJE SHELL WITH WRENCH
ANY WAYS CARPENTER
REPRESENTS ELAPSED TIME

490. SET UP PIPE STAGING (END-PCS & BRACES) FOR (8’LONG) SECTION WITH HAN
AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

491. SET UP (PIPE STAGING) ASSEMBLY FOR PIPE STAGING (1ST LEVEL) WITH (TO
CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

492. SET UP (PIPE STAGING) ASSEDBLY FOR PIPE STAGING (ADDL LEVELS) WITH
(TOUER CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAFSED TIME

496. TEAR DOWN (PIPE STAGING) ASSEMBLY FOR PIPE STAGING (ADDL- LEVELS) WIT
WRENCH (AND TOWER CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

497. TEAR DOWN (PIPE STAGING) ASSEMBLY FOR PIPE STAGING (FIRST LEVEL) WIT
(TOWER CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

498. TEAR DOWN PIPE STAGING (END PCS 2 BRACES) FOR (8’ LONG) SECTION WITH
HAND AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

510. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENT
REPRESENTS ELAPSED TIME

SECTION 4
STANDARD TIME CALCULATION

4.1 TIME SHEETS

SET-UP AND TEAR DOWN BRACKET STAGING (EXTERIOR) SHELL CARPEN

Titlesheet Organization List

Join

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUDES MANUAL ELEMENTS.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BDLKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
UELD TO MEET SAFETY REQUIREMENTS, RATE PER 100 LADDERS (400 CLIPS)o RATE INCLUDES MANUAL ELEHENTS.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
WELD TO MEET SAFETY REQUIREMENTS, RATE PER 100 PIECES OF AHNDRAIL (AVG, 1 CONNECTION EACH), RATE INCLUDES MANUAL ELEMENTSO

Move

516. TRANSPORT AREIAL PLATFORM FOR SIDE SHELL (STAGING) WITH (CRANE) AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

521. (CLIMB UP AND DOWN) MOVE OPERATOR(ON LADDER) ON SIDE SHELL AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

529. TRANSPORT AERIAL PLATFORM FOR SIDE SHELL (STAGING) WITH CRANE AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

580 . LOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

581. UNLOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
REPRESENTS ELAPSED TIME

STANDARD TIME CALCULATION

Operate

132. COMBINED SUB-OP

H00K-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW) RATE IN ELAPSED TIM
MULT BY 6 TO OBTAIN TOTAL TIME.

Prepare

517. SET-UP (STAGING CLIP) ON SIDE SHELL WITH HAMMER AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

518. SET-UP STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY CARPENTE
REPRESENTS ELAPSED TIME

519. SET-UP STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

520. SET-UP (ACCESS) LADDER ON SIDE SHELL WITH HAND AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

522. SET-UP STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

523 . SET-UP HANDRAIL FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

524. TEAR DOWN HANDRAIL ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

525. TEAR DOWN STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

526 . TEAR DOWN STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTE
REPRESENTS ELAPSED TIME

527 . TEAR DOWN (ACCESS) LADDR ON SIDE SHELL WITH TORCH AT ANY WAY CARPEN
REPRESENTS ELAPSED TIME

528. TEAR DOWN STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY CARPENTER
REPRESENTS ELAPSED TIME

530. TEAR DOWN (STAGING CLIP) ON SIDE SHELL WITH TORCH AT ANY WAY CARPENT
REPRESENTS ELAPSED TIME

STANDARD TIME CALCULATION

4.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	x
PROCESS/OPER CODE	SET UP	STANDARD CODE	x
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	x	HULL	x
COST CLASS/JOB	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	WORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	x
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	x
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	x
DET, DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PA
OPER. DESCRIPTION	SET UP BRACKET STAGING-ON A SMOOTH BULKHEAD PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction	FreQ
1	SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER ((376) AND STEEL-TAPE)	3

* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE MINE IN A...
* . ..SEPARATE SUB OPERATION

2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.06
3	MAKE READY STAGING BRACKET FOR (TRANSPORTING) W ITH HAND	377)	6
	* REPRESENTS GETTING BRACKET READY TO BE.. * ... TRANSPORTED TO TANK OR BULKHEAD * CARPENTER IS LOCATED EITHER ON THE WAY.. * . ..OR IN TANK AT THE MATERIAL (BIN-1)		
4	TRANSPORT STAGING BRACKET WITH (GROVE CRANE) (	378)	6
	* REPRESENTS TRANSPORTING BRACKETS FROM... * ...BIN-1 TO BULKHEAD * DISTANCES FROM CRANE-REST TO BIN-1 AND.. * ...FROM BIN-1 TO BULKHEAD ARE AVERAGE... * ...DISTANCES IN A CENTER TANK 98'X 50' * MAXIMUM NUMBER OF BRKTS IN LIFT = 6		
5	SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH(	379)	3
	* REPRESENTS PUTTING UP A BRACKET ON AN... * ...EXISTING STAGING CLIP		
6	MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(H HAND	386)	10
	* REPRESENTS GETTING BOARD ON BOLSTERS SO * ...THAT THE CRANE CAN TRANSPORT IT		
7	TRANSPORT STAGING PLANK WITH (GROVE CRANE) (	387)	10
	* REPRESENTS TRANSPORTING BOARDS FROM..... * .....LU-PILE TO BULKHEAD * DISTANCES FROM CRANE-REST TO LU-PILE AND * ...FROM LU-PILE TO BULKHEAD ARE AVERAGE * ...DISTANCES IN A CENTER TANK 98'X 50' * MAXIMUM NUMBER OF BOARDS IN LIFT = 3		
8	SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(ND	388)	5
	* REPRESENTS SETTING UP BOARDS BETWEEN... * ...BRACKETS. * TWO MAN OPERATION: * CARPENTERS ARE LOCATED AT TWO DIFFERENT * ..BRACKETS. THEY BOTH LIFT THE BOARD.... * ...TOGETHER AND SLIDE IT INTO POSITION. * IN THIS ANALYSIS CARPENTERS ARE LOCATED * ...ON THE LEVEL BELOW THE BOARDS.		
9	MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(ND	391)	6
	* REPRESENTS GETTING STANCHION READY TO BE		

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     * ...TRANSFORTED.
10 TRANSPORT STANCHION WITH (GROVE CRANE)          ( 392)-
     * REPRESENTS TRANSPORTING STANCHION FROM...
     * ...BIN-2 TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO BIN-2 AND..
     * ..FROM BIN-2 TO BULKHEAD ARE AVERAGE...
     *...DISTANCES IN A CENTER TANK 98'X 50'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
11 SET-UP STANCHION IN STAGING BRACKET WITH HAND  ( 393)          3
     * REPRESENTS PUTTING STANCHION IN THE....
     * ...BRACKET SLEEVE.
l2 MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN( 394)         12
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     * ...S0 THAT THE CRANE CAN TRANSPORT IT
13 TRANSPORT HANDRAIL WITH (GROVE CRANE)           ( 395)         12
     * REPRESENTS TRANSPORTING HANDRAIL FROM...
     * ...HR-PILE TO BDLKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
     * ...DISTANCES IN A CENTER TANK 98'X50'
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
14 SET-UP HANDRAIL ON STANCHION WITH HAND          ( 396)         12
     * REPRESENTS PUTTING HANDRAIL INTO THE..,.
     * ...EYELETS ON THE STANCHION
     * INCLUDES ACTION DISTANCES NEEDED FOR...
     * ...ALIGNING THE HANDRAIL
     * WELDING OF THE HANDRAIL CONNECTIONS WILL
     * ...BE DONE IN A SEPARATE SDB OPERATION
15  SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND B( 397)
     BULKHEAD) WITH HAND

     * REPRESENTS PUTTING HANDRAIL (END PIECES)
     * ...AT THE END OF A STAGING LEVEL
     * WELDING OF THE HANDRAIL (END PIECES)+OO+
     * ...CONNECTIONS WILL BE DONE IN A.....
     * ...SEPARATE SUB OPERATION
16 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S( 440)         1 2
     TICK ELECTRODE

17 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND ( 380)         2
     * REPRESENTS GETTING LADDER ON BOLSTERS SO
     * ...THAT THE CRANE CAN TRANSPORT IT.
18 TRANSPORT LADDERS WITH (GROVE CRANE)            ( 381)         2
     * REPRESENTS TRANSPORTING LADDERS FROM....+
     * ...LDR-PILE TO BULKHEAD
```

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     * DISTANCES FROM CRANE-REST TO LDR-PILE...
     * ...AND FROM LDR-PILE TO BULKHEAD ARE....
     * ....AVERAGE DISTANCES IN A CENTER TANK...
     * ...98'X 50'
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
19  SET-UP  (ACCESS) LADDER ON BULKHEAD WITH HAND    (  383)          2
     * REPRESENTS PUTTING UP AN ACCESS LADDER..
     * ...ON THE BULKHEAD SO THAT THE CARPENTER
     * ...CAN CLIMB TO THE NEXT LADDER,
     * ALSO INCLUDES CLIMBING UP AND DOWN THE..
     * ...LADDER.
     * AVERAGE NUMBER OF RUNGS = 12
20   POSITION (SECURE)  (ACCESS) LADDER FOR BULKHEAD ( 384)          2
     WITH

     * REPRESENTS SECURING A LADDER TO THE.....
     * ...BULKHEAD USING 4 LADDER CLIPS
     * WELDING OF CLIPS WILL BE DONE IN A....
     * ...SEPARATE SUB OPERATION
21 WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD( 438)           .02
       (OR ANY STRUCTURE)
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STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0000	3.00		2010.	376
2	0.00	0.06		63801.	435
3	0.00	6.00		3060 .	377
4	0.00	6.00		6402.	378
5	0.00	3.00		3240.	379
6	0.00	10.00		4200 .	386
7	0.00	10.00		25670.	387
8	0.00	5.00		1450.	388
	0.00	6.00		3300 .	391
10	0.00	6.00		6402.	392
11	0.00	3.00		750.	393
12	0. 00	12.00		6000.	394
13	0.00	12.00		12804.	395
14	0.00	12.00		7800.	396
15	0.00	2.00		3940.	397
16	0.00	0.12		23531.	440
17	0.00	2.00		1200 .	380
18	0.00	2.00		4800 .	381
19	0.00	2.00		2840 .	383
20	0.00	2.00		1420.	384
21	0.00	0.02		34032.	438
			---	---	
MANUAL TIME(TMU)			0.	218652.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered Operetion Time Calculation

Type of work	Elementel Time	Percent ADowance	ADouence Time	Standerd Time
EXTERNAL MANUAL	2.187		0.OOO	2.187
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	“ 2.187		0. 000	2.187
PIECES PER CYCLE	1			
STANDARD HOURS				2.2

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	3 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP BRACKET STAGING ON A SMOOTH BULKHEAD PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER ((AND STEEL-TAPE)	376)	3
	* REPRESENTS PUTTING UP A STAGING CLIP ON * ...THE BULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... * ...SEPARATE SUB OPERATION		
2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.06

3 MAKE READY STAGING BRACKET FOR (TRANSPORTING) W(377) 6
ITH HAND

* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATER EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)

4 TRANSPORT STAGING BRACKET WITH (GROVE CRANE) (378) 6
* REPRESENTS TRANSPORTING BRACKETS FROM....
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES IN A CENTER TANK 98'*50'
* MA*IMUH NUMBER OF BRKTS IN LIFT = 6

5 SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH(379) 3
* REPRESENTS PUTTING UP A BRACKET ON AN...
* ,+,E*ISTING STAGING CLIP

6 MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(386) 15
H HAND

* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT

7 TRANSPORT STAGING PLANK WITH (GROVE CRANE) (387) 15
* REPRESENTS TRANSPORTING BOARDS FROM...
* ....LU-PILE TO BULKHEAD
* DSTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...SIISTANCES IN A CENTER TANK 98'*50'
* HA*IMUH NUMBER OF BOARDS IN LIFT = 3

8 SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(389) 10
ND

* REPRESENTS SETTING UP BOARDS BETWEEN.....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH PICK-UP THE BOARD
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.

9 MAKE REALLY STANCHION FOR (TRANSPORTING) WITH HA(391) 6
ND

* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED,

10 TRANSPORT STANCHION WITH (GROVE CRANE) (392) 6

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     * REPRESENTS TRANSPORTING STANCHION FROM..
     * ...BIN-2 TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO BIN-2 AND..
     * ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
     * ...DISTANCES IN A CENTER TANK 98'X 50'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
11 SET-UP STANCHION IN STAGING BRACKET WITH HAND  ( 393)          3
     * REPRESENTS PUTTING STANCHION IN THE....
     * ....BRACKET SLEEVE.
12 MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN(  394)        12
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     * ...S0 THAT THE CRANE CAN TRANSPORT IT
13 TRANSPORT HANDRAIL WITH (GROVE CRANE)          ( 395)         12
     * REPRESENTS TRANSPORTING HANDRAIL FROtit.*
     * ...HR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * ...FROH HR-PILE TO BULKHEAD ARE AVERAGE
     * ..oDISTANCES IN A CENTER TANK 98'*50'
     * MA*IMUM NUMBER OF HANDRAIL IN LIFT = 6 .
14 SET-UP HANDRAIL ON STANCHION WITH HAND         ( 396)         12
     * REPRESENTS PUTTING HANDRAIL INTO THE....
     * ..oEYELETS ON THE STANCHION
     * INCLUDES ACTION DISTANCES NEEDED FOR....
     * ...ALIGNING THE HANDRAIL
     * WELDING OF THE HANDRAIL CONNECTIONS WILL
     * ● ..BE DONE IN A SEPARATE SUB OPERATION
15 SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND E( 397)         2
     ULKHEAD) WITH HAND

     * REPRESENTS PUTTING HANDRAIL (END PIECES)
     * ..oAT THE END OF A STAGING LEVEL
     * WELDING OF THE HANDRAIL (END PIECES) . . . .
     *   ...CONNECTIONS WILL BE DONE IN A........
     * . ..SEPARATE SUB OPERATION
16 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(  440 )        12
     TICK ELECTRODE

17 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND ( 380)         2
     * REPRESENTS GETTING LADDER ON BOLSTERS SO
     * ...THAT THE CRANE CAN TRANSPORT IT.
18 TRANSPORT LADDERS WITH (GROVE CRANE)           ( 381)         2
     * REPRESENTS TRANSPORTING LADDERS FROM....
     * ...LDR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO LDR-PILEa..
     * ..*AND FROM LDR-PILE TO BULKHEAD AREe..o
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     * ...AUERAGE DISTANCES IN A CENTER TANK...
     * ...98'*5O'
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
19 SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND    (  383)
     * REPRESENTS PUTTING UP AN ACCESS LADDER..
     * ...ON THE BULKHEAD SO THAT THE CARPENTER
     * ..cCAN CLIME TO THE NE*T LADDER.
     * ALSO INCLUDES CLIMBING UP AND DOWN THE..
     * ..*LADDERe
     * AVERAGE NUMBER OF RUNGS = 12
20   POSITION (SECURE)   (ACCESS) LADDER FOR BULKHEAD ( 384)          2
      WITH

     * REPRESENTS SECURING A LADDER TO THE***..
     * ...BULKHEAD USING 4 LADDER CLIPS
     * WELDING OF CLIPS WILL BE DONE IN A......
     * ..cSEPARATE SUB OPERATION
21   WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD( 438)          0 2
       (OR ANY STRUCTURE)
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STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	3.00		2010.	376
2	0.00	0 0 6		63801 .	435
3	0.00	6.00		3060 .	377
4	0.00	6.00		6402 .	378
5	0.00	3.00		3240.	379
6	0.00	15.00		6300 .	386
7	0.00	15.00		38505 .	387
8	0.00	10.00		3500 .	389
9	0.00	6.00		3300.	391
10	0.00	6.00		6402 .	392
11	0.00	3.00		750.	393
12	0.00	12.00		6000 .	394
13	0.00	12.oo		12804.	395
14	0.00	12.00		7800.	396
15	0.00	2.00		3940.	397
16	0.00	0.12		23531.	440
	0.00	2.00		1200.	380
17	0.00	2.00		4800 .	381
19	0.00	2.00		2840.	383
20	0.00	2.00		1420.	384
21	0.00	0.02		34032.	438
			---	---	
MANUAL TIME(TMU)			0.	454290,	
ACTUAL PROCESS TIME(TMU)			o.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered “Operetion Time Calculetion

Type of Work	Elemental Time	Percent Allowence	Allowance Time	Standard Time
EXTERNAL MANUAL	2.356		0.000	2.l 356
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS+/CYCLE)	2.356		0.000	2.356
PIECES per CYCLE	1			
STANDARD HOURS				2.4

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP OF BRACKET STAGING AT THE FLOOR LEVEL OF A		
	TRANSVERSE BULKHEAD PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER ((AND STEEL-TAPE)	376)	3
	* REPRESENTS PUTTING UP A STAGING CLIP ON * ...THE BULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... * ...SEPARATE SUB OPERATION		
2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.06

STANDARD TIME CALCULATION

3	MAKE READY STAGING BRACKET FOR (TRANSPORTING) W(ITH HAND	377)	6
	* REPRESENTS GETTING BRACKET READY TO BE.. * ...TRANSPORTED TO TANK OR BULKHEAD * CARPENTER IS LOCATED EITHER ON THE WAY.. * ...OR IN TANK AT THE MATERIAL (BIN-1)		
4	TRANSPORT STAGING BRACKET WITH (GROVE CRANE) (	378)	6
	* REPRESENTS TRANSPORTING BRACKETS FRO?f.00 * ...BIN-1 TO BULKHEAD * DISTANCES FROM CRANE-REST TO BIN-1 AND.. * ...FROil BIN-1 TO BULKHEAD ARE AVERAGE... * ...D1STANCES IN A CENTER TANK 98'X 50' * MAXIMUM NUMBER OF BRKTS IN LIFT = 6		
5	SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH(	379)	3
	* REPRESENTS PUTTING UP A BRACKET ON AN... * ...EXISTING STAGING CLIP		
6	HAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(H HAND	386)	12
	* REPRESENTS GETTING BOARD ON BOLSTERS SO * ...THAT THE CRANE CAN TRANSPORT IT		
7	TRANSPORT STAGING PLANK WITH (GROVE CRANE) (	387)	12
	* REPRESENTS TRANSPORTING BOARDS FROM..*O. * .o.LU-PILE TO BULKHEAD * DISTANCES FROM CRANE-REST TO LU-PILE AND * ...FROM LU-PILE TO BULKHEAD ARE AVERAGE * .eoIiISTANCES IN A CENTER TANK 98'X 50' * MAXIMUM NUMBER OF BOARDS IN LIFT = 3		
8	SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(ND	388)	6
	* REPRESENTS SETTING UP BOARDS BETWEEN... * ...BRACKETS * TWO MAN OPERATION: * CARPENTERS ARE LOCATED AT TWO DIFFERENT * ..BRACKETS. THEY BOTH LIFT THE BOARD . . . . * ..TOGETHER AND SLIDE IT INTO POSITION. * IN THIS ANALYSIS CARPENTERS ARE LOCATED * . ..ON THE LEVEL BELOW THE BOARDS.		
9	MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(ND	391)	12
	* REPRESENTS GETTING STANCHION READY TO BE * . ..TRANSPORTED.		
10	TRANSPORT STANCHION WITH (GROVE CRANE) (	392)	12

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     * REPRESENTS TRANSPORTING STANCHION FROM..
     * ..eBIN-2 TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO BIN-2 ANIJ.Q
     * ..oFROM BIN-2 TO BULKHEAD ARE AVERAGE...
     * t..DISTANCES IN A CENTER TANK 98'X 50'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
11 SET-UP STANCHION IN STAGING BRACKET WITH HAND  ( 393)          6
     *I REPRESENTS PUTTING STANCHION IN THE......
     *  ......BRACl(ET SLEEVE.
12 HAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN( 394)         12
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     * ...S0 THAT THE CRANE CAN TRANSPORT IT
13 TRANSPORT HANDRAIL WITH (GROVE CRANE)          ( 395)         12
     * REPRESENTS TRANSPORTING HANDRAIL FROH....
     * ...HR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
     * ..*DISTANCES IN A CENTER TANK 98'X 50'
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
14 SET-UP HANDRAIL ON STANCHION WITH HAND         ( 396)         12
     * REPRESENTS PUTTING HANDRAIL INTO THE...;
     * ....EYELETS ON THE STANCHION
     * INCLUDES ACTION DISTANCES NEEDED FOR....
     * ...ALIGNING THE HANDRAIL
     * WELDING OF THE HANDRAIL CONNECTIONS WILL
     * ...BE DONE IN A SEPARATE SUB OPERATION
15 SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND B( 397)          6
     ULKHEAD) WITH HAND

     * REPRESENTS PUTTING HANDRAIL (END PIECES)
     *  ...AT THE END (IF A STAGING LEVEL
     * WELDING OF THE HANDRAIL (END PIECES).....
     *  ...CONNECTIONS WILL BE DONE IN A........
     * ...SEPARATE SUB OPERATION
16 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S( 440)         .12
     TICK ELECTRODE

17 (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED ST( 431)          1
     AIRS) ON BULKHEAD

     * REPRESENTS CARPENTER WALKING UP OR DOWN
     *  ...A SET OF INCLINED STAIRS. AVERAGE
     *  ..oNUMBER OF TREADS IN A SET OF INCLINED
     *  ...STAIRS = 16.
     * CARPENTERS ARE WALKING UP OR DOWN STAIRS
```

STANDARD TIME CALCULATION

* AT THE SAME TIME.

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	3.00		2010.	376
2	0.00	0.06		63801.	435
3	0.00	6.00		3060 .	377
4	0.00	6.00		6402.	378
5	0.00	3.00		3240.	379
6	0.00	12.00		5040.	386
7	0.00	12.00		30804 .	387
8	0.00	6.00		1740.	388
9	0.00	12.00		6600.	391
10	0.00	12.00		12804.	392
11	0.00	6.00		1500 .	393
12	0.00	12.00		6000.	394
13	0.00	12.00		12804.	395
14	0.00	12.00		7800.	396
15	0.00	6.00		11820.	397
16	0.00	0.12		23531 .	440
17	0.00	1.00		320.	431
			---	---	
MANUAL TIME(TMU)			0.	653566 .	
ACTUAL PROCESS TIME(TMU)			0.	04	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD:

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered OPeretion Time Calculetion

Type of work	Elementel Time	Percent Allowence	Allowance Time	Standard Time
EXTERNAL MANUAL	1.993		0.000	1.993
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANUARD(HRS./CYCLE)	1. 993		0.000	1.993
PIECES PER CYCLE				
STANDARD HOURS				2.0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP OF BRACKET STAGING BELOW THE FLOOR LEVEL OF A TRANSVERSE BULKHEAD PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER ((AND STEEL-TAPE)	376)	8
	* REPRESENTS PUTTING UP A STAGING CLIP ON * ...THE BULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... * ...SEPARATE SUB OPERATION		
2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.08

STANDARD TIME CALCULATION

3 MAKE READY STAGING BRACKET FOR (TRANSPORTING) W(377)
ITH HAND

* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* . ..OR IN TANK AT THE MATERIAL (BIN-1)
TRANSPORT STAGING BRACKET WITH (GROVE CRANE) (378)
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
*DISTANCES FROM CRANE-REST TO BIN-1 AND...
* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ..DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
5 SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH(379) 4
* REPRESENTS PUTTING UP A BRACKET ON AN...
* ...EXISTING STAGING CLIP
6 MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(386) 14
H HAND

* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
7 TRANSPORT STAGING PLANK WITH (GROVE CRANE) (387) 14
* REPRESENTS TRANSPORTING BOARDS FROM....
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BOARSIS IN LIFT = 3
8 SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(388) 2
ND

* REPRESENTS SETTING UP BOARDS BETWEEN....
* ....BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH LIFT THE BOARD.
. ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS.
9 SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(390) 12
ND

* REPRESENTS SETTINGUP BOARDS BETWEEN.....
* ...BRACKETS. .
* ONE MAN OPERATION:

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     * USUALLY OCCURS WHEN CRANE CANNOT PLACE..
     * ...BOARD ON BRACKETS.
10 MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(  391)
     ND

     . REPRESENTS GETTING STANCHION READY TO BE
     .  ...TRANSPORTED.
11 TRANSPORT STANCHION WITH (GROVE CRANE)          (  392)        8
     . REPRESENTS TRANSPORTING STANCHION FROM..
     . . ..BIN-2 TO BULKHEAD
     . DISTANCES FROM CRANE-REST TO BIN-2 ANDD...
     * ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
     * ...DISTANCES IN A CENTER TANK 98'X 50'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
12 SET-UP STANCHION IN STAGING BRACKET WITH HAND (  393)        4
     * REPRESENTS PUTTING STANCHION IN THE......
     * ..BRACKET SLEEVE.
13 MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN(  394)       12
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     . . ..S0 THAT THE CRANE CAN TRANSPORT IT
14 TRANSPORT HANDRAIL WITH (GROVE CRANE)           (  395)       12
     * REPRESENTS TRANSPORTING HANDRAIL FROM...
     * ...HR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * . ..FROM HR-PILE TO BULKHEAD ARE AVERAGE
     * ...DISTANCES IN A CENTER TANK 98'X50'
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
15  SET-UP HANDRAIL ON STANCHION WITH HAND         (  396)       12
     * REPRESENTS PUTTING HANDRAIL INTO THE . . . .
     * ...EYELETS ON THE STANCHION
     * INCLUDES ACTION DISTANCES NEEDED FOR....
     * ...ALIGNING THE HANDRAIL
     * WELDING OF THE HANDRAIL CONNECTIONS WILL
     * ...BE DONE IN A SEPARATE SUB OPERATION
16 SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND B(  397)
     ULKHEAD) WITH HAND

     * REPRESENTS PUTTING HANDRAIL (END PIECES)
     * ...AT THE END OF A STAGING LEVEL
     * WELDING OF THE HANDRAIL (END PIECES)....
     *  ...CONNECTIONS WILL BE DONE IN A.....
     * ...SEPARATE SUB OPERATION
17 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(  440)       ●14
     TICK ELECTRODE
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STANDARD TIME CALCULATION

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18 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND (   380)          2
     * REPRESENTS GETTING LADDER ON BOLSTERS SO
     * ...THAT THE CRANE CAN TRANSPORT IT.
19 TRANSPORT LADDERS WITH (GROVE CRANE)            (  381)          2
     * REPRESENTS TRANSPORTING LADDERS FROM...
     * ..LDR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO LDR-PILE...
     * ...AND FROM LDR-PILE TO BULKHEAD ARE...
     * ...AVERAGE DISTANCES IN A CENTER TANK...
     * ....98'X50'
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
20   SET-UP   (ACCESS) LADDER ON BULKHEAD WITH HAND    (  383)        2
     * REPRESENTS PUTTING UP AN ACCESS LADDER..
     * ...ON THE BULKHEAD SO THAT THE CARPENTER
     * ...CAN CLIMB TO THE NEXT LADDER.
     * ALSO INCLUDES CLIMBING UP AND DOWN THE..
     *  ..LADDER.
     * AVERAGE NUMBER OF RUNGS = 12
21   POSITION (SECURE)   (ACCESS) LADDER FOR BRACKET S(  385)          2
     TAGING WITH

     * REPRESENTS SECURING LADDER TO STAGING...
     * ...BOARDS USING WIRE ROPE
22   (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED ST(   431)
     AIRS) ON BULKHEAD

     * REPRESENTS CARPENTER WALKING UP OR DOWN
     *  ... SET OF INCLINED STAIRS, AVERAGE
     * ...NUMBER OF TREADS IN A SET OF INCLINED
     * ...STAIRS = 16.
     * CARPENTERS ARE WALKING UP OR DOWN STAIRS
     * AT THE SAME TIME.
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	8.00		5360.	376
2	0.00	0.08		85068.	435
3	0.00	8.00		4080.	377
4	0.00	8.00		8536.	378
5	0.00	4.00		4320.	379
6	0.00	14.00		5880.	386
7	0.00	14.00		35938.	387
8	0.00	2.00		580.	388
9	0.00	12.00		8040.	390
10	0.00	8.00		4400.	391
11	0.00	8.00		8536.	392
12	0.00	4.00		1000.	393
13	0.00	12.00		6000.	394
14	0.00	12.00		12804.	395
15	0.00	12.00		7800.	396
16	0.00	2.00		3940.	397
17	0.00	0.14		27453.	440
18	0.00	2.00		1200.	380
19	0.00	2.00		4800.	381
20	0.00	2.00		2840.	383
21	0.00	2.00		560.	385
22	0.00	1.00		320.	431
			---------	---------	
MANUAL TIME(TMU)			0.	893021.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered Operetion Time Calculation

Type of work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2,395		0.000	2.395
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.395		0.000	2.395
PIECES PER CYCLE	1			
STANDARD HOURS				2.4

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING ON A SMOOTH BULKHEAD CENTER TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH * REPRESENTS TEARING DOWN HANDRAIL IN A... * ...CENTER TANK. HANDRAIL IS THROWN TO A * ...MATERIAL PILE ON THE TANKTOP. * CARPENTERS REMOVE 2 HADNRAIL BEFORE..... * ...MOVING TO NEXT SECTION.	(398)	14
2	TEAR DOWN STANCHION ON BULKHEAD WITH HAND * REPRESENTS REMOVING STANCHION FROM..... * ...STAGING BRACKETS IN A CENTER TANK.	(400)	3

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     *  ...STANCHION IS THROWN TO A MATERIAL...
     * ...FILE ON THE TANKTOP
3  TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH(   402)          10
     HAND (AND WINCH)

     * REPRESENTS REMOVING BOARDS FROM ANY TANK
     *  ...WINCH IS USED TO LOWER BOARD TO.....
     * ...BD-PILE ON TANKTOP.
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
4  (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) 0(   404)
     N BULKHEAD

     * REPRESENTS CARPENTERS CLIMBING Up AND...
     * ...DOWN LADDERS TO REMOVE STAGING.
     * AVERAGE LADDER SIZE = 12 RUNGS.
5  TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD(   403)
     WITH

     * REPRESENTS REMOVING LADDER FROM BULKHEAD
     *  ...THERE ARE 4 LADDER CLIPS PER LADDER.
     * ...LADDER LOWERD TO LDR-PILE BY WINCH
     * ...LADDER CLIPS THROWN TO MATL-PILE.
6  TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WREN(   406)
     CH

     * REPRESENTS TEARING DOWN STAGING BRACKET
     *  ...IN ANY TANK. BRACKETS ARE LOWERED TO
     * ...MATL-PILE BY WINCH.
     * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
7  REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH (   407)          14
     * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
     * ...PILE ON TANKTOP TO DECK (GOING THRU
     *  ...MANHOLE).
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
a  REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH (   408)           6
     * REPRESENTS REMOVAL OF STANCHION FROM ...
     * ....MATL-PILE ON TANKTOP TO DECK (GOING
     * ..THRU MANHOLE).
     * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
9  REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH(   410)          10
     * REPRESENT REMOVING BOARDS FROM BOARD...
     * ...PILE ON TANKTOP TO DECK (GOES THRU..
     *  ...MANHOLE)
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
10 REMOVE LADDER ON (LADDER-PILE) WITH WINCH       ( 411)           2
     * REPRESENT REMOVING LADDERS FROM LADDER
     * ....PILE ON TANKTOP TO DECK (GOES THRU..
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     * ...HANHOLE).
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
11 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (   409)          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MATL
     * ... FILE ON TANKTOP TO DECK (GOING THRU
     * ...HANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
12 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH    (  412)          1
     * REPRESENTS REMOVING TOOLBOX FROM MATL..
     * ...PILEON TANKTOP TO DECK (GOES THRU...
     * ...MANHOLE).
     * TOOLBOX CONTAINS:
     * ...28 BOLTS
     * ...28 NUTS
     * ...28 LADDER CLIPS
```

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
	0.00	14.00		8400.	398
2	0.00	3.00		1170.	400
3	0.00	10.00		19430.	402
4	0.00	2.00		2560.	404
5	0.00	2.00		17940.	403
6	0.00	6.00		16782.	406
7	0.00	14.00		12852.	407
8	0.00	6.00		5928.	408
9	0.00	10.00		19830.	410
10	0.00	2.00		3966.	411
11	0.00	6.00		10662.	409
12	0.00	1.00		7210.	412
			---	---	
MANUAL TIME(TMU)			0.	1019751.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered OPeretion Time Calculation

TYPe of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1.267		0.000	1.267
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS ./CYCLE)	1.267		0.000	1.267
PIECES PER CYCLE				
STANDARD HOURS				1.3

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	3 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING ON A SMOOTH BULKHEAD CENTER TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH	(398)	14
	* REPRESENTS TEARING DOWN HANDRAIL IN A...		
	* ...CENTER TANK. HANDRAIL IS THROWN TO A		
	* ...MATERIAL PILE ON THE TANKTOP.		
	* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....		
	* ...MOVING TO NEXT SECTION.		
2	TEAR DOWN STANCHION ON BULKHEAD WITH HAND	(400)	3
	* REPRESENTS REMOVING STANCHION FROM.....		
	* ...STAGING BRACKETS IN A CENTER TANK.		

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     * ...STANCHION IS THROWN TO A MATERIAL.....
     * ...PILE ON THE TANKTOP
 3   TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH(   402)          15
       HAND (AND WINCH)

     * REPRESENTS REMOVING BOARDS FROM ANY TANK
     * ...WINCH IS USED TO LOWER BOARD TO.....
     *  ....BD-PILE ON TANKTOP,
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
 4   (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) 0(   404)          2
     N  BULKHEAD

     * REPRESENTS CARPENTERS CLIMBING UP AND...
     * ...DOWN LADDERS TO REMOVE STAGING.
     * AVERAGE LADDER SIZE = 12 RUNGS.
 5   TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD(   403)          2
       WITH

     * REPRESENTS REMOVING LADDER,FROM BULKHEAD
     * ...THERE ARE 4 LADDER CLIPS PER LADDER.
     * ...LADDER LOWERED TO LDR-PILE BY WINCH
     *  ...LADDER CLIPS THROWN TO MATL-PILE.
 6   TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WREN(. 406)           6
     CH

     * REPRESENTS TEARING DOWN STAGING BRACKET
     * ...IN ANY TANK. BRACKETS ARE LOWERED TO
     * ...MATL-PILE BY WINCH,
     * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
 7   REMOVE HANDRAIL ON (HATERIAL-PILE) WITH WINCH (   407)           14
     * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
     * .... PILE ON TANKTOP TO DECK (GOING THRU
     * ...HANHOLE),
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
 8   REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH (   408)          6
     * REPRESENTS REMOVAL OF STANCHION FROM  . ...
     *  ...MATL-PILE ON TANKTOP TO DECK (GOING
     * ...THRU MANHOLE).
     * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
 9   REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH(   410)          15
     * REPRESENT REMOVING BOARDS FROM BOARD....
     * ...PILE ON TANKTOP TO DECK (GOES THRU..
     * ...MANHOLE),
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
10   REMOVE LADDER ON (LADDER-FILE) WITH WINCH      (  411)           2
     * REPRESENT REMOVING LADDERS FROM LADDER
     * ...-PILE ON TANKTOP TO DECK <GOES THRU..
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     * ....MANHOLE)
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
11 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (  409 )          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MTL
     * ... PILE ON TANKTOP TO DECK (GOING THRU
     * ...HANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
12  REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH    ( 412)
     * REPRESENTS REMOVING TOOLBOX FROM MATL...
     * ...-PILEON TANKTOP TO DECK (GOES THRU..
     *  ....MANHOLE).
     * TOOLBOX CONTAINS:
     * ....28 BOLTS
     *  ....28 NUTS
     * ...28 LADDER CLIPS
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	14.00		8400.	398
2	0.00	3.00		1170.	400
3	0.00	15.00		29145.	402
4	0.00	2.00		2560.	404
5	0.00	2.00		17940.	403
6	0.00	6.00		16782.	406
7	0.00	14.00		12852.	407
8	0.00	6.00		5928.	408
9	0.00	15.00		29745.	410
10	0.00	2.00		3966.	411
11	0.00	6.00		10662.	409
12	0.00	1.00		7210.	412
			---	---	
MANUAL TIME(TMU)			0.	1166111.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered Operation Tipe Calculation

Type of Work	Elenentel Time	Percent Allowence	Allowance -Time	Standard Time
EXTERNAL MANUAL	1.464		0.000	1.464
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0. 000
STANDARD(HRS,/CYCLE)	1.464		0.000	1.464
PIECES PER CYCLE	1			
STANDARD HOURS				1.5

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING FLOOR LEVEL		
	TRANSVERSE BULKHEAD CTR TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH	(398)	18
	* REPRESENTS TEARING DOWN HANDRAIL IN A...		
	* ...CENTER TANK. HANDRAIL IS THROWN TO A		
	* ...MATERIAL PILE ON THE TANKTOP.		
	* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....		
	* ...MOVING TO NEXT SECTION.		
2	TEAR DOWN STANCHION ON BULKHEAD WITH HAND	(400)	6
	* REPRESENTS REMOVING STANCHION FROM.....		
	* ...STAGING BRACKETS IN A CENTER TANK.		

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    * ...STANCHION IS THROWN TO A MATERIAL....
    * ...PILE ON THE TANKTOP
 3 TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH(   402)          12
     HAND (AND WINCH)

    * REPRESENTS REMOVING BOARDS FROM ANY TANK
    *  ...WINCH IS USED TO LOWER BOARD TO.....
    * ...BD-PILE ON TANKTOP.
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
 4 TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WREN(   406)          6
    CH

    * REPRESENTS TEARING DOWN STAGING BRACKET
    * ...IN ANY TANK, BRACKETS ARE LOWERED TO
    * ....MATL-PILE BY WINCH.
    * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
 5 REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH (   407)          18
    * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
 6 REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH (   408)          12
    * REPRESENTS REMOVAL OF STANCHION FROM . ..
    * ...MATL-PILE ON TANKTOP TO DECK (GOING
    * ...THRU HANHOLE).
    * MAXIMUM NUMBER OF STANCHION IN LIFT =.6
 7 REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH(   410)          12
    * REPRESENT REMOVING BOARDS FROM BOARD...
    * ...-PILE ON TANKTOP TO DECK (GOES THRU..
    *  ...MANHOLE).
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
 8 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (   409 )          6
    WINCH

    * REPRESENTS REMOVAL OF BRACKET FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
 9 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH (   412)          1
    * REPRESENTS REMOVING TOOLBO* FROM MATL...
    * ...-PILEON TANKTOP TO DECK (GOES THRU...
    * ...HANHOLE).
    * TOOLBOX CONTAINS:
    * ...28 BOLTS
    * ...28 NUTS
    * ...20 LADDER CLIPS
10 (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED ST(   431)          1
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STANDARD TIME CALCULATION

AIRS) ON BULKHEAD

* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ..NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	S4	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	18.00		10800.	398
2	0.00	6.00		2340 .	400
3	0.00	12.00		23316.	402
4	0.00	6.00		16782.	406
5	0.00	18.00		16524 .	407
6	0.00	12.00		11856.	408
7	0.00	12.00		23796.	410
8	0.00	6.00		10662.	409
	0.00	1.00		7210.	412
10	0.00	1.00		320	431
			---	---	
MANUAL TIME(TMU)			0.	1289717.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD:

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered Operetion Time Calculation

Type of work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1•236		0.000	1.236
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS /CYCLE)	1.236		0.000	1.236
PIECES PER CYCLE	1			
STANDARD HOURS				1.2

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING BELOW FLOOR TRANSVERSE BULKHEAD CTR TANK PER 100 LIN FT		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH	(398)	14
	* REPRESENTS TEARING DOWN HANDRAIL IN A...		
	* ...CENTER TANK. HANDRAIL IS THROWN TO A		
	* ...MATERIAL PILE ON THE TANKTOP.		
	* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....		
	* ...MOVING TO NEXT SECTION.		
2	TEAR DOWN STANCHION ON BULKHEAD WITH HAND	(400)	4
	* REPRESENTS REMOVING STANCHION FROM.....		
	* ...STAGING BRACKETS IN A CENTER TANK.		

```
     * ...STANCHION IS THROWN TO A MATERIAL....
     * ...PILE ON THE TANKTOP
  3  TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH(   402)          14
       HAND (AND WINCH)

     * REPRESENTS REMOVING BOARDS FROM ANY TANK
     * ...WINCH IS USED TO LOWER BOARD TO....
     * ...BD-PILE ON TANKTOP.
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
  4  TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WREN(   406
     CH

     * REPRESENTS TEARING DOWN STAGING BRACKET
     * ...IN ANY TANK, BRACKETS ARE LOWERED TO
     * ...MATL-PILE BY WINCH.
     * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
  5  TEAR DOWN LADDER (AND WIRE ROPE) ON BULKHEAD WI(   405)
     TH

     *  REPRESENTS  REMOVING  LADDER  FROM  BULKHEAD
     * ...THERE IS 1 WIRE ROPE PER LADDER.
     * ...LADDER LOWERED TO LDR-PILE BY WINCH
     * ...WIRE-ROP-E IS THROWN TO MATL-PILE.
  6  REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH (   407)          14
     * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
     * ... PILE ON TANKTOP TO DECK (GOING THRU
     * ...HANHOLE),
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
  7  REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH (   408)          8
     * REPRESENTS REMOVAL OF STANCHION FROM . . .
     * ...MATL-PILE ON TANKTOP TO DECK (GOING
     * ...THRU MANHOLE).
     * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
  8  REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH(   410)          14
     * REPRESENT REMOVING BOARDS FROM BOARD...
     * ...-PILE ON TANKTOP TO DECK (GOES THRU.
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
  9  REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (   409)          8
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MATL
     * ... PILE ON TANKTOP TO DECK (GOING THRU
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
 1.0 REMOVE LADDER ON (LADDER-PILE) WITH WINCH          411)
     * REPRESENT REMOVING LADDERS FROM LADDER
```

```
     * ...-PILE ON TANKTOP TO DECK (GOES THRU..
     * ...HANHOLE).
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
11 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH    ( 412)          1
     * REPRESENTS REMOVING TOOLBOX FROM MATL.....
     * ...-PILEON TANKTOP TO DECK (GOES THRU...
     * ...HANHOLE)
     * TOOLBOX CONTAINS:
     * ...28 BOLTS
     * ..28 NUTS
     * ...28 LADDER CLIPS
12  (WALK UP OR DOWN) HOVE OPERATOR (ON INCLINED ST(  431 )          1
     AIRS) ON BULKHEAD

     * REPRESENTS CARPENTER WALKING UP OR DOWN
     * ...A SET OF INCLINED STAIRS. AVERAGE
     * ...NUMBER OF TREADS IN A SET OF INCLINED
     * ...STAIRS = 16.
     * CARPENTERS ARE WALKING UP OR DOWN STAIRS
     * AT THE SAME TIME.
```

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL THU	EXTERNAL TMU	LOC #
1	0.00	14.QO		8400•	398
2	0.00	4.00		1560.	400
3	0.00	14.OO		27202.	402
4	0.00	8.00		22376.	406
5	0.00	2.00		10940.	405
6	0.00	14.OO		12852	407
7	0.00	8.00		7904 .	408
0	0.00	14.OO		27762.	410
9	0.00	8000		14216.	409
10	0.00	2.00		3966.	411
11	0.00	1.OO		7210.	412
12	0.00	1.00		320 .	431
			---	---	
MANUAL TIME(TWU)			0.	1434425.	
ACTUAL PROCESS TIME(TMU)			O.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1.447		0.000	1.447
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	1.447		0.000	1.447
PIECES PER CYCLE	1			
STANDARD HOURS				1.4

4.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP BRACKET STAGING ON WEBS IN WING TANKS		
	PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	SET-UP (STAGING CLIP) ON WEB FRAME WITH * REPRESENTS PUTTING UP A STAGING CLIP ON * ...A WEB FRAME * WELDING OF THE CLIP WILL BE DONE IN A * ...SEPARATE SUB OPERATION	(568)	3
2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH	(435)	.06

3 MAKE READY STAGING BRACKET FOR (TRANSPORTING) WI(426) 6
TH HAND

* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTEII TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY++
* ...OR IN TANK AT THE MATERIAL (BIN-1)

4 TRANSPORT STAGING BRACKET WITH (TOWER CRANE) (563)
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* t..FROtl BIN-1 TO BULKHEAD ARE AVERAGE*.C
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6

5 SET-UP STAGING BRACKET ON WEB FRAME WITH WRENCH(569) 3
* REPRESENTS PUTTING UP A STAGING BRACKET
* ...ON A EXISTING STAGING CLIP (LOCATED
* ...ON A WEB FRAME)

6 MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(428) 34
H HAND

* REPRESENTS GETTING BOARD ON BOLSTERS SO
* .o.THAT THE CRANE CAN TRANSPORT IT

7 TRANSPORT STAGING PLANK WITH (TOWER CRANE) (565) 34
* REPRESENTS TRANSPORTING BOARDS FROM
* .+.LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3

8 SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(573) 5
ND

* REPRESENTS SPREADING BOARDS BETWEEN WEBS
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ...WEBS. THEY BOTH PICK UP THE BOARD
* ...TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* .*.ON THE SAME LEVEL AS THE BOARDS.

9 SET-WP STAGING PLANK ON (EXISTING) BRACKET ST(575) 12
AGING WITH HAND

* REPRESENTS SPREADING BOARDS BETWEEN

```
      * EXISTING STAGING AND INBOARD OR
      *   OUTBOARD   BULKHEAD
      * 2 MAN OPERATION:
      * CARPENTERS ARE LOCATED AT DIFFERENT WEBS
      * EACH CARPENTER SPREADS TWO BOARDS
      * SIMULTANEOUSLY
      * IN THIS ANALYSIS CARPENTERS ARE LOCATED
      * ON THE SAME LEVEL AS THE BOARDS.
10 MAKE READY STANCHION FOR (TRANSPORTING) WITH HA( 429)          6
   ND

      * REPRESENTS GETTING STANCHION READY TO BE
      *       TRANSPORTED,
11  TRANSPORT STANCHION WITH (TOWER CRANE)       ( 566)          6
      * REPRESENTS TRANSPORTING STANCHION FROM..
      * BIN-2 TO BULKHEAD
      *  DISTANCES FROM CRANE-REST TO BIN-2 AND..
      *  FROM BIN-2 TO BULKHEAD ARE AVERAGES...
      *   *DISTANCES FROM THE SIDE OF A BASIN
      *  ..12OO'X2OO'
      * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
12  SET-UP STANCHION IN STAGING BRACKET WITH HAND ( 577)          3
      *  REPRESENTS PUTTING STANCHION IN THE
      *  BRACKET SLEEVE IN A WING TANK
13 MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN( 430)         12
   D

      * REPRESENTS GETTING HANDRAIL ON BOLSTERS
      *   SO THAT THE CRANE CAN TRANSPORT IT
14 TRANSPORT HANDRAIL WITH (TOWER CRANE)          ( 567 )        12
      *  REPRESENTS TRANSPORTING HANDRAIL FROM...
      * HR-PILE TO BULKHEAD
      * DISTANCES FROM CRANE-REST TO HR-PILE AND
      *  FROH HR-PILE TO BULKHEAD ARE AVERAGE
      *  DISTANCES FROM THE SIDE OF A BASIN
      *  1200'X200'
      * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
15  SET-UP HANDRAIL IN STANCHION UITH HAND        ( 578 )        12
      *  REPRESENTS PUTTING HANDRAIL INTO THE
      * EYELETS ON THE STANCHION
      *  INCLUDES ACTION DISTANCES NEEDED FOR
      *  Gs,ALIGNING THE HANDRAIL
      * WELDING OF THE HANDRAIL WILL BE DONE IN
      *  A SEPARATE SUB OPERATION
16 SET-UP HANDRAIL ( END PIECES ) ON ( HANDRAIL AN( 579)          12
   D ) RULKHEAD WITH
```

```
     *  REPRESENTS  PUTTING  HANDRAIL  (END  PIECES)
     * AT THE END OF A STAGING LEVEL
     * WELDING OF THE HANDRAIL ( END PIECES )
     *  CONNECTIONS  WILL  BE  DONE  IN  A
     *  SEPARATE SUB OPERATION
17 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(  440 )          1 2
     TICK ELECTRODE

18 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND ( 427)
     *  REPRESENTS GETTING LADDER ON BOLSTERS SO
     * THAT THE CRANE CAN TRANSPORT IT.
19 TRANSPORT LADDER WITH (TOWER CRANE)              (    564)
     *  REPRESENTS  TRANSPORTING  LADDERS  FROM
     *   LDR-PILE   TO   BULKHEAD
     *  DISTANCES  FROM  CRANE-REST  TO  LDR-PILE
     * ...AND FROM LDR-PILE TO BULKHEAD ARE
     * ...AVERAGE DISTANCE FROM SIDE OF BASIN
     * ...1200'X200'
     *  MAXIMUM NUMBER OF LADDERS IN LIFT = 3
20 SET-UP ( ACCESS ) LADDER ON ( INBOARD OR OUTBOA(  570 )
     RD ) BULKHEAD WITH

     *  REPRESENTS PUTTING UP AN ACCESS LADDER
     *  ...ON THE INBOARD OR OUTBOARD BULKHEAD
     * ...SO THAT THE CARPENTER CAN CLIMB TO
     * ...THE NEXT LEVEL OF STAGING
     *  ...ALSO INCLUDES CLIMBING UP AND DOWN THE
     * ...LADDER
21  POSITION ( SECURE )  ( ACCESS ) LADDER ON       (    571)
     * REPRESENTS SECURING A LADDER TO THE
     * ...INBOARD OR OUTBOARD BULKHEAD USING
     *   ...FOUR   LADDER   CLIPS
     * WELDING OF CLIPS WILL BE DONE IN A
     * ...SEPARATE SUB OPERATION
22 WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD(  438)          0 1
      (OR ANY STRUCTURE)
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMW	EXTERNAL TMW	LOC #
1	0.00	3.OO		2010.	568
2	O.OO	0.06		638014	435
3	O.OO	6.OO		3060 .	426
4	0.00	6.00		10800.	563
5	0.00	3.OO		3240	569
6	0.00	34.00		17000.	428
7	O.OO	34.00		137122.	565
8	O.OO	5.00		1750.	573
9	O.OO	12.00		5040	575
10	0.00	6.00		1740.	429
11	0.00	6.00		10800.	566
12	O.OO	3.00		750 .	577
13	O.OO	12.00		6000.	430
14	0.00	12.00		21600.	567
15	O.OO	12.OO		7800 .	578
16	0.00	12.00		23640 .	579
17	0.00	O.12		23531 .	440
18	O.OO	1.00		720 .	427
19	O.OO	1.00		3600.	564
20	O.OO	1.00		1420 .	570
21	O.OO	1.00		71O.	571
22	O.OO	0.01		17016.	438

MANUAL TIME(TMU)	0.	3631S0.
ACTUAL PROCESS TIME(TMU)	0.	0.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: o

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	3.632		0.000	3.632
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS ./CYCLE)	3.632		0.000	3.632
PIECES PER CYCLE	1			
STANDARD HOURS				3.6

STANDARD TIME CALCULATION

M 0 S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	x	REV. LTR/DATE	x
PROCESS/OPER CODE	SET UP	STANDARD CODE	x
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	x	HULL	x
COST CLASS/JOB	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	CORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUE-GROUP	x	WORK CENTER	x
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	x
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	x
DET . DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PA
OPER. DESCRIPTION	SET UP BRACKET STAGING ON SMOOTH BULKHEAD WING TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method	Instruction		Free
1	SET-UP	(STAGING CLIP) ON BULKHEAD wITH HAMMER ((AND STEEL-TAPE)	376)	3
		* REPRESENTS PUTTING UP A STAGING CLIP ON THE RULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... SEPARATE SUB OPERATION		
2	WELD	STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.06

STANDARD TIME CALCULATION

3 MAKE READY STAGING BRACKET FOR (TRANSPORTING) WI(426) 6
TH HAND

* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)

4 TRANSPORT STAGING BRACKET WITH (TOUER CRANE) (563) 6
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* .,.FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6

5 MAKE READY STAGING BRACKET FOR (TRANSPORTING) W(377) 3
ITH HAND

* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE HATERIAL (BIN-1)

6 MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(428) . 10
H HAND

* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT

7 TRANSPORT STAGING PLANK WITH (TOUER CRANE) (565) 10
* REPRESENTS TRANSPORTING BOARDS FROM
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'x200'
* MAXIMUMI NUMBER OF BOARDS IN LIFT = 3

8 SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(388) 5
ND

* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH LIFT THE BOARD...
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS.

```
 9 MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(  429)          6
     ND

     *  REPRESENTS GETTING STANCHION READY TO BE
     *      ...TRANSPORTED.
10 TRANSPORT STANCHION WITH (TOUER CRANE)          (  566)          6
     *    REPRESENTS    TRANSPORTING    STANCHION    FROM..
     *   ..RIN-2   TO   BULKHEAD
     *  DISTANCES  FROM  CRANE-REST  TO  BIN-2  AND..
     *  ...FROM  BIN-2  TO  BULKHEAD  ARE  AVERAGE...
     *  ...DISTANCES  FROM  THE  SIDE  OF  A  BASIN
     *  ...1200'X200'
     *  MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
11  SET-UP STANCHION IN STAGING BRACKET WITH HAND (  393)          3
     *    REPRESENTS    PUTTING    STANCHION    IN    THE...
     *    ...BRACKET    SLEEVE.
12  MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAN(  430)         14
     D

     *  REPRESENTS GETTING HANDRAIL ON BOLSTERS
     *  ...S0 THAT THE CRANE CAN TRANSPORT IT
13 TRANSPORT HANDRAIL WI WITH (TOWER CRANE)          (  !567)         14
     *    REPRESENTS    TRANSPORTING    HANDRAIL    FROM...
     *    ...HR-PILE    TO    BULKHEAD
     *  DISTANCES  FROM  CRANE-REST  TO  HR-PILE  AND
     *  ...FROM  HR-PILE  TO  BULKHEAD  ARE  AVERAGE
     *  ...DISTANCES  FROM  THE  SIDE  OF  A  BASIN
     *  ...1200'X200'
     *  MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
14 SET-UP HANDRAIL ON STANCHION WITH HAND          (  396)          14
     *    REPRESENTS    PUTTING    HANDRAIL    INTO    THE..,*
     *    ...EYELETS    ON    THE    STANCHION
     *    INCLUDES    ACTION    DISTANCES    NEEDED    FOR...
     *     ...ALIGNING    THE    HANDRAIL
     *  WELDING  OF  THE  HANDRAIL  CONNECTIONS  WILL
     *    ...BE    DONE    IN    A    SEPARATE    SUB    OPERATION
15  SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND B(  3971          4
     ULKHEAD) WITH HAND

     *  REPRESENTS PUTTING HANDRAIL (END PIECES)
     *  ...AT THE END OF A STAGING LEVEL
     *  WELDING  OF  THE  HANDRAIL  (END  PIECES)...
     *     ...CONNECTIONS    WILL    BE    DONE    IN    A.....
     *    ...SEPARATE    SUB    OPERATION
16 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(  440)         .14
     TICK ELECTRODE
```

17 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND (427)
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT,

18 TRANSPORT LADDER WITH (TOUER CRANE) (564)
* REPRESENTS TRANSPORTING LADDERS FROM
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE
* ...AND FROM LDR-PILE TO BULKHEAD ARE
* ...AVERAGE DISTANCE FROM SIDE OF BASIN
* 1200'x200'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3

19 SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND (383)
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ...ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER,
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ...LADDER.
AVERAGE NUMBER OF RUNGS = 12

20 POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD (384)
WITH

* REPRESENTS SECURING A LADDER TO THE....
* ...BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION

21 WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD(438) .01
(OR ANY STRUCTURE)

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP		SA	FREQ	INTERNAL THU	EXTERNAL TMU	LOC #
1		0.00	3.OO		201O.	376
2		0.00	0.06		63801 .	435
3		0.00	6.OO		3060.	426
4		O.OO	6.00		10800 .	563
5		O.OO	3.00		1530.	377
6		0.00	10.OO		5000 .	428
7		0.00	10.00		40330 .	565
8		0.00	5.OO		1450.	388
9		0.00	6.00		1740.	429
10		0.00	6.00		10800.	566
11		0.00	3.00		750 .	393
12		O.OO	14.00		7000.	430
13		0.00	14.00		25200,	567
14		0.00	14.OO		91OO.	396
15		O.OO	4 O O		7880.	397
16		0.00	0.14		27453.	440
17		0.00	1.OO		720 .	427
18		0.00	1.OO		3600.	564
19		O.OO	1.OO		1420.	383
20		O.OO	1.OO		71O.	384
21		0.00	0.01		17016.	438

MANUAL TIHE(TMU)	0.	604520 .
ACTUAL PROCESS TIME(TMU)	o.	o.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

H O S T. OPERATION TIME CALCULATION

Engineered Operation Time Calculation

TYPe of work.	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.414		0.000	2,414
ASSIGNED. INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.414		0.000	2.414
PIECES PER CYCLE	1			
STANDARD HOURS				2.4

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	x	REV. LTR/DATE	X
PROCESS/OPER" CODE	SET UP	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	x	HULL	x
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	WORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	x
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE X	x
ITEM	131-3	SUB-ITEH	131-3-1
GEN. DRAWING.	131	WORK ORDER	x
DET. DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PA
OPER. DESCRIPTION	SET UP BRACKET STAGING AT FLOOR LEVEL TRANSVERSE BULKHEAD WING TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Stem	Method	Instruction	FreQ
1	SET-UP	(STAGING CLIP) ON BULKHEAD WITH HAMMER ((376) AND STEEL-TAPE)	3
		* REPRESENTS PUTTING UP A STAGING CLIP ON * THE BULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... * .SEPARATE SUB OPERATION	
2	WELD	STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(435) STRUCTURE) WITH	.06

STANDARD TIME CALCULATION

3	MAKE READY STAGING BRACKET FOR (TRANSPORTN6) WI(TH HAND	426)	6
	* REPRESENTS GETTING BRACKET READY TO BE..		
	* TRANSPORTED TO TANK OR BULKHEAD		
	* CARPENTER IS LOCATED EITHER ON THE WAY..		
	* OR IN TANK AT THE HATERIAL (BIN-1)		
4	TRANSPORT STAGING BRACKET WITH (TOWER CRANE)	(563)	6
	* REPRESENTS TRANSPORTING BRACKETS FROM..		
	* BIN-1 TO BULKHEAD		
	* DISTANCES FROM CRANE-REST TO BIN-1 AND..		
	* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...		
	* ...DISTANCES FROM THE SIDE OF A BASIN		
	*...1200'X200"		
	* MAXIMUM NUMBER OF BRKTS IN LIFT = 6		
5	SET-UP STAGING BRACKET ON WEB FRAME WITH WRENCH(	569)	3
	* REPRESENTS PUTTING UP A STAGING BRACKET		
	* ...ON A EXISTING STAGING CLIP (LOCATED		
	* ...ON A WEB FRAME)		
6	MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(H HAND	428)	40
	* REPRESENTS GETTING BOARD ON BOLSTERS SO		
	* ...THAT THE CRANE CAN TRANSPORT IT		
7	TRANSPORT STAGING PLANK WITH (TOWER CRANE)	(565)	40
	* REPRESENTS TRANSPORTING BOARDS FROM		
	* ...LU-FILE TO BULKHEAD		
	* DISTANCES FROM CRANE-REST TO LU-PILE AND		
	* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE		
	* ...DISTANCES FROM THE SIDE OF A BASIN		
	*...1200'X200'		
	* MAXIMUM NUMBER OF BOARDS IN LIFT = 3		
8	SET-UP STAGING PLANK ON STAGING BRACKET WITH HA(ND	573)	5
	* REPRESENTS SPREADING BOARDS BETWEEN WEBS		
	* 2 MAN OPERATION:		
	* CARPENTERS ARE LOCATED AT TWO DIFFERENT		
	* ...WEBS. THEY BOTH PICK UP THE BOARD		
	* ...TOGETHER AND SLIDE IT INTO POSITION.		
	* IN THIS ANALYSIS CARPENTERS ARE LOCATED		
	* ON THE SAME LEVEL AS THE BOARDS.		
9	SET-UP STAGING PLANK ON (EXISTING) BRACKET ST(AGING WITH HAND	575)	15
	* REPRESENTS SPREADING BOARDS BETWEEN		

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     * ...EXISTING STAGING AND INBOARD OR
     *   ...OUTBOARD   BULKHEAD
     * 2 MAN OPERATION:
     * CARPENTERS ARE LOCATED AT DIFFERENT WEBS
     * ...EACH CARPENTER SPREADS TWO BOARDS
     *  ...S1MULTANE0USLY
     * IN THIS ANALYSIS CARPENTERS ARE LOCATED
     *  ...ON THE SAME LEVEL AS THE BOARDS.
10 MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(  429)          6
     NDl

     * REPRESENTS GETTING STANCHION READY TO BE
     * ...TRANSPORTED+
11 TRANSPORT STANCHION WITH (TOWER CRANE)          (  566)          6
     * REPRESENTS TRANSPORTING STANCHION FROM...
     * ...BIN-2 TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO BIN-2 AND..
     * ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
     * ...DISTANCES FROM THE SIDE OF A BASIN
     *  ...1200'X200'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
12  SET-UP STANCHION IN STAGING BRACKET WITH HAND  (  577)          3
     * REPRESENTS PUTTING STANCHION IN THE
     * ...BRACKET SLEEVE IN A WING TANK
13 MAKE READY HANDRAIL FOR (TRANSPORTING) WITH MAN(  430)          10
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     * ...S0 THAT THE CRANE CAN TRANSPORT IT
14 TRANSPORT HANDRAIL WITH (TOWER CRANE)          (  567)          10
     * REPRESENTS TRANSPORTING HANDRAIL FROM...
     * ...HR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
     * ...DISTANCES FROM THE SIDE OF A BASIN
     *       ...1200'X200'
     *   MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
15  SET-UP HANDRAIL IN STANCHION WITH HAND         (  578)          10
     * REPRESENTS PUTTING HANDRAIL INTO THE
     * ...EYELETS ON THE STANCHION
     * INCLUDES ACTION DISTANCES NEEDED FOR
     * ...ALIGNING THE HANDRAIL
     * WELDING OF THE HANDRAIL WILL BE DONE IN
     * ...A SEPARATE SUB OPERATION
16 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(  440)          ● lo
     TICK ELECTRODE
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STANDARD TIME CALCULATION

17 (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED ST(431)
AIRS) ON BULKHEAD

* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	3.00		2010.	376
2	0.00	0.06		63801.	435
3	0.00	6.00		3060.	426
4	0.00	6.00		10800.	563
5	0.00	3.00		3240.	569
6	0.00	40.00		20000.	428
7	0.00	40.00		161320.	565
8	0.00	5.00		1750.	573
9	0.00	15.00		6300.	575
10	0.00	6.00		1740.	429
11	0.00	6.00		10800.	566
12	0.00	3.00		750.	577
13	0.00	10.00		5000.	430
14	0.00	10.00		18000.	567
15	0.00	10.00		6500.	578
16	0.00	0.10		19609.	440
17	0.00	1.00		320.	431
			---	---	
MANUAL TIME(TMU)			0.	939521.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operetion Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	3.350		0.000	3.350
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS+/CYCLE)	3.350		0.000	3.350
PIECES PER CYCLE	1			
STANDARD HOURS				3.4

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP BRACKET STAGING BELOW FLOOR TRANSVERSE BULKHEAD WING TANK PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER ((AND STEEL-TAPE)	376)	3
	* REPRESENTS PUTTING UP A STAGING CLIP ON * ...THE BULKHEAD * WELDING OF THE CLIP WILL BE DONE IN A... * ...SEPARATE SUB OPERATION		
2	WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(STRUCTURE) WITH	435)	.06

STANDARD TIME CALCULATION

3	MAKE READY STAGING BRACKET FOR (TRANSPORTNG) WITH HAND	(426)	6
	* REPRESENTS GETTING BRACKET READY TO BE..		
	* ...TRANSPORTED TO TANK OR BULKHEAD		
	* CARPENTER IS LOCATED EITHER ON THE WAY..		
	* ...OR IN TANK AT THE MATERIAL (BIN-1)		
4	TRANSPORT STAGING BRACKET WITH (TOWER CRANE)	(563)	6
	* REPRESENTS TRANSPORTING BRACKETS FROM...		
	* ...BIN-1 TO BULKHEAD		
	* DISTANCES FROM CRANE-REST TO BIN-1 AND..		
	* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...		
	* ...DISTANCES FROM THE SIDE OF A BASIN		
	* ...1200'X200'		
	* MAXIMUM NUMBER OF BRKTS IN LIFT = 6		
5	MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND	(377)	
	* REPRESENTS GETTING BRACKET READY TO BE..		
	* ...TRANSPORTED TO TANK OR BULKHEAD		
	* CARPENTER IS LOCATED EITHER ON THE WAY..		
	* ...OR IN TANK AT THE MATERIAL (BIN-1)		
6	SET-UP STAGING BRACKET ON WEB FRAME WITH WRENCH	(569)	2
	* REPRESENTS PUTTING UP A STAGING BRACKET		
	* ...ON A EXISTING STAGING CLIP (LOCATED		
	* ...ON A WEB FRAME)		
7	MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND	(428)	20
	* REPRESENTS GETTING BOARD ON BOLSTERS SO		
	* ...THAT THE CRANE CAN TRANSPORT IT		
8	TRANSPORT STAGING PLANK WITH (TOWER CRANE)	(565)	20
	* REPRESENTS TRANSPORTING BOARDS FROM		
	* ...LU-PILE TO BULKHEAD		
	* DISTANCES FROM CRANE-REST TO LU-PILE AND		
	* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE		
	* ...DISTANCES FROM THE SIDE OF A BASIN		
	* ...1200'X200'		
	* MAXIMUM NUMBER OF BOARDS IN LIFT = 3		
9	SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND	(573)	5
	* REPRESENTS SPREADING BOARDS BETWEEN WEBS		
	* 2 MAN OPERATION:		
	* CARPENTERS ARE LOCATED AT TWO DIFFERENT		
	* ...WEBS. THEY BOTH PICK UP THE BOARD		

```
     * ...TOGETHER AND SLIDE IT INTO POSITION.
     * IN THIS ANALYSIS CARPENTERS ARE LOCATED
     * ...ON THE SAME LEVEL AS THE BOARDS.
10   SET-UP  STAGING PLANK ON ( EXISTING ) BRACKET ST(  575)          5
     AGING WITH HAND

     * REPRESENTS SPREADING BOARDS BETWEEN
     * ...EXISTING STAGING AND INBOARD OR
     * ...OUTBOARD BULKHEAD
     * 2 MAN OPERATION:
     * CARPENTERS ARE LOCATED AT DIFFERENT WEBS
     * ...EACH CARPENTER SPREADS TWO BOARDS
     * ...SIMULTANEOUSLY
     * IN THIS ANALYSIS CARPENTERS ARE LOCATED
     * ...ON THE SAME LEVEL AS THE BOARDS.
11   MAKE READY  STANCHION FOR (TRANSPORTING) WITH HA(  429)          6
     ND

     * REPRESENTS GETTING STANCHION READY TO BE
     * ...TRANSPORTED.
12   TRANSPORT  STANCHION WITH (TOWER CRANE)          (  566)          6
     * REPRESENTS TRANSPORTING STANCHION FROM..
     * ...BIN-2 TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO BIN-2 AND..
     * ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
     * ...DISTANCES FROM THE SIDE OF A BASIN
     * ...1200'X200'
     * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
13   SET-UP  STANCHION IN STAGING BRACKET WITH HAND   (  393)          3
     * REPRESENTS PUTTING STANCHION IN THE.....
     * ...BRACKET SLEEVE.
14   MAKE READY  HANDRAIL FOR (TRANSPORTING) WITH HAN(  430)          10
     D

     * REPRESENTS GETTING HANDRAIL ON BOLSTERS
     * ...SO THAT THE CRANE CAN TRANSPORT IT
15   TRANSPORT  HANDRAIL WITH (TOWER CRANE)           (  567)          10
     * REPRESENTS TRANSPORTING HANDRAIL FROM...
     * ...HR-PILE TO BULKHEAD
     * DISTANCES FROM CRANE-REST TO HR-PILE AND
     * ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
     * ...DISTANCES FROM THE SIDE OF A BASIN
     * ...1200'X200'
     * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
16   SET-UP  HANDRAIL ON STANCHION WITH HAND          (  396)          10
     * REPRESENTS PUTTING HANDRAIL INTO THE....
     * ...EYELETS ON THE STANCHION
```

STANDARD TIME CALCULATION

* INCLUDES ACTION DISTANCES NEEDED FOR....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION

17 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S(440) .10
TICK ELECTRODE

18 (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED ST(431)
AIRS) ON BULKHEAD

* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	3.00		2010.	376
2	0.00	0.06		63801.	435
3	0.00	6.00		3060.	426
4	0.00	6.00		10800.	563
5	0.00	1.00		510.	377
6	0.00	2.00		2160.	569
7	0.00	20.00		10000.	428
8	0.00	20.00		80660.	565
9	0.00	5.00		1750.	573
10	0.00	5.00		2100.	575
11	0.00	6.00		1740.	429
12	0.00	6.00		10800.	566
13	0.00	3.00		750.	393
14	0.00	10.00		5000.	430
15	0.00	10.00		18000.	567
16	0.00	10.00		6500.	396
17	0.00	0.10		19609.	440
18	0.00	1.00		320.	431
			---------	---------	
MANUAL TIME(TMU)			0.	1179091.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.396		0.000	2.396
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.396		0.000	2.396
PIECES PER CYCLE	1			
STANDARD HOURS				2.4

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING ON WEBS IN WING TANKS PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction	Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND (399) WINCH)	14

* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....

```
    * ...MOVING TO THE NEXT SECTION.
    * MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
2   TEAR DOWN  STANCHION ON BULKHEAD WITH HAND (AND (  401)          3
    WINCH)

    * REPRESENTS TEARING DOWN STANCHION IN A..
    * ...WING TANK. STANCHION IS LOWERED TO...
    * ...THE MATL-PILE WITH A WINCH BECAUSE...
    * ...THE TANK IS TO SMALL FOR THE.........
    * ...STANCHION TO BE THROWN.
    * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
3   TEAR DOWN  STAGING PLANK ON STAGING BRACKET WITH(  402)          34
     HAND (AND WINCH)

    * REPRESENTS REMOVING BOARDS FROM ANY TANK
    * ...WINCH IS USED TO LOWER BOARD TO......
    * ...BD-PILE ON TANKTOP.
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
4   TEAR DOWN  STAGING BRACKET ON BULKHEAD WITH WREN(  406)          6
    CH

    * REPRESENTS TEARING DOWN STAGING BRACKET
    * ...IN ANY TANK. BRACKETS ARE LOWERED TO
    * ...MATL-PILE BY WINCH.
    * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
5   TEAR DOWN  LADDER (AND LADDER CLIPS) ON BULKHEAD(  403)          1
     WITH

    * REPRESENTS REMOVING LADDER FROM BULKHEAD
    * ...THERE ARE 4 LADDER CLIPS PER LADDER.
    * ...LADDER LOWERED TO LDR-PILE BY WINCH
    * ...LADDER CLIPS THROWN TO MATL-PILE.
6   (CLIMB UP AND DOWN) MOVE  OPERATOR (ON LADDER) O(  404)          1
    N BULKHEAD

    * REPRESENTS CARPENTERS CLIMBING UP AND...
    * ...DOWN LADDERS TO REMOVE STAGING.
    * AVERAGE LADDER SIZE = 12 RUNGS.
7   REMOVE  HANDRAIL ON (MATERIAL-PILE) WITH WINCH  (  407)          14
    * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
8   REMOVE  STANCHION ON (MATERIAL PILE) WITH WINCH (  408)          6
    * REPRESENTS REMOVAL OF STANCHION FROM ...
    * ...MATL-PILE ON TANKTOP TO DECK (GOING
    * ...THRU MANHOLE).
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     * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
 9   REMOVE  STAGING PLANK ON (BOARD PILE) WITH WINCH(  410)          34
     * REPRESENT REMOVING BOARDS FROM BOARD...
     * ...-PILE ON TANKTOP TO DECK (GOES THRU..
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
10   REMOVE  STAGING BRACKET ON (MATERIAL PILE) WITH (  409)          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MATL
     * ... PILE ON TANKTOP TO DECK (GOING THRU
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
11   REMOVE  LADDER ON (LADDER-PILE) WITH WINCH      (  411)          1
     * REPRESENT REMOVING LADDERS FROM LADDER
     * ...-PILE ON TANKTOP TO DECK (GOES THRU..
     * ...MANHOLE).
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
12   REMOVE  TOOLBOX ON (MATERIAL PILE) WITH WINCH   (  412)          1
     * REPRESENTS REMOVING TOOLBOX FROM MATL...
     * ...-PILEON TANKTOP TO DECK (GOES THRU...
     * ...MANHOLE).
     * TOOLBOX CONTAINS:
     * ...28 BOLTS
     * ...28 NUTS
     * ...28 LADDER CLIPS
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STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	14.00		22932.	399
2	0.00	3.00		4764.	401
3	0.00	34.00		66062.	402
4	0.00	6.00		16782.	406
5	0.00	1.00		8970.	403
6	0.00	1.00		1280.	404
7	0.00	14.00		12852.	407
8	0.00	6.00		5928.	408
9	0.00	34.00		67422.	410
10	0.00	6.00		10662.	409
11	0.00	1.00		1983.	411
12	0.00	1.00		7210.	412

MANUAL TIME(TMU)	0.	1405938.
ACTUAL PROCESS TIME(TMU)	0.	0.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.268		0.000	2.268
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.268		0.000	2.268
PIECES PER CYCLE	1			
STANDARD HOURS				2.3

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING ON SMOOTH BULKHEAD WING TANKS PER 100 LINEAR FEET		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction	Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND (399) WINCH)	14

* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....

```
    * ...MOVING TO THE NEXT SECTION.
    * MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
2   TEAR DOWN  STANCHION ON BULKHEAD WITH HAND (AND (  401)          3
    WINCH)

    * REPRESENTS TEARING DOWN STANCHION IN A..
    * ...WING TANK. STANCHION IS LOWERED TO...
    * ...THE MATL-PILE WITH A WINCH BECAUSE...
    * ...THE TANK IS TO SMALL FOR THE.........
    * ...STANCHION TO BE THROWN.
    * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
3   TEAR DOWN  STAGING PLANK ON STAGING BRACKET WITH(  402)          10
     HAND (AND WINCH)

    * REPRESENTS REMOVING BOARDS FROM ANY TANK
    * ...WINCH IS USED TO LOWER BOARD TO......
    * ...BD-PILE ON TANKTOP.
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
4   TEAR DOWN  STAGING BRACKET ON BULKHEAD WITH WREN(  406)          6
    CH

    * REPRESENTS TEARING DOWN STAGING BRACKET
    * ...IN ANY TANK. BRACKETS ARE LOWERED TO
    * ...MATL-PILE BY WINCH.
    * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
5   TEAR DOWN  LADDER (AND LADDER CLIPS) ON BULKHEAD(  403)          1
     WITH

    * REPRESENTS REMOVING LADDER FROM BULKHEAD
    * ...THERE ARE 4 LADDER CLIPS PER LADDER.
    * ...LADDER LOWERED TO LDR-PILE BY WINCH
    * ...LADDER CLIPS THROWN TO MATL-PILE.
6   (CLIMB UP AND DOWN) MOVE  OPERATOR (ON LADDER) O(  404)          1
    N BULKHEAD

    * REPRESENTS CARPENTERS CLIMBING UP AND...
    * ...DOWN LADDERS TO REMOVE STAGING.
    * AVERAGE LADDER SIZE = 12 RUNGS.
7   REMOVE  HANDRAIL ON (MATERIAL-PILE) WITH WINCH  (  407)          14
    * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
8   REMOVE  STANCHION ON (MATERIAL PILE) WITH WINCH (  408)          6
    * REPRESENTS REMOVAL OF STANCHION FROM ...
    * ...MATL-PILE ON TANKTOP TO DECK (GOING
    * ...THRU MANHOLE).
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     * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
 9 REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH(  410)          10
     * REPRESENT REMOVING BOARDS FROM BOARD...
     * ...PILE ON TANKTOP TO DECK (GOES THRU..
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
10 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH ( 409)          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MATL
     * . . . PILE ON TANKTOP TO DECK (GOING THRU
     *  ...MANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
11 REMOVE LADDER ON (LADDER-PILE) WITH WINCH       (    411)
     * REPRESENT REMOVING LADDERS FROM LADDER
     * ...-PILE ON TANKTOP TO DECK (GOES THRU..
     * ...MANHOLE).
     * MAXIMUM NUMBER OF LADDERS IN LIFT = 3
12 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH    (    412)
     * REPRESENTS REMOVING TOOLBOX FROM MATL...
     * ...-PILEON TANKTOP TO DECK (GOES THRU...
     * ...MANHOLE).
     * TOOLBOX CONTAINS:
     * ...28 BOLTS
     * ...28 NUTS
     * ...28 LADDER CLIPS
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	14.00		22932.	399
2	0.00	3.00		4764.	401
3	0.00	10.00		19430.	402
4	0.00	6.00		16782.	406
5	0.00	1.00		8970.	403
6	0.00	1.00		1280.	404
7	0.00	14.00		12852.	407
8	0.00	6.00		5928.	408
9	0.00	10.00		19830.	410
10	0.00	6.00		10662.	409
11	0.00	1.00		1983.	411
12	0.00	1.00		7210.	412
			---	---	
MANUAL TIME(TMU)			0.	1538561.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1•326		0.000	1.326
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	1•326		0.000	1•326
PIECES PER CYCLE	1			
STANDARD HOURS				1.3

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING AT FLOOR		
	TRANSVERSE BULKHEAD WING TANK PER 100 LIN FT		
DATE	08-JUN-83	ISSUE #	1

Step	Method Instruction	Freq
1	TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND (399) WINCH)	10

* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....

```
    * ...MOVING TO THE NEXT SECTION.
    * MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
2   TEAR DOWN  STANCHION ON BULKHEAD WITH HAND (AND (  401)          3
    WINCH)

    * REPRESENTS TEARING DOWN STANCHION IN A..
    * ...WING TANK. STANCHION IS LOWERED TO...
    * ...THE MATL-PILE WITH A WINCH BECAUSE...
    * ...THE TANK IS TO SMALL FOR THE.........
    * ...STANCHION TO BE THROWN.
    * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
3   TEAR DOWN  STAGING PLANK ON STAGING BRACKET WITH(  402)          40
     HAND (AND WINCH)

    * REPRESENTS REMOVING BOARDS FROM ANY TANK
    * ...WINCH IS USED TO LOWER BOARD TO......
    * ...BD-PILE ON TANKTOP.
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
4   TEAR DOWN  STAGING BRACKET ON BULKHEAD WITH WREN(  406)          6
    CH

    * REPRESENTS TEARING DOWN STAGING BRACKET
    * ...IN ANY TANK. BRACKETS ARE LOWERED TO
    * ...MATL-PILE BY WINCH.
    * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
5   (WALK UP OR DOWN) MOVE  OPERATOR (ON INCLINED ST(  431)
    AIRS) ON BULKHEAD

    * REPRESENTS CARPENTER WALKING UP OR DOWN
    * ...A SET OF INCLINED STAIRS. AVERAGE
    * ...NUMBER OF TREADS IN A SET OF INCLINED
    * ...STAIRS = 16.
    * CARPENTERS ARE WALKING UP OR DOWN STAIRS
    * AT THE SAME TIME.
6   REMOVE  HANDRAIL ON (MATERIAL-PILE) WITH WINCH  (  407)          10
    * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
7   REMOVE  STANCHION ON (MATERIAL PILE) WITH WINCH (  408)          6
    * REPRESENTS REMOVAL OF STANCHION FROM ...
    * ...MATL-PILE ON TANKTOP TO DECK (GOING
    * ...THRU MANHOLE).
    * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
8   REMOVE  STAGING PLANK ON (BOARD PILE) WITH WINCH(  410)          40
    * REPRESENT REMOVING BOARDS FROM BOARD...
    * ...-PILE ON TANKTOP TO DECK (GOES THRU..
```

```
     *    ...MANHOLE).
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
  9 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (  409 )          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MATL
     * . . . PILE ON TANKTOP TO DECK (GOING THRU
     *    ...MANHOLE).
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
 10 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH (  412)            1
     * REPRESENTS REMOVING TOOLBOX FROM MATL...
     * ...-PILEON TANKTOP TO DECK (GOES THRU...
     * ...MANHOLE).
     * TOOLBOX CONTAINS:
     *    ...28  BOLTS
     * ...28 NUTS
     * ...28 LADDER CLIPS
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	10.00		16380 .	399
2	0.00	3.00		4764.	401
3	0.00	40.00		77720.	402
4	0.00	6.00		16782.	406
5	0.00	1.00		320.	431
6	0.00	10.00		9180.	407
7	0.00	6.OO		5928.	408
8	0.00	40.00		79320.	410
9	0.00	6.00		10662.	409
10	0.00	1.00		7210.	412
MANUAL TIME(TMU)			O.	1766827.	
ACTUAL PROCESS TIME(TWJ)			0.	0.	
FACTORED PROCESS TIME(THU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.283		0.000	2.283
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.283		0.000	2.283
PIECES PER CYCLE	1			
STANDARD HOURS				2.3

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	x	REV. LTR/DATE	x
PROCESS/OPER CODE	REMOVE	STANDARD CODE	x
PART NAME	2 BOARD BRACKET STAGING		
SHIP CLASS	x	HULL	x
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	WORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	x
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	x
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	x
DET . DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN AND REMOVE BRACKET STAGING BELOW FLOOR TRANSVERSE BULKHEAD WING TANK PER 100 LIN FT		
DATE	08-JUN-83	ISSUE #	1

Step	Method	Instruction	Freq
1		TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND (399) WINCH)	10

* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....

```
    * ...MOVING TO THE NEXT SECTION.
    * MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
2   TEAR DOWN  STANCHION ON BULKHEAD WITH HAND (AND (  401)          3
    WINCH)

    * REPRESENTS TEARING DOWN STANCHION IN A..
    * ...WING TANK. STANCHION IS LOWERED TO...
    * ...THE MATL-PILE WITH A WINCH BECAUSE...
    * ...THE TANK IS TO SMALL FOR THE.........
    * ...STANCHION TO BE THROWN.
    * MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
3   TEAR DOWN  STAGING PLANK ON STAGING BRACKET WITH(  402)          20
     HAND (AND WINCH)

    * REPRESENTS REMOVING BOARDS FROM ANY TANK
    * ...WINCH IS USED TO LOWER BOARD TO......
    * ...BD-PILE ON TANKTOP.
    * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
4   TEAR DOWN  STAGING BRACKET ON BULKHEAD WITH WREN(  406)          6
    CH

    * REPRESENTS TEARING DOWN STAGING BRACKET
    * ...IN ANY TANK. BRACKETS ARE LOWERED TO
    * ...MATL-PILE BY WINCH.
    * MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
5   (WALK UP OR DOWN) MOVE  OPERATOR (ON INCLINED ST(  431)          1
    AIRS) ON BULKHEAD

    * REPRESENTS CARPENTER WALKING UP OR DOWN
    * ...A SET OF INCLINED STAIRS. AVERAGE
    * ...NUMBER OF TREADS IN A SET OF INCLINED
    * ...STAIRS = 16.
    * CARPENTERS ARE WALKING UP OR DOWN STAIRS
    * AT THE SAME TIME.
6   REMOVE  HANDRAIL ON (MATERIAL-PILE) WITH WINCH  (  407)          10
    * REPRESENTS REMOVAL OF HANDRAIL FROM MATL
    * ... PILE ON TANKTOP TO DECK (GOING THRU
    * ...MANHOLE).
    * MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
7   REMOVE  STANCHION ON (MATERIAL PILE) WITH WINCH (  408)          6
    * REPRESENTS REMOVAL OF STANCHION FROM ...
    * ...MATL-PILE ON TANKTOP TO DECK (GOING
    * ...THRU MANHOLE).
    * MAXIMUM NUMBER OF STANCHION IN LIFT = 6
8   REMOVE  STAGING PLANK ON (BOARD PILE) WITH WINCH(  410)          20
    * REPRESENT REMOVING BOARDS FROM BOARD...
    * ...-PILE ON TANKTOP TO DECK (GOES THRU..
```

```
     * ...MANHOLE).
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 3
 9 REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH (  409 )          6
     WINCH

     * REPRESENTS REMOVAL OF BRACKET FROM MAIL
     *  ...PILE  ON  TANKTOP  TO  DECK  (GOING  THRU
     * ...MANHOLE)O
     * MAXIMUM NUMBER OF BRACKET IN LIFT = 3
10 REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH    (    412)
     * REPRESENTS REMOVING TOOLBOX FROM MAIL...
     * ...-PILEON TANKTOP TO DECK (GOES THRU...
     * ...MANHOLE).
     * TOOLBOX CONTAINS:
     * ...28 BOLTS
     * ...28 NUTS
     *  ...28 LADDER CLIPS
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TIME	EXTERNAL TMU	LOC #
	0.00	10.00		16380.	399
1	0.00	3*OO		4764.	401
3	0.00	20.00		30860.	402
4	0.00	6.00		16782.	406
5	0.00	1.00		320.	431
6	0.00	10.00		9180.	407
7	0.00	6.00		5920.	408
8	0.00	20.00		39660.	410
9	0.00	6.00		10662.	409
10	0.00	1.00		7210.	412
			---	---	
MANUAL TIME(TMU)			0.	1916573.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(THU)			0.		
TOTAL INTERNAL TIME(TMU)			o.		

TITLE SHEET USED IN SETTING STANDARD: o

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1.497		0 . 000	1.497
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	1.497		0.000	1.497
PIECES PER CYCLE	1			
STANDARD HOURS				1.5

4.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	x	REV. LTR/DATE	x
PROCESS/OPER CODE	SET UP	STANDARD CODE	x
PART NAME	TANK STAGING PLATFORM		
SHIP CLASS	x	HULL	x
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	WORK AREA	x
SUE-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	x
CREW/MACHINE	2 CARPENTERS	ASSET/MACHINE	x
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	x
DET. DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PP
OPER. DESCRIPTION	ASSEMBLE TANK STAGING PLATFORM, PLACE ON SHIP, SECURE TO MAIN DECK PER 100 SQUARE FEET		
DATE	18-MAY-83	ISSUE #	1

Step	Method	Instruction	Freq
1	(BRUSH) CLEAN M WITH BROOM	(PLATEN) FOR TANK STAGING PLATFOR(538)	.14
		* REPRESENTS CLEANING THE TABLE BEFORE THE * ...TANK STAGING PLATFORM IS ASSEMBLED. * SQUARE FOOTAGE OF AREA CLEANED = 700	
2	READ	MATERIAL LIST (PRINT) FOR TANK STAGING PLA(539)	.14

TFORM WITH (EYES)

* CARPENTER READS PRINT BEFORE LAYING OUT
* ...TABLE. READS 48 DIGITS PER LOCATION
3 MEASURE (PLATEN) FOR TANK STAGING PLATFORM WITH(540) .14
(STEEL) TAPE

* REPRESENTS MEASURING TABLE FOR LAYOUT
* ANALYSIS INCLUDES ALL THE WALKING....
* ...DISTANCES FOR THE LAYOUT.
* STEPS:
* 2,3,4 ARE FOR I-1,I-2,I-3,I-4,AND I-5
* ...AT A-5 AND A-6.
* 5,6,7 ARE FOR A-5,I-7,A-4,A-3,A-1,I-6,
* ...AND A-6 AT I-5
* 5,6,7 ARE FOR A-5,I-7,A-4,A-2,A-1,I-6,
* ...AND A-6 AT I-1
* 9,10,11 ARE FOR A-2 AND A-3 AT I-3
4 MARK (PLATEN) FOR TANK STAGING PLATFORM WITH MA(541) .14
RKER

* REPRESENTS MARKING THE LAYOUT FOR A TANK
* ...STAGING PLATFORM AND INSPECTING WORK.
* THE FOLLOWING PLACES ARE LAID OUT:
* ...AT A-5 AND A-6:
* ...I-1,I-2,I-3,I-4, AND I-5
* ...AT I-1 AND I-5:
* ...A-6,I-6,A-1,A-4,I-7, AND A-5
* ...A-2 IS LAID OUT AT I-3 AND I-1
* ...A-3 IS LAID OUT AT I-3 AND I-5
5 TRANSPORT PALLET (I-BEAMS AND ANGLES) FOR TANK (542) .14
STAGING PLATFORM

* MATERIAL NEEDED FOR ONE PLATFORM:
* ...I-BEAMS - 7
* ...ANGLES - 6
6 SET-UP I-BEAMS FOR TANK STAGING PLATFORM WITH ((543) .14
CRANE)

* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 3 INCLUDES SPREADING I-BEAMS AT:
* ...I-2,I-3,I-4, AND I-5
7 SET-UP ANGLE-BARS FOR TANK STAGING PLATFORM WIT(544) .14
H (CRANE)

* CARPENTER WORKS SIMULTANEOUSLY WITH THE

```
     * ...HOOKER-ON
     * STEP 1 INCLUDES SPREADING ANGLES AT:
     * ...A-6,A-1, AND A-2
     * STEP 2 INCLUDES SPREADING ANGLES AT:
     * ...A-3,A-4, AND A-5
 8   ASSEMBLE  I-BEAMS FOR TANK STAGING PLATFORM WITH(  545)          .14
       WRENCH

     * CARPENTER WORKS ALONE BOLTING I-BEAMS
     * STEPS:
     * 1-4 ARE FOR THE CONNECTIONS OF I-6 & I-7
     * ...AT I-1,I-2,I-3,I-4, AND I-5
     * 5,6 ARE FOR MOVEMENT OF THE CARPENTER
     * ...BETWEEN THE CONNECTIONS
 9   ASSEMBLE  ANGLE-BARS FOR TANK STAGING PLATFORM W(  546)          .14
     ITH WRENCH

     * CARPENTER WORKS ALONE ASSEMBLING ANGLES
     * STEPS:
     * 1-6 ARE FOR CONNECTIONS OF A-4 AND A-1
     * ...AT I-1,I-2,I-3,I-4, AND I-5
     * 7-13 ARE FOR CONNECTIONS OF
     * ...A-3 AT I-5,I-4, AND I-3 AND
     * ...A-1 AT I-3,I-2, AND I-1
     * 14-20 ARE FOR CONNECTIONS OF A-5 AND A-6
     * ...AT I-1,I-2,I-3,I-4, AND I-5
10   TRANSPORT  STAGING PLANKS FOR TANK STAGING PLATF(  547)          .14
     ORM WITH (CRANE)

     * BOARDS ARE TRANSPORTED FROM LUMBER PILE
     * ...WHICH IS LOCATED ON THE PLATEN.
     * TOTAL NUMBER OF BOARDS IN LIFT = 64
     * TOTAL LIFTS = 2 (PORT AND STARBOARD)
11   SET-UP  STAGING PLANKS ON TANK STAGING PLATFORM (  548)          .14
     WITH HANDS

     * CARPENTERS SPREAD BOARDS SIMULTANEOUSLY
     * BOARDS ARE SPREAD ON PORT SIDE FIRST....
     * ...THEN STARBOARD SIDE.
     * TOTAL BOARDS PER SIDE = 32
     * STEPS:
     * 2-5 SPREAD BOARDS BETWEEN A-6 & I-6 P/S
     * 6-8 SPREAD BOARDS BETWEEN I-6 & A-1 P/S
     * 9-11 SPREAD BOARDS BETWEEN A-1 & A-3 S
     * ...AND A-1 & A-2 P
     * 12-14 SPREAD BOARDS BETWEEN A-3 & A-4 S
     * ...AND A-2 & A-4 P
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     * 15-17 SPREAD BOARDS BTWN A-4 & I-7 P/S
     * 18-20 SPREAD BOARDS BTWN I-7 & A-5 P/S
     * 21-22 SPREAD BOARD AT A-5 P/S
12   TRANSPORT  (FINISHED) TANK STAGING PLATFORM WITH(  549)          .14
       (CRANE)

     * TRANSPORT FINISHED PLATFORM TO A STORAGE
     * ...PILE
13   POSITION (PLACE)  TANK STAGING PLATFORM ( AND BO(  557)          .14
       ARDS ) IN

     * REPRESENTS SETTING TANK STAGING PLATFORM
     * ...IN A TYPICAL TANK ON THE SHIP. ALSO
     * ...THE BOARDS NEEDED TO EXTEND THE
     * ...PLATFORM UNDER THE MAIN DECK.
     * 2 HOOKER-ONS: ONE AT THE MATERIAL AND
     * ...ONE ON THE SHIP IN THE TANK.
     * TOTAL OF 280 FOR TYPICAL TANK
     * 7 LIFTS ( 40 BOARDS PER LIFT )
14   POSITION (RAISE)  TANK STAGING PLATFORM WITH (CR(  555)          .14
       ANE)

     * REPRESENTS RAISING TYPICAL PLATFORM IN A
     * ...CENTER TANK AND SECURING IT TO THE
     * ...MAIN DECK.
     * 2 CARPENTERS WORK SIMULTANEOUSLY ON THE
     * ...MAIN DECK
     * 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
     * ...CENTER TANK ON THE PLATFORM
     * STEPS:
     * 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
     * ...HOLES ON MAIN DECK
     * 7-12 CONNECTION OF SHACKLES ON PLATFORM
     * 14-19 CONNECTION OF SUSPENSION CABLES ON
     * ...PLATFORM AND MAIN DECK
     * 21-26 REMOVING SHACKLES FROM PLATFORM
     * 27-29 REMOVING CABLES FROM CENTER TANK
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL T M U	LOC #
1	0.00	0.14		5961.	538
2	0.00	0.14		437.	539
3	0.00	0.14		2164.	540
4	0.00	0.14		1190.	541
5	0.00	0.14		1092.	542
6	0.00	0.14		6104.	543
7	0.00	0.14		6552 .	544
8	0.00	0.14		7511.	545
9	0.00	0.14		10364.	546
10	0.00	0.14		3640.	547
11	0.00	0.14		5043.	548
12	0.00	0.14		1764.	549
13	0.00	0.14		9758.	557
14	0.00	0.14		8071.	555
			---	---	
MANUAL TIME(TMU)			0.	69652.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.697		0.000	0.697
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	0.697		0.000	0.697
PIECES PER CYCLE	1			
STANDARD HOURS				0.7

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	TEAR DOWN	STANDARD CODE	X
PART NAME	TANK STAGING PLATFORM		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	6 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	LOWER TANK STAGING PLATFORM, DISASSEMBLE, REMOVE MATERIAL FROM TANK PER 100 SQUARE FEET		
DATE	26-MAY-83	ISSUE #	2

Step	Method Instruction	Freq
1	POSITION (LOWER) TANK STAGING PLATFORM WITH (CR(556) ANE)	.14
	* REPRESENTS LOWERING TYPICAL PLATFORM IN	
	* ...A CENTER TANK AND REMOVING IT FROM	
	* ...THE MAIN DECK.	
	* 2 CARPENTERS WORK SIMULTANEOUSLY ON THE	
	* ...MAIN DECK	
	* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE	

```
    * ...CENTER TANK ON THE PLATFORM
    * STEPS:
    * 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
    * ...HOLES ON MAIN DECK
    * 6-11 CONNECTION OF SHACKLES ON PLATFORM
    * 13-18 REMOVAL OF SUSPENSION CABLES FROM
    * ...PLATFORM AND MAIN DECK
    * 23-28 REMOVING SHACKLES FROM PLATFORM
    * 29-31 REMOVING CABLES FROM CENTER TANK
2   TEAR DOWN  STAGING PLANKS ON TANK STAGING PLATFO(  552)          .14
    RM WITH WINCH

    * REPRESENTS REMOVAL OF BOARDS ON A TANK
    * ...STAGING PLATFORM (IN A CENTER TANK)
    * TOTAL BOARDS = 64 (22 LIFTS)
    * 2 CARPENTERS MOVE BOARDS FROM THE TANK
    * ...STAGING PLATFORM TO A LUMBER-PILE
    * ...LOCATED NEAR A MANHOLE. A WINCH
    * ...OPERATOR AND A CARPENTER REMOVE THE
    * ...BOARDS FROM THE TANK. THERE ARE 2
    * ...CARPENTERS WHO RECEIVE AND STACK THE
    * ...BOARDS ON THE DECK. THEIR TIME IS
    * ...INTERNAL TO THE WINCH PROCESS TIME.
3   TEAR DOWN  ANGLES ON TANK STAGING PLATFORM WITH (  550)          .14
    WRENCH

    * CARPENTER WORKS ALONE UNBOLTING ANGLES
    * STEPS:
    * 1-5 ARE FOR REMOVING BOLTS ON A-4 & A-1
    * ...AT I-1,I-2,I-3,I-4,AND I-5
    * 7-11 ARE FOR REMOVING BOLTS
    * ...ON A-3 AT I-1,I-2, & I-3
    * ...ON A-1 AT I-3,I-4, & I-5
    * 14-18 FOR REMOVING BOLTS ON A-5 & A-6
    * ...AT I-1,I-2,I-3,I-4 & I-5
4   TEAR DOWN  I-BEAMS ON TANK STAGING PLATFORM WITH(  551)          .14
      WRENCH

    * CARPENTER WORKS ALONE UNBOLTING I-BEAMS
    * STEPS:
    * 1-5 ARE FOR REMOVING BOLTS ON I-6 & I-7
    * ...AT I-1,I-2,I-3,I-4,AND I-5
    * 6,7 ARE FOR MOVEMENT OF THE CARPENTER
    * ...BETWEEN THE CONNECTIONS
5   TEAR DOWN  ANGLES ON TANK STAGING PLATFORM WITH (  553)          .14
    WINCH
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```
     * REPRESENTS REMOVAL OF ANGLES ON A TANK
     * ...STAGING PLATFORM (IN A CENTER TANK)
     *  TOTAL ANGLES = 6 (1 LIFT)
     * 1 CARPENTER MOVES ANGLES TO ONE AREA ON
     * ...THE TANK STAGING PLATFORM
     * ...LOCATED NEAR A MANHOLE, A WINCH
     * ...OPERATOR AND A CARPENTER REMOVE THE
     * ...ANGLES FROM THE TANK. THERE ARE 2
     *  ...CARPENTERS WHO RECEIVE AND STACK THE
     * ...ANGLES (IN THE DECK. THEIR TIME IS
     *  ...INTERNAL TO THE WINCH PROCESS TIME.
6 TEAR DOWN I-BEAMS FOR TANK STAGING PLATFORM WIT( 554 )          .14
     H WINCH

     * REPRESENTS REMOVAL OF I-BEAMS FROM THE
     * ...TANK STAGING PLATFORM
     * TOTAL I-BEAMS = 7 (7 LIFTS)
     * A CARPENTER AND WINCH OPERATOR REMOVE
     * ...THE I-BEAMS FROM THE TANK. THERE ARE
     * ...2 CARPENTERS WHO RECEIVE AND STACK
     * ...THE I-BEAMS ON THE DECK. THEIR TIME
     * ...IS INTERNAL TO THE WINCH PROCESS TIME
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	0.14		8571.	556
2	0.00	0.14		30111.	552
3	0.00	0.14		7960.	550
4	0.00	0.00		5394.	551
5	0.00	0.14		1294.	553
6	0.00	0.14		4976.	554

MANUAL TIME(TMU)	0.	127957.
ACTUAL PROCESS TIME(TMU)	o.	o.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	o.	

TITLE SHEET USED IN SETTING STANDARD: o

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	0.583		0.000	0.583
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0,000	0.000
STANDARD(HRS./CYCLE)	0.583		0.000	0.583
PIECES PER CYCLE	1			
STANDARD HOURS				O.6

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	STAGING BOARDS AND REMOVE HANDRAIL		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	2 CARPENTER	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SPREADING STAGING BOARDS AROUND PERIMETER OF A CENTER TANK (OFF TANK STAGING PLATFORM) PER 100 FT		
DATE	25-MAY-83	ISSUE #	1

Step	Method Instruction	Freq
1	SET-UP STAGING PLANKS FOR TANK STAGING PLATFORM(559) WITH HAMMER	100
	* REPRESENTS SPREADING BOARDS FROM A TANK * ...STAGING PLATFORM TO EXISTING STAGING * ...ON THE BULKHEADS. * 2 CARPENTERS WHO ARE NOT WORKING * ...SIMULTANEOUSLY.	
2	TEAR DOWN HANDRAIL (AND STANCHION) ON (LONGI(560)	6

TUDINAL) BULKHEAD

* REPRESENTS REMOVAL OF HANDRAIL FROM TOP
* ...LEVEL OF BULKHEAD STAGING IN A CENTER
* ...TANK. THIS IS DONE AFTER BOARDS HAVE
* ...BEEN SPREAD TO TANK STAGING PLATFORM
* CARPENTER WORKS ALONE
* HOOKUP, IGNITE AND EXTINGUISH TORCH ARE
* ...IN A SEPARATE SUB-OP

3 HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WREENC(9) 6
H

* TORCH AND HOSE LOCATED AT MANIFOLD
* UNHOOK IS THE REVERSE OF HOOKUP

4 IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HA(10) 6
ND

* HOOK-UP NOT INCLUDED

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL THU	EXTERNAL TMU	LOC #
1	0.00	100.00		673000.	559
2	0.00	6.00		57360.	560
3	0.00	6.00		1680.	9
4	0.00	6.00		3960.	10
t4ANUAL TIME(TMU)			0.	863957.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: o

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	7.360		0.000	7.360
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	7.360		0.000	7.360
PIECES PER CYCLE	1			
STANDARD HOURS				7.4

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	x	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	STAGING BRACKETS AND BOARDS		
SHIP CLASS	x	HULL	x
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	x	WORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	x
CREW/MACHINE	2 CARPENTERS	ASSET/MACHINE	x
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	x
DET. DRAWING	x	SHEET 1	1
WORK PACKAGE	x	APPLICATOR	PP
OPER. DESCRIPTION	CONNECT TWO TANK STAGING PLATFORMS: USING STAGING BRACKETS AND BOARDS PER 100 LINEAR FEET		
DATE	25-MAY-83	ISSUE #	1

Step	Method	Instruction	Freq
1	SET-UP	STAGING BRACKETS FOR (BETWEEN) TANK STAG(561) ING PLATFORM WITH	5

* REPRESENTS SETTING UP BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. BOARDS ARE SPREAD
* ...BETWEEN THE BRACKETS.
* THIS ASSEMBLY IS USED TO CONNECT THE TWO
* ...TANK STAGING PLATFORMS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH

```
     * ...WORKING ON A DIFFERENT PLATFORM.
     * STEPS:
     * 1-6 REPRESENTS SETTING UP BRACKETS AT
     * ...BR-1, BR-2, AND BR-3
     * 7 REPRESENTS SPREADING BOARDS BETWEEN
     * ...BR-I AND BR-2; BR-2 AND BR-3
2  SET-UP STAGING PLANKS FOR (BETWEEN) TANK STAGIN(  562)          100
     G PLATFORMS WITH

     * REPRESENTS SPREADING BOARDS BETWEEN TWO
     * ...TANK STAGING PLATFORMS
     * 2 CARPENTERS ARE NOT WORKING
     *      ...SIMULTANEOUSLY
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	5.00		32700,	561
2	0.00	100.00		683000.	562
			---------	---------	
MANUAL TIME(TMU)			0.	1579657.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	7.157		0.000	7.157
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	7.157		0.000	7.157
PIECES PER CYCLE	1			
STANDARD HOURS				7.2

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVAL	STANDARD CODE	X
PART NAME	STAGING BOARDS		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	2 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	REMOVAL OF BOARDS AROUND THE PERIMETER OF A CENTER TANK (OFF TANK STAGING PLATFORM) PER 100 LIN FT		
DATE	31-MAY-83	ISSUE #	1

Step	Method Instruction	Freq
1	TEAR DOWN STAGING PLANK FOR TANK STAGING PLATFO(582) RM WITH	100

* REPRESENTS REMOVING BOARDS FROM BELOW
* ...THE MAIN DECK. BOARDS ARE CONNECTED
* ...TO THE TANK STAGING PLATFORM AND THE
* ...EXISTING PERIMETER STAGING BY NAILS.
* 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH

* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON THE
* ...TANK STAGING PLATFORM.

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TIME	EXTERNAL TMU	LOC #
1	0.00	100.00		153000.	582

MANUAL TIME(TMU)	0,	1732657.
ACTUAL PROCESS TIME(TMU)	0.	0.
FACTORED PROCESS TIME(TWU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1.530		0.000	1.530
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	1.530		0.000	1.530
PIECES PER CYCLE	1			
STANDARD HOURS				1.5

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVAL	STANDARD CODE	X
PART NAME	BRACKETS AND BOARDS		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	2 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	DISCONNECT 2 TANK STAGING PLATFORMS: REMOVE		
	BRACKETS AND BOARDS PER 100 LINEAR FEET		
DATE	31-MAY-83	ISSUE #	1

Step	Method Instruction	Freq
1	TEAR DOWN STAGING BRACKETS ON TANK STAGING PLAT(584) FORM WITH WRENCH	5

* REPRESENTS REMOVAL OF BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. ALSO REMOVAL OF
* ...BOARDS THAT ARE SPREAD BETWEEN THE
* ...BRACKETS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM.

STANDARD TIME CALCULATION

```
     * STEPS:
     * 1 REPRESENTS REMOVAL OF BOARDS BETWEEN
     * ...BR-1 AND BR-2; BR-2 AND BR-3
     * 2-5 REPRESENTS REMOVAL OF BRACKETS FROM
     * ...BR-1, BR-2 AND BR-3. BRACKETS ARE
     * ...PLACED ON A PILE ON THE PLATFORM.
2    TEAR DOWN  STAGING PLANK FOR ( BETWEEN ) TANK ST(  583)          100
     AGING PLATFORM

     * REPRESENTS REMOVING BOARDS FROM BETWEEN
     * ...THE TWO TANK STAGING PLATFORMS. THE
     * ...BOARDS ARE CONNECTED TO THE PLATFORMS
     * ...BY NAILS.
     * 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
     * ...CARPENTERS LOOSEN THE NAILS ON EACH
     * ...END OF THE BOARD, THEN PICK UP THE
     * ...BOARD AND PLACE IT ON A PILE ON ONE
     * ...OF THE TANK STAGING PLATFORMS.
```

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	O*OO	5.00		28200.	584
2	0.00	100.00		185000.	583
			---------	---------	
MANUAL TIME(TMU)			0.	1945857.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

	Engineered Operation Time Calculation			
Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.132		O.OOO	2.132
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.132		0.000	2.132
PIECES PER CYCLE	1			
STANDARD HOURS				2.1

4.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	3 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP BRACKET STAGING ON EXTERIOR SHELL WORKING OFF AN AERIAL PLATFORM PER 100 LINEAR FEET		
DATE	09-JUN-83	ISSUE #	1

Step	Method Instruction	Freq
1	LOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH(580) (CRANE)	1

* REPRESENTS SPREADING MATERIAL ON AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:

```
    * ...5 BRACKETS PER LEVEL.
    * TOTAL MATERIAL:
    * MATL    QUANTITY
    * BRKTS      15
    * STANS      15
    * BOARDS     36
    * HANDRAIL   24
    * LADDERS     5
2   TRANSPORT  AREIAL PLATFORM FOR SIDE SHELL (STAGI(  516)          1
    NG) WITH (CRANE)

    * REPRESENTS MOVING AERIAL PLATFORM FROM A
    * ...WAY TO A SECTION OF SIDE SHELL
3   SET-UP  (STAGING CLIP) ON SIDE SHELL WITH HAMMER(  517)          8
    * REPRESENTS PUTTING UP A STAGING CLIP ON
    * ...THE SIDE SHELL.
    * CARPENTERS ARE WORKING FROM AN AERIAL
    * ...PLATFORM.
    * WELDING OF THE CLIP IS DONE IN A
    * ...SEPERATE SUB OPERATION.
4   WELD  STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY(  435)          .08
      STRUCTURE) WITH

5   SET-UP  STAGING BRACKET ON SIDE SHELL WITH WRENC(  518)          .8
    H

    * REPRESENTS PUTTING UP A BRACKET ON THE
    * ...SIDE SHELL.
    * CARPENTERS ARE WORKING FROM AN AERIAL
    * ...PLATFORM.
6   SET-UP  STAGING PLANK FOR SIDE SHELL WITH HAND  (  519)          21
    * REPRESENTS SETTING BOARDS UP BETWEEN TWO
    * ...STAGING BRACKETS.
    * CARPENTERS ARE WORKING ON AN AREIAL
    * ...PLATFORM AND THEY ARE WORKING
    * ...SIMULTANEOUSLY.
7   SET-UP  (ACCESS) LADDER ON SIDE SHELL WITH HAND (  520)          1.8
    * REPRESENTS SETTING UP A LADDER ON THE
    * ...SIDE SHELL.
    * CARPENTERS ARE WORKING ON AN AERIAL
    * ...PLATFORM, BUT ARE NOT WORKING
    * ...SIMULTANEOUSLY.
    * WELDING DONE IN A SEPERATE
    * ...SUB OPERATION.
8   WELD  LADDER (CLIP) (SECURES LADDER) ON BULKHEAD(  438)          .018
      (OR ANY STRUCTURE)
```

STANDARD TIME CALCULATION

9	(CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) O N SIDE SHELL	O(	521)	1.8
	* REPRESENTS CARPENTERS CLIMBING UP AND * ...DOWN LADDERS TO GET ON AND OFF * ...STAGING AT OUTSIDE SIDE SHELL. * CARPENTERS ARE WORKING ON AN AERIAL * ...PLATFORM.			
10	SET-UP STANCHION FOR SIDE SHELL WITH HAND	(	522)	8
	* REPRESENTS PUTTING STANCHION IN STAGING * ...BRACKETS. * TWO CARPENTERS ARE ON THE STAGING, ONE * ...REMAINS ON THE AERIAL PLATFORM.			
11	SET-UP HANDRAIL FOR SIDE SHELL WITH HAND	(	523)	14
	* REPRESENTS PUTTING UP HANDRAIL AT THE * ...SIDE SHELL. * TWO CARPENTERS ARE ON THE STAGING, ONE * ...REMAINS ON THE AERIAL PLATFORM. * WELDING IS DONE IN A SEPERATE SUB * ...OPERATION.			
12	WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH S TICK ELECTRODE	(	440)	.14

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	1.00		61870.	580
2	0.00	1.00		13100.	516
3	0.00	8.00		7520.	517
4	0.00	0.08		85068.	435
5	0.00	8.00		9760.	518
6	0.00	21.00		25410.	519
7	0.00	1.80		3546.	520
8	0.00	0.02		30629.	438
9	0.00	1.80		2304.	521
10	0.00	8.00		4880.	522
11	0.00	14.00		14000.	523
12	0.00	0.14		27453.	440

MANUAL TIME(TMU)	0.	285540.
ACTUAL PROCESS TIME(TMU)	0.	0.
FACTORED PROCESS TIME(TMU)	0.	
TOTAL INTERNAL TIME(TMU)	0.	

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	2.855		0.000	2.855
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	2.855		0.000	2.855
PIECES PER CYCLE	1			
STANDARD HOURS				2.9

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVE	STANDARD CODE	X
PART NAME	3 BOARD BRACKET STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-3	SUB-ITEM	131-3-3
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	REMOVAL OF BRACKET STAGING ON EXTERIOR SHELL WORK		
	OFF AERIAL PLATFORM PER 100 LINEAR FEET		
DATE	09-JUN-83	ISSUE #	1

Step	Method Instruction		Freq
1	TEAR DOWN HANDRAIL ON SIDE SHELL WITH TORCH	(524)	14
	* REPRESENTS TEARING DOWN HANDRAIL ON THE		
	* ...SIDE SHELL.		
	* TWO CARPENTERS ARE ON THE STAGING, ONE		
	* ...REMAINS ON THE AERIAL PLATFORM.		
	* THE CARPENTERS ARE NOT WORKING		
	* ...SINULTANEOUSLY.		
2	TEAR DOWN STANCHION FOR SIDE SHELL WITH HAND	(525)	8
	* REPRESENTS REMOVAL OF STANCHION FROM		

```
    * ...SIDE SHELL.
    * TWO CARPENTERS ARE ON THE STAGING, ONE
    * ...REMAINS ON AERIAL PLATFORM.
    * THE CARPENTERS DO NOT WORK
    * ...SIMULTANEOUSLY.
3   TEAR DOWN  (ACCESS) LADDER ON SIDE SHELL WITH TO(  527)          1.8
    RCH

    * REPRESENTS REMOVAL OF LADDER FROM SIDE
    * ...SHELL.
    * CARPENTERS ARE WORKING ON AN AERIAL
    * ...PLATFORM.
    * THE CARPENTERS ARE NOT WORKING
    * ...SIMULTANEOUSLY.
4   (CLIMB UP AND DOWN) MOVE  OPERATOR (ON LADDER) O(  521)          1.8
    N SIDE SHELL

    * REPRESENTS CARPENTERS CLIMBING UP AND
    * ...DOWN LADDERS TO GET ON AND OFF
    * ...STAGING AT OUTSIDE SIDE SHELL.
    * CARPENTERS ARE WORKING ON AN AERIAL
    * ...PLATFORM.
5   TEAR DOWN  STAGING PLANK FOR SIDE SHELL WITH HAN(  526)          21
    D

    * REPRESENTS TEARING DOWN BOARDS ON THE
    * ...SIDE SHELL.
    * CARPENTERS ARE WORKING ON AN AERIAL
    * ...PLATFORM.
    * THE CARPENTERS ARE WORKING
    * ...SIMULTANEOUSLY.
6   TEAR DOWN  STAGING BRACKET ON SIDE SHELL WITH WR(  528)          8
    ENCH

    * REPRESENTS REMOVAL OF BRACKETS
    * ...FROM SIDE SHELL.
    * CARPENTERS ARE WORKING ON AN
    * ...AERIAL PLATFORM.
7   TEAR DOWN  (STAGING CLIP) ON SIDE SHELL WITH TOR(  530)          8
    CH

    * REPRESENTS REMOVING STAGING CLIPS FROM
    * ...THE SIDE SHELL.
    * CARPENTERS ARE WORKING ON AN AERIAL
    * ...PLATFORM.
8   TRANSPORT  AERIAL PLATFORM FOR SIDE SHELL (STAGI(  529)          1
    NG) WITH CRANE
```

```
    * REPRESENTS MOVING AERIAL PLATFORM
    * ...FROM A SECTION OF THE SIDE SHELL
    * ...TO A WAY.
9   UNLOAD  (STAGING MATERIAL) ON AERIAL PLATFORM WI(  581)          1
    TH (CRANE)

    * REPRESENTS REMOVAL OF MATERIAL FROM AN
    * ...AERIAL PLATFORM
    * AERIAL PLATFORM CAN HOLD ENOUGH STAGING
    * ...MATERIAL FOR 3 LEVELS OF STAGING:
    * ...5 BRACKETS PER LEVEL.
    * TOTAL MATERIAL:
    * MATL   QUANTITY
    * BRKTS      15
    * STANS      15
    * BOARDS     36
    * HANDRAIL   24
    * LADDERS     5
```

STANDARD TIME CALCULATION

H O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1	0.00	14.00		21840.	524
2	0.00	8.00		4240.	525
3	0.00	1.80		8190.	527
4	0.00	1.80		2304.	521
5	0.00	21.00		9240.	526
6	0.00	8.00		7200.	528
7	0.00	8.00		11360.	530
8	0.00	1.00		9900.	529
9	0.00	1.00		61150.	581
			---------	---------	
MANUAL TIME(TMU)			0.	420964.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: o

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	1.354		0.000	1.354
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	1.354		0.000	1.354
PIECES PER CYCLE	1			
STANDARD HOURS				1.4

4.2 HOW TO CALCULATE TIME STANDARDS

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	SET UP	STANDARD CODE	X
PART NAME	96' SECTION OF TWO LEVEL PIPE STAGING		
SHIP CLASS	X	HULL	X
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	X
SUB-GROUP	X	WORK ZONE	X
SUB-SUB-GROUP	X	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-2	SUB-ITEM	131-2-1
GEN. DRAWING	131	WORK ORDER	X
DET. DRAWING	X	SHEET	1
WORK PACKAGE	X	APPLICATOR	PP
OPER. DESCRIPTION	SET UP PIPE STAGING EXT SIDE SHELL (3-16' PIPE STAGING + 3-16' PLANKING TO SPAN PIPE SECTIONS)		
DATE	16-JUN-83	ISSUE #	3

Step	Method Instruction	Freq
1	MAKE READY END RAIL (END PIECE) FOR (TRANSPORTI(487) NG)	18
	* REPRESENTS GETTING END PIECES ON BOLSTER * ...SO THAT CRANE CAN TRANSPORT IT.	
2	TRANSPORT END RAIL (END PIECE) ON (END-PIECE RA(486) CK) WITH	18

STANDARD TIME CALCULATION

* REPRESENTS TRANSPORTING END PIECES FROM
* . . .END-PC-RACK TO MATL-PILE.
* DISTANCES FROM CRANE REST TO END-PC-RACK
* * AND FROM END-PC-RACK TO HATL-PILE ARE
* . . . AVERAGE DISTANCES ON A WAY 740'X120'
* MAXIMUM NUMBER END-PCS IN LIFT = 3
* . . .THERE ARE 2 LIFTS DONE PER SECTION OF
* . . . PIPE STAGING (16'LONG).

3 SET-UP PIPE STAGING (END PCS AND BRACES) FOR SI(488) 3
DE SHELL WITH HAND

* REPRESENTS SETTING UP 1ST LEVEL OF A 16'
* . . . LONG SECTION OF PIPE STAGING. SECTION
* *. . . INCLUDES 3 END PIECES AND 8 BRACES
* WHICH ARE HELD IN PLACE BY A LOCKING
* . . .PIN.
* CARP-1 AND CARP-2 ARE WORKING
* . . .SIMULTANEOUSLY IN PUTTING UP THE END
* . . . PIECES AND BRACES.

4 SET-UP PIPE STAGING (END PCS AND BRACES) FOR SI(489) 3
DE SHELL WITH WRENCH

* REPRESENTS SETTING UP 2ND LEVEL OF A 16'
* . . . LONG SECTION OF PIPE STAGING. SECTION
* . . . INCLUIIES 3 END PIECES AND 8 BRACES
* . . . WHICH ARE HELD IN PLACE BY A LOCKING
* . . . PIN, END PIECES ARE BOLTED TO 1ST
* . . . LEVEL END PIECES.
* CARP-1 AND CARP-2 ARE WORKING
* . . . SIMULTANEOUSLY IN PUTTING UP THE END
* . . . PIECES AND BRACES.

5 MAKE READY STAGING PLANK FOR (TRANSPORTING) WIT(455) 24
H HAND

* REPRESENTS GETTING BOARD ON BOLSTERS SO
* . . . THAT THE CRANE CAN TRANSPORT IT

6 TRANSPORT STAGING PLANK FOR PIPE STAGING (AT SI(456) 12
DE SHELL) WITH

* REPRESENTS TRANSPORTING BOARDS FROM

ING) FOR

* REPRESENTS CARPENTER CLIMBING UP AND
* . . . DOWN END PIECE OF PIPE STAGING.
* AVERAGE NUMBER OF STEPS NEEDED = 6.

8 SET UP STAGING PLANK ON PIPE STAGING (AT SIDE S(457) 1 2
HELL) WITH HAND

* REPRESENT'S CARPENTERS SPREADING BOARDS
* . . . ON PIPE STAGING SECTION (16'LONG).
* . . . CARPENTERS HAVE TO CLIMB UP AND DOWN
* . . . THE PIPE STAGING TO SPREAD THE BOARDS
* . . . (SEE SEPARATE ANAYLSIS FOR CLIMBING)

9 MAKE READY STANCHION FOR (TRANSPORTING) WITH HA(458)
ND

* REPRESENTS GETTING STANCHION READY TO BE
* . . . TRANSPORTED.

10 TRANSPORT STANCHION FOR PIPE STAGING (AT SIDE S(4 5 9) 6
HELL) WITH

* REPRESENTS TRANSPORTING STANCHION FROM
* . . . BIN-2 TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BIN-2 AND. .
* . . . FROM BIN-2 TO SIDE SHELL ARE AVERAGE
* . . . DISTANCES FROM A WAY 740'X120'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6

11 SET UP STANCHION ON PIPE STAGING (AT SIDE SHELL(460)
) WITH WRENCH

* REPRESENTS SETTING UP STANCHIONS ON PIPE
* . . . STAGING
* . . . CARPENTERS INSTALL SIMULTANEOUSLY.
* . . . CARPENTERS ARE STILL ON PIPE STAGING

12 TRANSPORT HANDRAIL FOR PIPE STAGING (AT SIDE SH(461)
ELL) WITH

* REPRESENTS TRANSPORTING HANDRAIL FROM
* . . . HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* . . . FROM HR-PILE TO SIDE SHELL ARE
* . . . AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6

13 SET UP HANDRAIL ON PIPE STAGING (AT SIDE SHELL)(462)
WITH HAND

* REPRESENTS CARPENTERS INSTALLING

* . . . HANDRAIL THRU EYELETS IN STANCHIONS.
* . . . CARPENTERS DON'T WORK SIMULTANEOUSLY.
* WELDING DONE IN A SEPARATE SUB-OP.

14 TRANSPORT STAGING PLANK FOR (463) 12
* REPRESENTS TRANSPORTING BOARDS FROM
* . . . BD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO RD-PILE AND
* . . . FROM BD-PILE TO SIDE SHELL ARE
* . . . AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4

15 SET UP STAGING PLANK FOR (464) 12
* REPRESENTS CARPENTERS SPREADING BOARDS
* . . . BETWEEN PIPE STAGING SECTIONS.
* . . . THERE IS A 16' GAP BETWEEN SECTIONS.
* . . . CARPENTERS HAVE TO CLIMB UP AND DOWN
*. . . THE PIPE STAGING TO SPREAD THE BOARDS
*. . . (SEE SEPARATE ANAYLSIS FOR CLIMBING)

16 TRANSPORT HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) (465) 6
* REPRESENTS TRANSPORTING HANDRAIL FROM
* ...HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-FILE AND
* . . .FROM HR-PILE TO SIDE SHELL ARE
* . . .AVERAGE DISTANCES FROMI WAY 740'Xi20'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6

17 SET UP HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) (466) 3
* REPRESENTS CARPENTERS INSTALLING
* . . .HANDRAIL ON EXISTING HANDRAIL
* . . .*CARPENTERS DON'T WORK SIMULTANEOUSLY.
* . . .WELDING DONE IN A SEPARATE SUB-OP.

18 WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE (446) .12

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	6.954		0.000	6.954
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	6.954		0.000	6.954
PIECES PER CYCLE	1			
STANDARD HOURS				7.0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

DETAIL/UNIT/PART	X	REV. LTR/DATE	X
PROCESS/OPER CODE	REMOVAL	STANDARD CODE	X
PART NAME	96' SECTION OF TWO LEVEL PIPE STAGING		
SHIP CLASS	x	HULL	x
COST CLASS/JOB #	131	TRADE	CARPENTER
GROUP (UNIT/ZONE)	X	WORK AREA	x
SUB-GROUP	x	WORK ZONE	x
SUB-SUB-GROUP	x	WORK CENTER	X
CREW/MACHINE	3 CARPENTERS	ASSET/MACHINE	X
ITEM	131-2	SUB-ITEM	131-2-3
GEN. DRAWING	131	WORK ORDER	X
DET, DRAWING	x	SHEET	1
WORK PACKAGE	x	APPLICATOR	PP
OPER. DESCRIPTION	TEAR DOWN PIPE STAGING EXT SIDE SHELL (3-16' PIPE STAGING +3-16' BOARD SPANS OF P.IPE SECTIONS)		
DATE	16-JUN-83	ISSIUE #	2

Step	Method	Instruction		FreQ
1	TEAR DOWN	HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS)	(469)	3

* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* ...STAGING (BTWN 2 SECTIONS). A TORCH IS
* ...USED TO BURN THE HANDRAIL OFF. THE
* . ..HANDRAIL IS THROWN TO THE MATERIAL
* ...PILE. CARPENTERS REMOVE 2 HANDRAIL
* ...PIECES BEFORE MOVING TO NEXT SECTION.

STANDARD TIME CALCULATION

2	TEAR DOWN STAGING PLANK FOR * REPRESENTS TEARING DOWN BOARDS BETWEEN 2 * ...PIPE STAGING SECTIONS. THERE IS A 16' * ...GAP BETWEEN SECTIONS. BOARDS ARE * ...STACKED SO THE CRANE CAN TRANSPORT * ...THEM. CARPENTERS WORK SIMULTANEOUSLY.	(472)	12
3	REMOVE STAGING PLANK ON PIPE STAGING (AT SIDE S(HELL) WITH * REPRESENTS REMOVAL OF BOARDS FROM PIPE * ...STAGING AT SIDE SHELL TO BOARD PILE * ...DISTANCES ARE AVERAGE DISTANCES FOR A * ...WAY 740'X120'. * MAXIMUM NUMBER OF BOARDS IN LIFT = 4 * TOWER CRANE IS USED FOR REMOVAL.	478)	12
4	TEAR DOWN HANDRAIL FOR PIPE STAGING (AT SIDE SH(ELL) WITH HAND * REPRESENTS TEARING DOWN HANDRAIL ON PIPE * ...STAGING (BTWN 2 STANCHIONS). THE * ...HANDRAIL IS THROWN TO THE MATERIAL * ...PILE. CARPENTERS REMOVE 2 HANDRAIL * ...PIECES BEFORE MOVING TO NEXT SECTION.	470)	3
5	TEAR DOWN STANCHION ON PIPE STAGING (AT SIDE SH(ELL) WITH WRENCH * REPRESENTS TEARING DOWN STANCHION ON * ...SECTION OF PIPE STAGING (16'LONG). * ...CARPENTERS WORK SIMULTANEOUSLY. * ...STANCHIONS ARE THROWN TO MATERIAL * ...PILE.	471)	6
6	TEAR DOWN STAGING PLANK ON PIPE STAGING (AT SID(E SHELL) WITH HAND * REPRESENTS TEARING DOWN BOARDS ON PIPE * ...STAGING SECTION (16'LONG). BOARDS ARE * ...STACKED SO THE CRANE CAN TRANSPORT * ...THEM. CARPENTERS WORK SIMULTANEOUSLY.	473)	12
7	(CLIMB UP AND DOWN) MOVE OPERATOR (ON PIPE STAG(ING) FOR * REPRESENTS CARPENTER CLIMBING UP AND * ...DOWN END PIECE OF PIPE STAGING. * AVERAGE NUMBER OF STEPS NEEDED = 6.	454)	3
8	REMOVE STAGING PLANK ON PIPE STAGING (AT SIDE S(HELL) WITH	478)	12

```
     * REPRESENTS REMOVAL OF BOARDS FROM PIPE
     * ...STAGING AT SIDE SHELL TO BOARD PILE
     * ...DISTANCES ARE AVERAGE DISTANCES FOR A
     * ...WAY 740'X120'.
     * MAXIMUM NUMBER OF BOARDS IN LIFT = 4
     * TOWER CRANE IS USED FOR REMOVAL.
 9   TEAR DOWN  PIPE STAGING (END PCS AND BRACES) FOR(  474)          3
       SIDE SHELL WITH

     * REPRESENTS TEARING DOWN END PIECES AND
     * ...BRACES ON PIPE STAGING (2ND LEVEL).
     * ...END PIECES ARE BOLTED TO END PIECES
     * ...ON 1ST LEVEL. BRACES ARE HELD ON BY A
     * ...LOCKING PIN. CARPENTERS WORK
     * ...SIMULTANEOUSLY. CARPENTER-1 HANDLES
     * ...REMOVAL AT END-PC-1 AND END-PC-2.
     * ...MATERIAL IS THROWN OR PLACED AT THE
     * ...MATERIAL PILE.
10   TEAR DOWN  PIPE STAGING (END PCS AND BRACES) FOR(  475)          3
       SIDE SHELL WITH

     * REPRESENTS TEARING DOWN END PIECES AND
     * ...BRACES ON PIPE STAGING (1ST LEVEL).
     * ...BRACES ARE HELD ON BY A LOCKING PIN
     * ...CARPENTERS WORK SIMULTANEOUSLY.
     * ...CARPENTER-1 HANDLES REMOVAL AT
     * ...END-PC-1 AND END-PC-2. MATERIAL IS
     * ...THROWN OR PLACED AT THE MATERIAL
     * ...PILE.
11   REMOVE  BRACE ON (MATERIAL PILE) WITH (TOWER CRA(  479)         18
       NE)

     * REPRESENTS REMOVING BRACES FROM MATERIAL
     * ...PILE AT WAY TO BRACE PILE.
     * ...DISTANCES ARE AVERAGE DISTANCES FOR A
     * ...WAY 740'X120'.
     * MAXIMUM NUMBER OF BRACES IN LIFT = 6.
     * TOWER CRANE IS USED FOR REMOVAL.
12   REMOVE  END RAIL (END PIECE) ON (MATERIAL PILE) (  480)         18
       WITH (TOWER CRANE)

     * REPRESENTS REMOVING END PIECES FROM
     * ...MATERIAL PILE AT WAY TO END-PC-RACK.
     * ...DISTANCES ARE AVERAGE DISTANCES FOR A
     * ...WAY 740'X120'.
     * MAXIMUM NUMBER OF END PIECES IN LIFT = 3
     * TOWER CRANE IS USED FOR REMOVAL.
```

13 REMOVE HANDRAIL ON (MATERIAL PILE) WITH (TOWER (476) 12
CRANE)

* REPRESENTS REMOVAL OF HANDRAIL FROM
* ...MATERIAL PILE AT WAY TO HANDRAIL PILE
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.

14 REMOVE STANCHION ON (MATERIAL PILE) WITH (TOWER(477) 6
CRANE)

* REPRESENTS REMOVAL OF STANCHION FROM
* ...MATERIAL PILE AT WAY TO BIN-2
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

STEP	SA	FREQ	INTERNAL TMU	EXTERNAL TMU	LOC #
1		3.00		18554.	469
2		12.00		7524.	472
3		12.00		112005.	478
4		3.00		5472.	470
5		6.00		18810.	471
6		12.00		7524.	473
7		3.00		6840.	454
8		12.00		112005.	478
9		3.00		42152.	474
10		3.00		15561.	475
11		18.00		107576.	479
12		18.00		249985.	480
13		12.00		73975.	476
14		6.00		36030.	477
			---	---	
MANUAL TIME(TMU)			0.	1509372.	
ACTUAL PROCESS TIME(TMU)			0.	0.	
FACTORED PROCESS TIME(TMU)			0.		
TOTAL INTERNAL TIME(TMU)			0.		

TITLE SHEET USED IN SETTING STANDARD: 0

STANDARD TIME CALCULATION

M O S T OPERATION TIME CALCULATION

Engineered Operation Time Calculation

Type of Work	Elemental Time	Percent Allowance	Allowance Time	Standard Time
EXTERNAL MANUAL	8.140		0.000	8.140
ASSIGNED INTERNAL	(0.000)	()	(0.000)	(0.000)
PROCESS TIME	0.000		0.000	0.000
STANDARD(HRS./CYCLE)	8.140		0.000	8.140
PIECES PER CYCLE	1			
STANDARD HOURS				8.1

>

STANDARD TIME CACULATION

4.3 MANNING AND CREW SIZE

A. CENTER TANK
   1. Set-up: 3 Carpenters
   2. Tear down: 6 Carpenters

B. WING TANK
   1. Set-up: 3 Carpenters
   2. Tear down: 6 Carpenters

C. TANK STAGING PLATFORM
   1. Set-up: 2 Carpenters
   2. Tear down: 6 Carpenters

D. EXTERIOR SHELL
   1. Set-up: 3 Carpenters
   2. Tear down: 3 Carpenters

E. PIPE STAGING
   1. Set-up: 3 Carpenters
   2. Tear down: 3 Carpenters

SECTION 5
DATA SYNTHESIS AND BACK-UP

5.1 SUMMARY

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUDES MANUAL ELEMENTS.

*TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 196090.

378. TRANSPORT STAGING BRACKET WITH (GROVE CRANE) AT TANK (OR WAY) CARPEN
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES IN A CENTER TANK *98'X50'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1067.

381, TRANSPORT LADDERS WITH (GROVE CRANE) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADDERS FROM...
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE...
* ...AND FROM LDR-PILE TO BULKHEAD ARE...
* ...AVERAGE DISTANCES IN A CENTER TANK...
* ...98'X50'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

TOTAL TMU 2400.

384, POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDI
CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE...
* ...BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

TOTAL THU 71O.

387. TRANSPORT STAGING PLANK WITH (GROVE CRANE) AT TANK CARPENTER
PER STAGING PLANK OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM.....
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

TOTAL TMU 2567.

392. TRANSPORT STANCHION WITH (GROVE CRANE) AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM..
* ...BIN-2 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND..
* ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1067.

395. TRANSPORT HANDRAIL WITH (GROVE CRANE) AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM...
* ...HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1067.

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TAN
AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND...
* ...DOWN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

TOTAL TMU 1280.

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER HANDRAIL OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

TOTAL TMU 918.

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOII
CARPENTER
PER STANCHION OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM ...
* ...MATL-PILE ON TANKTOP TO DECK (GOING
* ...THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 988.

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 1777.

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARD...
* ...-PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 1983.

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING LADDERS FROM LADDER
* ...-PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

TOTAL TMU 1983.

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER TOOLBOX OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL...
* ...-PILEON TANKTOP TO DECK (GOES THRU...
* ...MANHOLE).
* TOOLBOX CONTAINS:
* ...28 BOLTS
* ...28 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

TOTAL TMU 7210.

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT
TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

TOTAL TMU 320.

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TIME. MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .23] ....
* ...WHERE "N" = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TANK CARPENTER
PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT TANKTOP

TOTAL TMU 670.

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

TOTAL TMU 510.

379. SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH AT TANK CARPENTER
PER STAGING BRACKET OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A BRACKET ON AN...
* ...EXISTING STAGING CLIP
CARP-1 BEGINS AT TANKTOP

TOTAL TMU 1080

380. MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT BIN-1

TOTAL TMU 600

382. SET-UP LADDER ON BULKHEAD (AT BRACKET LOCATION) WITH HAND AT TANK CARPENTER
PER LADDER OFG: 4 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A LADDER AT A.....
* ...BRACKET LOCATION SO THE CARPENTER CAN
* ...PUT UP A BRACKET. APPLIES ONLY FOR...
* ...FIRST LEVEL OF STAGING. CARPENTER IS
* ...WORKING FROM THE TANKTOP.
* ALSO INCLUDES CLIMBING UP & DOWN LADDER
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 920

DATA SYNTHESIS AND BACK-UP

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ...ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER.
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ...LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

TOTAL TMU 1420.

385. POSITION (SECURE) (ACCESS) LADDER FOR BRACKET STAGING WITH PLIER (AND WIRE ROPE) AT TANK CARPENTER
PER LADDER OFG: 4 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING LADDER TO STAGING...
* ...BOARDS USING WIRE ROPE
CARP-1 BEGINS AT LDR

TOTAL TMU 280.

386. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER STAGING PLANK OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

TOTAL TMU 420.

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH LIFT THE BOARD....
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 290.

389. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH PICK-UP THE BOARD
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 350.

DATA SYNTHESIS AND BACK-UP

390. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STAGING PLANK OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN...
* ...BRACKETS.
* ONE MAN OPERATION:
* USUALLY OCCURS WHEN CRANE CANNOT PLACE..
* ...BOARD ON BRACKETS.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 670.

391. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ....TRANSPORTED.
CARP-3 BEGINS AT LU-PILE

TOTAL TMU 550.

393, SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED THE
* REPRESENTS PUTTING STANCHION IN THE....
* ...BRACKET SLEEVE.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 250.

394. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY)
CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...SO THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

TOTAL TMU 500

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 650

397. SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND A
TANK CARPENTER
PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)....
* ...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 1970

398. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH AT (CENTER) MID TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...CENTER TANK. HANDRAIL IS THROWN TO A
* ...MATERIAL PILE ON THE TANKTOP.
* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....
* ...MOVING TO NEXT SECTION.
CARP-1 BEGINS AT BULKHEAD

TOTAL TMU . 600.

399. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....
* ...MOVING TO THE NEXT SECTION.
* MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
CARP-1 BEGINS AT BULKHEAD

TOTAL TMU 1638.

400. TEAR DOWN STANCHION ON BULKHEAD WITH HAND AT (CENTER) MID TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STANCHION FROM.....
* ...STAGING BRACKETS IN A CENTER TANK.
* ...STANCHION IS THROWN TO A MATERIAL....
* ...PILE ON THE TANKTOP
CARP-2 BEGINS AT BRKT-1

TOTAL TMU 390.

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER BOARD TO.....
* ...BD-PILE ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

TOTAL TMU 1943.

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD WITH TORCH (AND WINC AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 8970.

405. TEAR DOWN LADDER (AND WIRE ROPE) ON BULKHEAD WITH PLIER (AND WINCH) AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE IS 1 WIRE ROPE PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...WIRE-ROPE IS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 5470.

406. TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK. BRACKETS ARE LOWERED TO
* ...MATL-PILE BY WINCH.
* MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 2797.

SECTION 5
DATA SYNTHESIS AND BACK-UP

5.1 SUMMARY

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STIC
ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLU
MANUAL ELEMENTS.

TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) W
STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS
RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY
TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL
(AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 196090.

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TAN
AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND...
* ...DOWN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

TOTAL TMU 1280.

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER HANDRAIL OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

TOTAL TMU 918.

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STANCHION OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM ...
* ...MATL-PILE ON TANKTOP TO DECK (GOING
* ...THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 988.

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND
VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 1777.

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOID
CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARD...
* ...PILE ON TANKTOP TO DECK (GOES THRU..
* .....MANHOLE).
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT HATL-PILE

TOTAL TMU 1983.

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING LADDERS FROM LADDER
* ..4-PILE ON TANKTOP TO DECK (GOES THRU*.
* MANHOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

TOTAL TMU 1983.

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER TOOLBOX OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL..
* ...PILEON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE),
* TOOLBOX CONTAINS:
* ...28 BOLTS
* ..428 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

TOTAL TMU 7210.

DATA SYNTHESIS AND BACK-UP

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT ANY TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED*
* . ..STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

TOTAL TMU 320.

563. TRANSPORT STAGING BRACKET WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM..
* ..BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* .... FROM BIN-1 TO BULKHEAD ARE AVERAGE..
* ..DISTANCES FROM THE SIDE OF A BASIN
* ..1200'X200'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1800.

564. TRANSPORT LADDER WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPENT
PER LADDER OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADDERS FROM
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE
* ...AND FROM LDR-PILE TO BULKHEAD ARE
* ...AVERAGE DISTANCE FROM SIDE OF BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

TOTAL TMU 3600.

565. TRANSPORT STAGING PLANK WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

TOTAL TMU 4033.

566. TRANSPORT STANCHION WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
PER STANCHION OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM..
* ...BIN-2 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND..
* ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1800.

567. TRANSPORT HANDRAIL WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
PER HANDRAIL OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM...
* ...HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1800.

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TI
MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .23] ....
* ...WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TA
CARPENTER
PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT TANKTOP

TOTAL TMU 670.

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR
WAY) CARPENTER
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

TOTAL TMU 510.

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ..ON THE BULKHEAD SO THAT THE CARPENTER
* ..,CAN CLIMB TO THE NEXT LADDER.
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ....LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

TOTAL TMU 1420.

384, POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDER CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE....
* ...BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL 8E DONE IN A....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

TOTAL TMU 71O.

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN...
* ... BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH LIFT THE BOARD...
* ..TOGETHER AND SLIDE IT INTO POSITION,
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ..ON THE LEVEL BELOW THE BOARDS*
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 290.

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE.....
* ...BRACKET SLEEVE.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 250.

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 650.

397. SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)....
* ...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 1970.

399. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....
* ...MOVING TO THE NEXT SECTION.
* MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
CARP-1 BEGINS AT BULKHEAD

TOTAL TMU 1638.

401. TEAR DOWN STANCHION ON BULKHEAD WITH HAND (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION IN A..
* ...WING TANK. STANCHION IS LOWERED TO...
* ...THE MATL-PILE WITH A WINCH BECAUSE...
* ...THE TANK IS TO SMALL FOR THE.....
* ...STANCHION TO BE THROWN.
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
CARP-2 BEGINS AT BRKT-PILE

TOTAL TMU 1588.

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER BOARD TO.....
* ...BD-PILE ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

TOTAL TMU 1943.

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD WITH TORCH (AND WINC AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 8970.

406. TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK. BRACKETS ARE LOWERED TO
* ...MATL-PILE BY WINCH.
* MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 2797.

426. HAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING BRACKET OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ..OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

TOTAL TMU 51O.

427, MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER LADDER OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT BIN-1

TOTAL TMU 720.

428, MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY MAYS CARPENTER
PER STAGING PLANK OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

TOTAL TMU 500.

429. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENT
PER STANCHION OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED+
CARP-3 BEGINS AT LU-PILE

TOTAL TMU 290,

430, MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTE
PER HANDRAIL OFG: 3 1O-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...SO THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

TOTAL TMU 500.

569. SET-UP STAGING BRACKET ON WEB FRAME WITH WRENCH AT (WING) TANKS A
VOIDS CARPENTER
PER STAGING BRACKET OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING U)P A STAGING BRACKET
* ...ON A EXISTING STAGING CLIP (LOCATED
* .... ON A WEB FRAME)
CARP-1 BEGINS AT WING-TANK

TOTAL TMU 1080,

570. SET-UP (ACCESS) LADDER ON (INBOARD OR OUTBOARD) BULKHEAD WITH HAND
AT (WING) TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER
* ...ON THE INBOARD OR OUTBOARD BULKHEAD
* ...SO THAT THE CARPENTER CAN CLIMB TO
* ...THE NEXT LEVEL OF STAGING
* ALSO INCLUDES CLIMBING UP AND DOWN THE
* ...LADDER
CARP-1 BEGINS AT WING-TANK

TOTAL TMU 1420.

571. POSITION (SECURE) (ACCESS) LADDER ON (INBOARD OR OUTBOARD)
BULKHEAD WITH HAMMER AT (WING) TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE
* ...INBOARD OR OUTBOARD BULKHEAD USING
* ...FOUR LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

TOTAL TMU 710.

573. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT (WING) TANKS VOIDS CARPENTER
PER STAGING PLANK OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN WEBS
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ...WEBS. THEY BOTH PICK UP THE BOARD
* ...TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT WEB-1

TOTAL TMU 350.

575. SET-UP STAGING PLANK ON (EXISTING) BRACKET STAGING WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN
* ...EXISTING STAGING AND INBOARD OR
* ...OUTBOARD BULKHEAD
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT DIFFERENT WEBS
* ...EACH CARPENTER SPREADS TWO BOARDS
* ...SIMULTANEOUSLY
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT WEB-1

TOTAL TMU 420.

DATA SYNTHESIS AND BACK-UP

577. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 4 24-MAY-8.3
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE
* ...BRACKET SLEEVE IN A WING TANK
CARP-1 BEGINS AT WEB-1

TOTAL TMU 250 .

578, SET-UP HANDRAIL IN STANCHION WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR
* ..ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL WILL BE DONE IN
* ..A SEPARATE SUB OPERATION
CARP-1 BEGINS AT WEB-1

TOTAL TMU 650 .

579. SET-UP HANDRAIL (END PIECES) ON (HANDRAIL AND) BULKHEAD WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME-
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ..AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)
* ... CONNECTIONS WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-I BEGINS AT WEB-1

TOTAL TMU 1970.

568. SET-UP (STAGING CLIP) ON WEB FRAME WITH HAMMER (AND STEEL-TAPE) A
(WING) TANKS AND VOIDS CARPENTER
PER STAGING CLIP OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTIN6 UP A STAGING CLIP ON
* ..A WEB FRAME
* WELDING OF THE CLIP WILL BE DONE IN A
* ..SEPARATE SUB OPERATION
CARP-1 BEGINS AT WING-TANK

TOTAL TMU 670.

SECTION 5
DATA SYNTHESIS AND BACK-UP

5.1 SUMMARY

545. ASSEMBLE I-BEAMS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE BOLTING I-BEAMS
* STEPS:
* 1-4 ARE FOR THE CONNECTIONS OF I-6 & I-7
* ...AT I-l,I-2,I-3,I-4, AND 1-5
* 5,6 ARE FOR MOVEEMENT OF THE CARPENTER
* ...BETWEEN THE CONNECTIONS
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

TOTAL TMU 536504

546. ASSEMBLE ANGLE-BARS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE ASSEMBLING ANGLES
* STEPS:
* 1-6 ARE FOR CONNECTIONS OF A-4 AND A-1
* ...AT I-l,I-2,I-3,1-4, AND 1-5
* 7-13 ARE FOR CONNECTIONS OF
* ..A-3 AT 1-5,1-4, AND 1-3 AND
* ...A-1 AT 1-3,1-2, AND 1-1
* 14-20 ARE FOR CONNECTIONS OF A-S AND A-6
* ... AT 1-1,1-2,1-3,1-4, AND I-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

TOTAL TMU 74030.

539. READ MATERIAL LIST (PRINT) FOR TANK STAGING PLATFORM WITH (EYES) AT PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER READS PRINT BEFORE LAYING OUT
* ...TABLE, READS 48 DIGITS PER LOCATION
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

TOTAL TMU 3120.

540. MEASURE (PLATEN) FOR TANK STAGING PLATFORM WITH (STEEL) TAPE AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS MEASURING TABLE FOR LAYOUT
* ANALYSIS INCLUDES ALL THE WALKING...
* ...DISTANCES FOR THE LAYOUT.
* STEPS:
* 2,3,4 ARE FOR I-I, I-2,I-3,1-4,AND 1-5
* ..AT A-5 AND A-6,
* 5,6,7 ARE FOR A-5, I-7,A-4,A-3,A-I,I-6,
* ....AND A-6 AT 1-5
* 5,6,7 ARE FOR A-5,1-7,A-4,A-2,A-I,I-6,
* ...AND A-6 AT 1-1
* 9,10,II ARE FOR A-2 AND A-3 AT I-3
CARP-1 BEGINS AT STORE-2

TOTAL TMU 15460.

DATA SYNTHESIS AND BACK-UP

541. MARK (PLATEN) FOR TANK STAGING PLATFORM WITH MARKER AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* REPRESENTS MARKING THE LAYOUT FOR A TANK
* ...STAGING PLATFORM AND INSPECTING WORK.
* THE FOLLOWING PLACES ARE LAID OUT:
* ...AT A-S AND A-6:
* .. I-I,I-2,I-3,I-4, AND I-S
* ...AT I-1 AND 1-5:
* ...A-6,I-6,I-6,A-1,A-4,I-7 AND A-5
* ...A-2 IS LAID OUT AT I-3 AND I-1
* ..A-3 IS LAID OUT AT I-3 AND 1-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

TOTAL TMU 8500 .

542. TRANSPORT PALLET (I-BEAMS AND ANGLES) FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83.
REPRESENTS ELAPSED TIME
* MATERIAL NEEDED FOR ONE PLATFORM:
* ...I-BEAMS - 7
* ..ANGLES - 6
HOOKER-ON BEGINS AT CR-1

TOTAL TMU 7800 .

547, TRANSPORT STAGING PLANKS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* BOARDS ARE TRANSPORTED FROM LUMBER PILE
* ...WHICH IS LOCATED ON THE PLATEN.
* TOTAL NUMBER OF BOARDS IN LIFT = 64
* TOTAL LIFTS = 2 (PORT AND STARBOARD)
HOOKER-ON BEGINS AT STORE-2

TOTAL TMU 26000 .

549. TRANSPORT (FINISHED) TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* TRANSPORT FINISHED PLATFORM TO A STORAGE
* ...PILE
HOOKER-ON BEGINS AT STORE-2

TOTAL TMU 12600.

555. POSITION (RAISE) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND
VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS RAISING TYPICAL PLATFORM IN A
* ...CENTER TANK AND SECURING IT TO THE
* ...MAIN DECK.
* 2 CARPENTERS WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ...HOLES ON MAIN DECK
* 7-12 CONNECTION OF SHACKLES ON PLATFORM
* 14-19 CONNECTION OF SUSPENSION CABLES ON
* ...PLATFORM AND MAIN DECK
* 21-26 REMOVING SHACKLES FROM PLATFORM
* 27-29 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

TOTAL TMU 57652.

556. POSITION (LOWER) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS LOWERING TYPICAL PLATFORM IN
* ...A CENTER TANK AND REMOVING IT FROM
* ...THE MAIN DECK.
* 2 CARPENTERS WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ...HOLES ON MAIN DECK
* 6-11 CONNECTION OF SHACKLES ON PLATFORM
* 13-18 REMOVAL OF SUSPENSION CABLES FROM
* ...PLATFORM AND MAIN DECK
* 23-28 REMOVING SHACKLES FROM PLATFORM
* 29-31 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

TOTAL TMU 61219.

557. POSITION (PLACE) TANK STAGING PLATFORM (AND BOARDS) IN (TYPICAL TANK) WITH (CRANE) AT ANY SHIP CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING TANK STAGING PLATFORM
* ...IN A TYPICAL TANK ON THE SHIP. ALSO
* ...THE BOARDS NEEDED TO EXTEND THE
* ...PLATFORM UNDER THE MAIN DECK.
* 2 HOOKER-ONS: ONE AT THE MATERIAL AND
* ...ONE ON THE SHIP IN THE TANK.
* TOTAL OF 280 FOR TYPICAL TANK
* 7 LIFTS (40 BOARDS PER LIFT)
HOOKER-ON1 BEGINS AT S-7

TOTAL TMU 69700.

543. SET-UP I-BEAMS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 3 INCLUDES SPREADING I-BEAMS AT:
* ...I-2,I-3,I-4, AND I-5
HOOKER-ON BEGINS AT STORE-2

TOTAL TMU 43600.

544. SET-UP ANGLE-BARS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATE
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 1 INCLUDES SPREADING ANGLES AT:
* ...A-6,A-1, AND A-2
* STEP 2 INCLUDES SPREADING ANGLES AT:
* ...A-3,A-4, AND A-5
HOOKER-ON BEGINS AT STORE-2

TOTAL TMU 46800.

DATA SYNTHESIS AND BACK-UP

548. SET-UP STAGING PLANKS ON TANK STAGING PLATFORM WITH HANDS AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTERS SPREAD BOARDS SIMULTANEOUSLY
* BOARDS ARE SPREAD ON PORT SIDE FIRST....
* ...THEN STARBOARD SIDE.
* TOTAL BOARDS PER SIDE = 32
* STEPS:
* 2-5 SPREAD BOARDS BETWEEN A-6 & I-6 P/S
* 6-8 SPREAD BOARDS BETWEEN I-6 & A-1 P/S
* 9-11 SPREAD BOARDS BETWEEN A-1 & A-3 S
* ...AND A-1 & A-2 P
* 12-14 SPREAD BOARDS BETWEEN A-3 & A-4 S
* ...AND A-2 & A-4 P
* 15-17 SPREAD BOARDS BTWN A-4 & I-7 P/S
* 18-20 SPREAD BOARDS BTWN I-7 & A-5 P/S
* 21-22 SPREAD BOARD AT A-5 P/S
CARP-1 BEGINS AT STORE-2

TOTAL TMU 36020.

550. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND
VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING ANGLES
* STEPS:
* 1-5 ARE FOR REMOVING BOLTS ON A-4 & A-1
* ...AT I-1,I-2,I-3,I-4,AND I-5
* 7-11 ARE FOR REMOVING BOLTS
* ...ON A-3 AT I-1,I-2, & I-3
* ...ON A-1 AT I-3,I-4, & I-5
* 14-18 FOR REMOVING BOLTS ON A-5 & A-6
* ...AT I-1,I-2,I-3,I-4 & I-5
CARP-1 BEGINS AT I-1

TOTAL TMU 56860.

551, TEAR DOWN I-BEAMS ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AI
VOIDS. CARPENTER
PER PLATFORM OFG: 4 11-HAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING I-BEAMS
* STEPS:
* 1-5 ARE FOR REMOVING BOLTS ON 1-6 & I-7
* .... AT I-l,I-2,I-3,I-4,AND 1-5
* 6,7 ARE FOR MOVEMENT OF THE CARPENTER
* ...BETWEEN THE CONNECTIONS
CARP-I BEGINS AT 1-1

TOTAL TMU 38530,

552, TEAR DOWN STAGING PLANKS ON TANK STAGING PLATFORM WITH WINCH AT MID
TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 18-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL BOARDS = 64 (22 LIFTS)
* 2 CARPENTERS MOVE BOARDS FROM THE TANK
* ...STAGING PLATFORM TO A LUMBER-PILE
* ...LOCATED NEAR A MANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ....BOARDS FROM THE TANK. THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ..BOARDS ON THE DECK. THEIR TIME IS
* ..INTERNAL TO THE WINCH PROCESS TIME,
CARP-1 BEGINS AT I-5

TOTAL TNU 215080.

553. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF ANGLES ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL ANGLES = 6 (1 LIFT)
* 1 CARPENTER MOVES ANGLES TO ONE AREA ON
* ...THE TANK STAGING PLATFORM
* ...LOCATED NEAR A MANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ...ANGLES FROM THE TANK. THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ...ANGLES ON THE DECK. THEIR TIME IS
* ...INTERNAL TO THE WINCH PROCESS TIME.
CARP-3 BEGINS AT LUMBER-PILE

TOTAL TMU 9240.

554. TEAR DOWN I-BEAMS FOR TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF I-BEAMS FROM THE
* ...TANK STAGING PLATFORM
* TOTAL I-BEAMS = 7 (7 LIFTS)
* A CARPENTER AND WINCH OPERATOR REMOVE
* ...THE I-BEAMS FROM THE TANK. THERE ARE
* ...2 CARPENTERS WHO RECEIVE AND STACK
* ...THE I-BEAMS ON THE DECK. THEIR TIME
* ...IS INTERNAL TO THE WINCH PROCESS TIME
CARP-3 BEGINS AT A-6

TOTAL TMU 35540.

538. (BRUSH) CLEAN (PLATEN) FOR TANK STAGING PLATFORM WITH BROOM AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS CLEANING THE TABLE BEFORE THE
* ...TANK STAGING PLATFORM IS ASSEMBLED.
* SQUARE FOOTAGE OF AREA CLEANED = 700
CARP-1 BEGINS AT STORE-2

TOTAL TMU 42580.

559. SET-UP STAGING PLANKS FOR TANK STAGING PLATFORM WITH HAMMER AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 20-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS FROM A TANK
* ...STAGING PLATFORM TO EXISTING STAGING
* ...ON THE BULKHEADS.
* 2 CARPENTERS WHO ARE NOT WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT STAR-BHD

TOTAL TMU 6730.

560. TEAR DOWN HANDRAIL (AND STANCHION) ON (LONGITUDINAL) BULKHEAD WIT TORCH AT MID TANKS AND VOIDS CARPENTER
PER ASSEMBLY OFG: 4 20-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM TOP
* ...LEVEL OF BULKHEAD STAGING IN A CENTER
* ...TANK. THIS IS DONE AFTER BOARDS HAVE
* ...BEEN SPREAD TO TANK STAGING PLATFORM
* CARPENTER WORKS ALONE
* HOOKUP, IGNITE AND EXTINGUISH TORCH ARE
* ...IN A SEPARATE SUB-OP
CARP-3 BEGINS AT PLATFORM

TOTAL TMU 9560.

DATA SYNTHESIS AND BACK-UP

561. SET-UP STAGING BRACKETS FOR (BETWEEN) TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. BOARDS ARE SPREAD
* ..BETWEEN THE BRACKETS.
* THIS ASSEMBLY IS USED TO CONNECT THE TWO
* ....TANK STAGING PLATFORMS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM
* STEPS:
* 1-6 REPRESENTS SETTING UP BRACKETS AT
* ...BR-I, BR-2, AND BR-3
* 7 REPRESENTS SPREADING BOARDS BETWEEN
* ...BR-1 AND BR-2; BR-2 AND BR-3
CARP-1 BEGINS AT PLFM1

TOTAL TMU 6540.

562. SET-UP STAGING PLANKS FOR (BETWEEN) TANK STAGING PLATFORMS WITH HAMMER AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN TWO
* ...TANK STAGING PLATFORMS
* 2 CARPENTERS ARE NOT WORKING
* ..SIMULTANEOUSLY
CARP-I BEGINS AT PLFM1

TOTAL TMU 6830.

9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP
PER EA OFG: 1 31-JUL-81
* TORCH AND HOSE LOCATED AT MANIFOLD
* UNHOOK IS THE REVERSE OF HOOKUP
CARP4 BEGINS AT HOOK-UP

TOTAL TMU 280.

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK
PER EA OFG: 1 03-AUG-81
* HOOK-UP NOT INCLUDED
FITTER BEGINS AT JOB

TOTAL TMU 660.

582. TEAR DOWN STAGING PLANK FOR TANK STAGING PLATFORM WITH (PRYBAR) AND HAND AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BELOW
* ...THE MAIN DECK. BOARDS ARE CONNECTED
* ...TO THE TANK STAGING PLATFORM AND THE
* ...EXISTING PERIMETER STAGING BY NAILS.
* 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH
* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON THE
* ...TANK STAGING PLATFORM.
CARP-1 BEGINS AT STAR-BHD

TOTAL TMU 1530.

583. TEAR DOWN STAGING PLANK FOR (BETWEEN) TANK STAGING PLATFORM WITH (PRYBAR) AND HAND AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BETWEEN
* ...THE TWO TANK STAGING PLATFORMS. THE
* ...BOARDS ARE CONNECTED TO THE PLATFORMS
* ...BY NAILS.
* 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH
* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON ONE
* ...OF THE TANK STAGING PLATFORMS.
CARP-1 BEGINS AT PLFM1

TOTAL TMU 1850.

584. TEAR DOWN STAGING BRACKETS ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. ALSO REMOVAL OF
* ...BOARDS THAT ARE SPREAD BETWEEN THE
* ...BRACKETS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM.
* STEPS:
* 1 REPRESENTS REMOVAL OF BOARDS BETWEEN
* ...BR-1 AND BR-2; BR-2 AND BR-3
* 2-5 REPRESENTS REMOVAL OF BRACKETS FROM
* ...BR-1, BR-2 AND BR-3. BRACKETS ARE
* ...PLACED ON A PILE ON THE PLATFORM.
CARP-1 BEGINS AT BR-1

TOTAL TMU 5640.

SECTION 5
DATA SYNTHESIS AND BACK-UP

5.1 SUMMARY

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUD MANUAL ELEMENTS.

TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WI STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS) RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 196090.

516. TRANSPORT AREIAL PLATFORM FOR SIDE SHELL (STAGING) WITH (CRANE) AT AN WAY CARPENTER
PER AERIAL-PLATFORM OFG: 4 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS MOVING AERIAL PLATFORM FROM A
* ...WAY TO A SECTION OF SIDE SHELL
C-OPER BEGINS AT CR-1

TOTAL TMU 13100.

521. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON SIDE SHELL AT ANY WAY
CARPENTER
PER LADDER OFG: 4 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND
* ...DOWN LADDERS TO GET ON AND OFF
* ...STAGING AT OUTSIDE SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 1280.

529. TRANSPORT AERIAL PLATFORM FOR SIDE SHELL (STAGING) WITH CRANE AT ANY
WAY CARPENTER
PER AERIAL PLATFORM OFG: 4 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS MOVING AERIAL PLATFORM
* ...FROM A SECTION OF THE SIDE SHELL
* ...TO A WAY.
C-OPER BEGINS AT CR-1

TOTAL TMU 9900.

580. LOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN
CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING MATERIAL ON AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:
* ...5 BRACKETS PER LEVEL.
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
CARP-1 BEGINS AT P-REST

TOTAL TMU 61870.

581. UNLOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATE
CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF MATERIAL FROM AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:
* ...5 BRACKETS PER LEVEL.
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
C-OPER BEGINS AT CR-1

TOTAL TMU 61150.

DATA SYNTHESIS AND BACK-UP

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW), RATE IN ELAPSED TIME.
MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS IINCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (I)....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-DP...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .233 ...
* .... WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

517. SET-UP (STAGING CLIP) ON SIDE SHELL WITH HAMMER AT ANY WAY CARPENTER
PER STAGING CLIP OFG: 3 16-HAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ..THE SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ..PLATFORM.
* WELDING OF THE CLIP IS DONE IN A
* ...SEPERATE SUB OPERATION.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 940 •

518, SET-UP STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY CARPENTER
PER STAGING BRACKET OFG: 3 16-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A BRACKET ON THE
* ...SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ...PLATFORM.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 1220.

DATA SYNTHESIS AND BACK-UP

519. SET-UP STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STAGING PLANK OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING BOARDS UP BETWEEN TWO
* ...STAGING BRACKETS.
* CARPENTERS ARE WORKING ON AN AREIAL
* ...PLATFORM AND THEY ARE WORKING
* ...SIMULTANEOUSLY.
CARP-3 BEGINS AT BIN-1

TOTAL TMU 1210.

520. SET-UP (ACCESS) LADDER ON SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER ACCESS LADDER OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP A LADDER ON THE
* ...SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM, BUT ARE NOT WORKING
* ...SIMULTANEOUSLY.
* WELDING DONE IN A SEPERATE
* ...SUB OPERATION.
CARP-3 BEGINS AT BD-PILE

TOTAL TMU 1970.

522. SET-UP STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STANCHION OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN STAGING
* ...BRACKETS.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* ...REMAINS ON THE AERIAL PLATFORM.
CARP-3 BEGINS AT LDR-PILE

TOTAL TMU 610.

523. SET-UP HANDRAIL FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER HANDRAIL OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP HANDRAIL AT THE
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* ...REMAINS ON THE AERIAL PLATFORM.
* WELDING IS DONE IN A SEPERATE SUB
* ...OPERATION.
CARP-3 BEGINS AT BIN-2

TOTAL TMU 1000.

524. TEAR DOWN HANDRAIL ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
PER HANDRAIL OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON THE
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* ...REMAINS ON THE AERIAL PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 1560.

525. TEAR DOWN STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STANCHION OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* ...REMAINS ON AERIAL PLATFORM.
* THE CARPENTERS DO NOT WORK
* ...SIMULTANEOUSLY.
CARP-3 BEGINS AT BRKT-1

TOTAL TMU 530.

526, TEAR DOWN STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTEI
PER STAGING PLANK OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON THE
* ..SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
* THE CARPENTERS ARE WORKING
* ... SIMULTANEOUSLY.
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 440 .

527. TEAR DIOWN (ACCESS) LADDER ON SIDE SHELL WITH TORCH AT ANY WAY CARPEN
PER LADDER OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF LADDER FROM SIDE
* ...SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* ...SIMULTANEOUSLY.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 4550.

528. TEAR DOWN STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY
CARPENTER
PER STAGING BRACKET OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS
* ....FROM SIDE SHELL+
* CARPENTERS ARE WORKING ON AN
* ..AERIAL PLATFORM
CARP-1 BEGINS AT BRKT-1

TOTAL TMU 900.

SECTION 5
DATA SYNTHESIS AND BACK-UP

5.1 SUMMARY

446. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY PLATEN (SHOP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS* RATE PER 100 PIECES OF HANDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

TOTAL TMU 186012.

454. (CLIMB UP AND DOWN) MOVE OPERATOR (ON PIPE STAGING) FOR SIDE SHELL AT ANY WAYS CARPENTER
PER PIPE STAGING SECTION (16' LONG) OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER CLIMBING UP AND
* ...DOWN END PIECE OF PIPE STAGING.
* AVERAGE NUMBER OF STEPS NEEDED = 6.
CARP-1 BEGINS AT END-PC-I

TOTAL TMU 800.

456. TRANSPORT STAGING PLANK FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...BD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BD-PILE AND
* ...FROM BD-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

TOTAL TMU 3275.

459. TRANSPORT STANCHION FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRA
AT ANY WAYS CARPENTER
PER STANCHION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM
* ...BIN TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BIN-2 AND..
* ...FROIM BIN-2 TO SIDE SHELL ARE AVERAGE
* ... DISTANCES FROM A WAY 740'X120'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 1967.

461. TRANSPORT HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRAN
AT ANY WAYS CARPENTER
PER SECTION (i6'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM
* ...HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND.
* ..FROM HR-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-l

TOTAL TMU 2033.

463. TRANSPORT STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...BD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BD-PILE AND
* ...FROM BD-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

TOTAL TMU 3275.

465. TRANSPORT HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER HANDRAIL OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM
* ...HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO SIDE SHELL ARE
* ...AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

TOTAL TMU 2033.

476. REMOVE HANDRAIL ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
PER HANDRAIL OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM
* ...MATERIAL PILE AT WAY TO HANDRAIL PILE
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 2163.

477. REMOVE STANCHION ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS
CARPENTER
PER STANCHION OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* ...MATERIAL PILE AT WAY TO BIN-2
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 2107.

478. REMOVE STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS FROM PIPE
* ...STAGING AT SIDE SHELL TO BOARD PILE
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
* TOWER CRANE IS USED FOR REMOVAL.
C-OPER BEGINS AT CR-1

TOTAL TMU 3275.

479. REMOVE BRACE ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER BRACE OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BRACES FROM MATERIAL
* ...PILE AT WAY TO BRACE PILE.
* ...DISTANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120'.
* MAXIMUM NUMBER OF BRACES IN LIFT = 6.
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 2097.

480. REMOVE END RAIL (END PIECE) ON (MATERIAL PILE) WITH (TOWER CRANE) AT
ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING END PIECES FROM
* ...MIATERIAL PILE AT WAY TO END-PC-RACK.
* ..D1STANCES ARE AVERAGE DISTANCES FOR A
* ...WAY 740'X120',
* MAXIMUM NUMBER OF END PIECES IN LIFT = 3
* TOWER CRANE IS USED FOR REMOVAL,
CARP-3 BEGINS AT MATL-PILE

TOTAL TMU 4873

486, TRANSPORT END RAIL (END PIECE) ON (END-PIECE RACK) WITH (TOWER CRANI
AT ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING END PIECES FROM
* ..END-PC-RACK TO MATL-PILE.
* DISTANCES FROM CRANE REST TO END-PC-RACK
* .....AND FROM END-PC-RACK TO MATL-PILE ARE
* ....AVERAGE DISTANCES ON A WAY 740'X120'
* MAXIMUM NUMBER END-PCS IN LIFT = 3
* ...THERE ARE 2 LIFTS DONE PER SECTION OF
* .....PIPE STAGING (16'LONG).
C-OPER BEGINS AT CR-1

TOTAL TMU 2517.

DATA SYNTHESIS AND BACK-UP

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TIME. MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRQ NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .23] ....
* ...WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

455. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT SIDE-SHELL

TOTAL TMU 500.

457. SET UP STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS CARPENTERS SPREADING BOARDS
* ...ON PIPE STAGING SECTION (16'LONG).
* ...CARPENTERS HAVE TO CLIMB UP AND DOWN
* ...THE PIPE STAGING TO SPREAD THE BOARDS
* ...(SEE SEPARATE ANAYLSIS FOR CLIMBING)
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 250.

458. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPE
PER STANCHION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED.
CARP-3 BEGINS AT BD-PILE

TOTAL TMU 290

460. SET UP STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT ANY
WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP STANCHIONS ON PIPE
* ...STAGING.
* ...CARPENTERS INSTALL SIMULTANEOUSLY.
* ...CARPENTERS ARE STILL ON PIPE STAGING
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 1680

462. SET UP HANDRAIL ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WA
CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* ...HANDRAIL THRU EYELETS IN STANCHIONS.
* ...CARPENTERS DON'T WORK SIMULTANEOUSLY.
* ...WELDING DONE IN A SEPARATE SUB-OP.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 900

464. SET UP STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) W
HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS SPREADING BOARDS
* ...BETWEEN PIPE STAGING SECTIONS.
* .....THERE 1S A 16' GAP BETWEEN SECTIONS.
* ....CARPENTERS HAVE TO CLIMB UP AND DOWN
* ...THE PIPE STAGING TO SPREAD THE BOARDS
* .....(SEE SEPARATE ANAYLSIS FOR CLIMBING)
CARP-1 BEGINS AT SECTION-1

TOTAL TMU 250.

466. SET UP HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH HAND
AT ANY WAYS CARPENTER
PER SECTION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* ....HANDRAIL ON EXISTING HANDRAIL.
* .....CARPENTERS DON'T WORK SIMULTANEOUSLY.
* ....WELDING DONE IN A SEPARATE SUB-OP.
CARP-1 BEGINS AT SECTION-1

TOTAL TMU 720.

469. TEAR DOWN HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH
TORCH AT ANY WAYS CARPENTERS
PER SECTION OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* ...STAGING (BTWN 2 SECTIONS). A TORCH IS
* ...USED TO BURN THE HANDRAIL OFF. THE
* ...HANDRAIL IS THROWN TO THE MATERIAL
* ....PILE. CARPENTERS REMOVE 2 HANDRAIL
* ....PIECES BEFORE MOVING TO NEXT SECTION.
CARP-l BEGINS AT SECTION-1

TOTAL TMU 2170.

470. TEAR DOWN HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* ...STAGING (BTWN 2 STANCHIONS). THE
* ...HANDRAIL IS THROWN TO THE MATERIAL
* ...PILE. CARPENTERS REMOVE 2 HANDRAIL
* ...PIECES BEFORE MOVING TO NEXT SECTION.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 640.

471. TEAR DOWN STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT A WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION ON
* ...SECTION OF PIPE STAGING (16'LONG).
* ...CARPENTERS WORK SIMULTANEOUSLY.
* ...STANCHIONS ARE THROWN TO MATERIAL
* ...PILE.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 1100.

472. TEAR DOWN STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS BETWEEN 2
* ...PIPE STAGING SECTIONS. THERE IS A 16'
* ...GAP BETWEEN SECTIONS. BOARDS ARE
* ...STACKED SO THE CRANE CAN TRANSPORT
* ...THEM. CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT SECTION-1

TOTAL TMU 220.

473. TEAR DOWN STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON PIPE
* ...STAGING SECTION (16'LONG). BOARDS ARE
* ...STACKED SO THE CRANE CAN TRANSPORT
* ...THEM. CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 220.

474. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* ...BRACES ON PIPE STAGING (2ND LEVEL).
* ...END PIECES ARE BOLTED TO END PIECES
* ...ON 1ST LEVEL. BRACES ARE HELD ON BY A
* ...LOCKING PIN. CARPENTERS WORK
* ...SIMULTANEOUSLY. CARPENTER-1 HANDLES
* ...REMOVAL AT END-PC-1 AND END-PC-2.
* ...MATERIAL IS THROWN OR PLACED AT THE
* ...MATERIAL PILE.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 4930.

475. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAN
ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* .....BRACES ON PIPE STAGING (1ST LEVEL).
* ....BRACES ARE HELD ON BY A LOCKING PIN
* ....CARPENTERS WORK SIMULTANEOUSLY.
* .....CARPENTER-2 HANDLES REMOVAL AT
* ......END-PC-1 AND END-PC-2, MATERIAL IS
* ....THROWN OR PLACED AT THE MATERIAL
* ...PILE.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 182(

487, MAKE READY END RAIL (END PIECE) FOR (TRANSPORTING) AT ANY WAYS
CARPENTER
PER END RAIL (END PIECE) OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING END PIECES ON BOLSTER
* ....S0 THAT CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT END-PC-RACK

TOTAL TMU i40

488. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND AT ANY WAYS CARPENTER
PER SECTION (16' LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP 1ST LEVEL OF A 16'
* ....LONG SECTION OF PIPE STAGING. SECTION
* .....INCLUDES 3 END PIECES AND 8 BRACES
* ....WHICH ARE HELD IN PLACE BY A LOCKING
* .....PIN.
* CARP-1 AND CARP-2 ARE WORKING
* ....SIMULTANEOUSLY IN PUTTING UP THE END
* ....PIECES AND BRACES.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 3760.

489, SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP 2ND LEVEL OF A 16'
* ...LONG SECTION OF PIPE STAGING SECTION
* ...INCLUDES 3 END PIECES AND 8 BRACES
* ....WHICH ARE HELD IN PLACE BY A LOCKING
* ...PIN END PIECES ARE BOLTED TO 1ST
* ...LEVEL END PIECES,
* CARP-I AND CARP-2 ARE WORKING
* ...SIMULTANEOUSLY IN PUTTING UP THE END
* PIECES AND BRACES.
CARP-1 BEGINS AT END-PC-1

TOTAL TMU 8390,

5.2 SYNTHESIS AND ANALYSIS

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (10" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELD HORIZONTAL 1/4" FILLET WELD (5" PER CONNECTION) USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 196090.

378. TRANSPORT STAGING BRACKET WITH (GROVE CRANE) AT TANK (OR WAY) CARPENTER
PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-I TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ....DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT BRKT FROM BIN-1 USING CRANE WITH HOOK+SLING TO BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6

	Al	T1O	K24	T16	P3	TIO	AO	0.17	1067.

TOTAL TMU 1067.

381. TRANSPORT LADDERS WITH (GROVE CRANE) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADDERS FROM....
* .....LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE..
* ....AND FROM LDR-PILE TO BULKHEAD ARE..
* ....AVERAGE DISTANCES IN A CENTER TANK....
* ....0098'X50'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT LADR FROM LDR-PILE USING CRANE WITH HOOK+SLINE TO BULKHEAD (AT. LDR) PLACE+ADJUST RETURN TO CR-1 F 1 / 3

	Al	TIO	K24	T24	P3	TIO	AO	O.33	2400

TOTAL TMU 2400 •

384. POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADD
CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE.....
* ...BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON BHD AT LDR 4 STRIKES USING HAMMER-1 ASID
TO CARP-1
A1 B0 G1 A0 B0 (P0 A1 L10)A1 B0 P1 A0 (4) 1.00 480.
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKI
UPON PLACEMENT) PF 4 (6)
A1 B6 G3 A1 B0 (P3)A0 (4) 1.00 230.

TOTAL TMU 710.

387. TRANSPORT STAGING PLANK WITH (GROVE CRANE) AT TANK CARPENTER
PER STAGING PLANK OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM.....
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM LU-PILE USING CRANE WITH HOOK+SLING TO BULKH
(BTWN BRKTS) PLACE+MANEUVER RETURN TO CR-1 F 1 / 3
A1 T10 K24 T16 P16 T10 A0 0.33 2567.

TOTAL TMU 2567.

392. TRANSPORT STANCHION WITH (GROVE CRANE) AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM..
* ...BIN-2 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND ..
* ...FROM BIN-2 TO BULKHEAD ARE AVERAGE ...
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SI-ING TO BULKHEAD(BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6
Al T10 K24 T16 P3 T10 AO 0.17 1067.

TOTAL TMU 1067.

395. TRANSPORT HANDRAIL WITH (GROVE CRANE) AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM...
* ...HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES IN A CENTER TANK 98'X50'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6
Al T10 K24 T16 P3 T10 AO 0.17 1067.

TOTAL TMU 1067.

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TAN AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND ...
* ...DOUN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) 12 (3 4)
(A1)B16(G1 M3)XO IO AO (12) 1.00 760.
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) 12 (3 4)
(Al)B16(G1 Ml)XO IO AO (12) 1.OO 520.

TOTAL TMU 1280.

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND) VOIDS CARPENTER
PER HANDRAIL OFG: 3 O8-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MATL
* ...PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

1 CARP-3 GET+SLIDE HANDRAIL (ONTO BOLSTER) AT MATL-PILE
Al B6 G3 M3 XO IO AO 1.00 130.
2 WINCH-OPER PUSH WINCH-llOUN PROCESS (TO TANKTOP) F 1 / 6
Al BO G1 Ml X81 IO AO 0.17 140.
3 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
Al B6 G1 Al BO P1 L32 AO BO PO AO 0.17 70.
4 WINCH-OPER THROW CABLE FROM HENHOLE TO CARP-3 F 1 / 6
Al BO G1 Al B6 PO AO 0.17 15.
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND HANDRAIL) F 1 / 6
Al B6 G3 M1O XO IO AO 0.17 .33
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
Al BO G1 Ml X67 IO AO 0.17 117.
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO HENHOLE) F 1 / 6
Al BO G1 Ml X24510 AO 0.17 413.

TOTAL TMU 918

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STANCHION OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIHE
* REPRESENTS REMOVAL OF STANCHION FROM . . .
* ...MATL-PILE ON TANK TOP TO DECK (GOING
* ...THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM MAIL-PILE TO MATL-PILE WITH BEND
Al B6 G3 A1 B6 P3 A0 1.00 200.

2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
Al BO G1 M1 X81 IO AO 0.17 140.

3 WINCH-fJPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
Al B6 G1 Al BO P1 L32 AO BO PO AO 0.17 70.

4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
Al BO G1 Al B6 PO AO 0.17 15.

5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND STANCHION) F 1 / 6
A1 B6. G3 M1O XO IO AO 0.17 33.

6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
Al BO G1 Ml X67 IO fI0 0.17 1 1 7 .

7 WINCH-OPER PUSH WINCH-tJP PROCESS (TO MENHOLE) F 1 / 6
Al BO G1 Ml X245I0 AO 0.17 413.

TOTAL TMU 988.

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AN
VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ...MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1	CARP-3 GET+PLACE WITH BEND BRKT FROM MATL-PILE TO MATL-PILE WITH BEND A1 B6 G3 A1 B6 P3 A0	1.00	200.
2	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3 Al B0 G1 Ml X81 IO A0	0.33	280.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH REM AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3 M B6 G1 A1 B0 P1 L32 A0 B0 P0 A0	0.33	140.
4	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3 Al BO G1 Al B6 P0 A0	0.33	30 .
5	CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND BRACKET) F 1 / 3 A1 B6 G3 M1O XO IO AO	O.33	67.
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 A1 BO G1 M1 X67 IO A0	0.33	233 .
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3 A1 B0 G1 Ml X24510 A0	0.33	827.
	TOTAL TMU		1777.

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARDS...
* ...-PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE)*
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1	CARP-3 GET+SLIDE BOARD (ONTO BOLSTER) AT BD-PILE AND ADJUST A16 B6 G3 M3 X0 I6 A0	1.00	340.
2	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3 Al BO G1 M1 X81 IO 40	0.33	280.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3 Al B6 G1 Al B0 P1 L32 A0 B0 PO A0	0.33	140.
4	WINCH-OPER THROW CABL.E FROM MENHOLE TO CARP-3 F 1 / 3 Al B0 G1 Al B6 PO A0	0.33	30,
5	CARP-3 GET+MANIPULATE WITH BEND CABLE AT BD-PILE (HOOK AROUND BOARDS) (ALLOW FOR 2 ATTEMPTS) F 2 / 3 A1 B6 G3 H10 XO I0 A0	0, 67	133.
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 M1 X67 I0 A0	0.33	233 .
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3 Al BO G1 M1 X24510 A0	0.33	827
	TOTAL TMU		1983.

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING LADDERS FROM LADDER
* ...-PILE ON TANKTOP TO DECK (GOES THRU**
*...MANHOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

1	CARP-3 GET+SLIDE LADR (ONTO BOLSTER) AT LDR-PILE AND ADJUST	A16 B6 G3 M3 X0 I6 A0	1.00	340.
2	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3	A1 B0 G1 M1 X81 I0 A0	0.33	280.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3	A1 B6 G1 A1 B0 P1 L32 A0 B0 P0 A0	0.33	140.
4	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3	A1 B0 G1 A1 B6 P0 A0	0.33	30.
5	CARP-3 GET+MANIPULATE WITH BEND CABLE AT LDR-PILE (HOOK AROUND LADDERS.) (ALLOW FOR 2 ATTEMPTS) F 2/3	Al R6 G3 M10 M10 X0 I0 A0	0,67	133.
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3	Al B0 GI M1 X67 10 A0	0.33	233 .
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3	Al B0 G1 M1 X245I0 A0	0.33	827 .

TOTAL TMU 1983

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER TOOLBOX OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL...
* ...-PILEON TANKTOP TO DECK (GOES THRU...
* ...MANHOLE).
* TOOLBOX CONTAINS:
* ...28 BOLTS
* ...28 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

1	CARP-3 GET+PLACE 7 NUTS AND 7 BOLTS FROM MATL-PILE TO TOOLBOX-1 WITH BEND (TOTAL OF 28) PF 4 (2 3 4 5 6) A32 (B6 G3 A1 B6 P3)A0 (4)	1.00	1080.
2	CARP-3 GET+PLACE WITH BEND 4 LCLIPS FROM MATL-PILE TO TOOLBOX-1 WITH BEND (TOTAL OF 28) F 7 A1 B6 G3 A1 B6 P3 A0	7.00	1400.
3	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) A1 B0 G1 M1 X81 I0 A0	1.00	840.
4	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS A1 B6 G1 A1 B0 P1 L32 A0 B0 P0 A0	1.00	420.
5	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 A1 B0 G1 A1 B6 P0 A0	1.00	90.
6	CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND TOOLBOX) A1 B6 G3 M10 X0 I0 A0	1.00	200.
7	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) A1 B0 G1 M1 X67 I0 A0	1.00	700.
8	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) A1 B0 G1 M1 X245I0 A0	1.00	2480.
	TOTAL TMU		7210.

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT
TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

1	CARP-1 WALK TO LEVEL-2	A32	B0	G0	A0	B0	P0	A0	1.00	32(
2	CARP-2 WALK TO LEVEL-2 SIMO	<A32B0	G0	A0	B0	P0	A0 >		1.00	(

TOTAL TMU 32(

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED T
MULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .23] ....
* ...WHERE 'N' = THE NUMBER OF CUTS(BURNS).

TOTAL TMU 2900.0

	Combined sub-operation elements	Freq.	T
9.	HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP	8.00	22(
10.	IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK		

	1.00	660.0
Total TMU		2900.0

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TANK CARPENTER
PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT TANKTOP

1	CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1												
	A1	B0	G1	A1	B0	P1	M32	A1	B0	P1	A0	1.00	380.
2	CARP-1 LOOSEN PAINT ON BHD AT BRKT-1 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1												
	A1	B0	G1	A1	B0	P0	L10	A1	B0	P1	A0	1.00	150.
3	CARP-1 GET+PLACE WITH BEND SCLIP FROM TOOLBOX-2 TO BRKT-1 (TACKING UPON PLACEMENT)												
		A1	B6	G3	A1	B0	P3	A0				1.00	140.
											TOTAL TMU		670.

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER

PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1	CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BIN-1 A1 B6 G3 Al B0 P3 AO	1.00	140.
2	CARP-3 GET+PLACE WITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSEF BOLT IN BRKT **A1 B6 G3 A1 B0 P3 A1**	**1.00**	150.
3	CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS Al BO G1 Al BO Pi F1O AO BO PO AO	1.00	140.
4	CARP-3 GET+PLACE BRKT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR TRANSPORTATION) Al BO G3 Al BO P3 AO	1400	80+
	TOTAL TMU		510

379. SET-UP STAGING BRACKETS ON BULKHEAD WITH WRENCH AT TANK CARPENTER
PER STAGING BRACKET. OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
REPRESENTS PUTTING UP A BRACKET ON AN...
* ...EXISTING STAGING CLIP
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+HOLD WITH BEND BRKT FROM TANKTOP TO CARP-1	Al B6 S3 Al BO PO AO	1.00	110.
2 CARP-1 LOOSEN NUT AT BRKT-1 4 WRIST-TURNS USING HANDS	Al BO G1 Al BO PI L10 AO BO PO AO	1.00	140.
3 CARP-1 REMOVE BOLT FROM BRKT-1 (BRKT.) TO CARP-1	Al BO G1 Al BO P1 AO	1.00	40.
4 CARP-I GET+PLACE BRKT FROM CARP-1 TO BRKT-1 AND INSERT BOLT	Al BO G3 Al RO P3 Al	1.00	90.
5 CARP-1 FASTEN NUT AT BRKT-1 13 WRIST-TURNS USING HANDS	Al BO G1 Al BO PI F24 AO BO PO AO	1.00	2806
6 CARP-1 FASTEN NUT AT BRKT-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1	Al BO G1 Al BO P3 F24 Al BO P1 AO	1.00	320.
7 CARP-1 WALK TO BRKT-2 (TO 110 NEXT BRKT)	A10 BO GO AO BO PO AO	1.00	100.

TOTAL THU 1080,

380 MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TINE
* REPRESENTS GETTING LADDER ON ROLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE LADR AT LDR-PILE ANU ADJUST (ON BOLSTERS)	A42 B6 G3 M3 XO 16 AO	1.00	600,

TOTAL TMU 6004

382. SET-UP LADDER ON BULKHEAD (AT BRACKET LOCATION) WITH HAND AT TANK
CARPENTER
PER LADDER OFG: 4 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A LADDER AT A..... .
* ...BRACKET LOCATION SO THE CARPENTER CAN
* ...PUT UP A BRACKET APPLIES ONLY FOR...
* ...FIRST LEVEL OF STAGING. CARPENTER IS
*...WORKING FROM THE TANKTOP.
* ALSO INCLUDES CLIMBING UP & DOWN LADDER
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PLACE WITH BEND LADR FROM TANKTOP TO BRKT-1 A1 B6 G3 Al B0 P3 A0	1.00	140.
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT BRKT-1 (4 RUNGS) PF 4 (1) 4 (3 4) (A1)B16(G1 M3)XO IO AO (4)	1.00	360.
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT BRKT-1 (4 RUNGS) PF 4 (1) P F 4 (3 4) (Al)B16(G1 M1)XO IO AO (4)	1.00	280.
4 CARP-1 GET+PLACE LADR FROM BRKT-1 TO TANKTOP WITH BEND Al BO G3 A1 B6 P3 A0	1.00	140.
	TOTAL TMU	920.

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ....ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER.
* ALSO INCLUDES CLIMBING UP AND IIOUN THE..
* ...LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+PLACE WITH BEND LAIN? FROM TANKTOP TO LDR
Al B6 G3 Al BO P3 A0 1.OO 140.
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
(A1)B16(G1 M3)XO IO AO (12) 1.00 760.
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
(Al)B16(G1 M1)XO IO A0 (12) 1.00 520.

TOTAL TMU. 1420.

385. POSITION (SECURE) (ACCESS) LADDER FOR BRACKET STAGING WITH PLIER (AND WIRE ROPE) AT TANK CARPENTER
PER LADDER OFG: 4 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING LADDER TO STAGING...
*...BOARDS USING WIRE ROPE
CARP-1 BEGINS AT LDR

1 CARP-1 GET+MANIPULATE WIRE-ROPE AT LDR (PUT AROUND BOARDS AND LADDER.)
A1 BO G3 M10 XO IO AO 1.00 140.
2 CARP-1 TWIST WIRE-ROPE AT LDR USING PLIER-1 ASIDE TO CARP-1
Al BO G1 Al BO P3 C6 Al BO Pi AO 1.00 140.

TOTAL TMU 280

386. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT TANK (OR WA
CARPENTER
PER STAGING PLANK OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO)
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE BOARD AT LU-PILE AND ADJUST (ON BOLSTERS)
424 B6 G3 M3 XO I6 AO **1.00** 420.

TOTAL TMU 420,

388, SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH LIFT THE BOARD....
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEUEL BELOW THE BOARDS.
CARP-1 BEGINS AT BRKT-1

1 CARP-l+CARP-2 GET+SLIDE WITH 1 STEP BOARD AT BRKT-1 AND ALIGN
A3 BO G3 H3 X() I10 AO 1.00 190.
2 CARP-1 WALK TO BRKT-2 (TO DO NEXT SECTION OF BOARDS? CARP2 ALSO
MOVES TO ANOTHER BRACKET)
A1O BO GO 40 BO PO AO 1.00 100.

TOTAL TMU 290.

389. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS. THEY BOTH PICK-UP THE BOARD
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT BRKT-1

1 CARP-1+CARP-2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT BRKT-1 AND ALIGN
A3 B6 G3 M3 X0 I10 A0 1.00 250.
2 CARP-1 WALK TO BRKT-2 (TO DO NEXT SECTION OF BOARDS, CARP2 ALSO MOVES TO ANOTHER BRACKET)
A10 B0 G0 A0 B0 P0 A0 1.00 100.

TOTAL TMU 350.

390. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STAGING PLANK OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* ONE MAN OPERATION:
* USUALLY OCCURS WHEN CRANE CANNOT PLACE..
* ...BOARD ON BRACKETS.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+MANIPULATE WITH BEND BOARD AT BRKT-2 AND ALIGN RETURN TO BRKT-1
A10 B6 G3 M10 X0 I10 A10 1.00 490.
2 CARP-1 GET+POSITION WITH BEND BOARD FROM TANKTOP TO BRKT-1 AND SEAT
A1 B6 G3 A1 B0 P6 A1 1.00 180.

TOTAL TMU 670.

391. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY T0 BE
* ...TRANSPORTED,
CARP-3 BEGINS AT LU-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM BIN-2 TO BIN-2	A42 B6 G3 A1 B0 P3 AO	1.00	550
	TOTAL TMU		550 .

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE.....
* ... BRACKET SLEEVE
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PLACE WITH BEND STAN FROM TANKTOP TO BRKT-1 AND INSERT	41 B6 G3 Al BO P3 A1	1.00	150.
2 CARP-1 WALK TO BRKT-2 (1(0 NEXT STANCHION)	A1O BO GO AO BO PO AO	1.OO	100.
	TOTAL TMU		250 .

394. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...S0 THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

1 CARP-3 GET+SLIDE HANDRAIL AT HR-PILE AND ADJUST (ON BOLSTERS)	A32 B6 G3)43 XO 16 AO	1.00	500 .
	TOTAL TMU		500.

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR,....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-I BEGINS AT SRKT-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT BRKT-2 AND ALIGN (THRU 2 EYELETS ON THE STANCHIONS AT BRKT1 & BRKT2) RETURN TO BRKT-1 PF 2 (4 5 6) A1O B6 G3 (H3 XO 110)A1O (2)	1.00	5504
2 CARP-1 WALK TO BRKT(T-2 (DO NEXT SECTION) A1O BO GO AO BO PO AO	1.00	100.
TOTAL TMU		650,

397, SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIMEEE
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END-OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)***+
*...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-I

1 CARP-1 GET+HOLD WITH BEND HANDRAIL FROM TANKTOP TO CARP-1 Al B6 G3 Al R() P0 A0	1.00	110.
2 PTIME 1.O2 M (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)	1.OO	1700.
3 CARP-1 GET+PLACE 2 HANDRAIL (END PIECES) FR(Jfl CARP-1 TO BRKT-1 F 2 A1. BO G3 Al BO P3 AO	2.00	160.
TOTAL T?fU		1970.

398. TEAR DOWN HANDRAIL ON BULKHEAB WITH TORCH AT (CENTER) MID TANKS AND VOIDS CARPENTER

PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...CENTER TANK, HANDRAIL IS THROWN TO A
* ...MATERIAL PILE ON THE TANKTOP.
* CARPENTERS REMOVE 2 HADNRAIL BEFORE.....
*...MOVING TO NEXT SECTION.
CARP-1 BEGINS AT BULKHEAD

1	CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1 Al BO G1 HI XO 10 Al	1.00	40.
2	CARP-1 OPERATE TORCH AT BRKT-1 PTIME 0.26 M (BURN OFF HANDRAIL) Al RO G1 H6 X42 IO AO	1.00	500.
3	CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO CARP-2 SIMO <Al BO G3 Al BO PO AO >	1.OO	0.
4	CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO MATL-PILE AO RO GO Al BO PO AO	1.00	10.
5	CARP-1 AND CARP2 WALK TO BRKT-2 F 1 / 2 A1O BO GO AO BO PO AO	0.50	50.
	TOTAL TMU		600.

399. TEAR DOWN HANTIRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ... WING TANK. HANDRAIL IS LOWERED TO THE
* ...MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.+...
* ...MOVING TO THE NEXT SECTION*
* MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
CARP-1 BEGINS AT BULKHEAD

1 CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1			
Al EO GI Hi XO IO Al	1.00	40.
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME 0.26 M (BURN OFF HANDRAIL)			
Al BO G1 H6 X42 IO AO	1.00	500.
3 CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO RRKT-1 SIMO			
<A1 BO G3 Al BO PO AO >	1.00	0.
4 CARP-2 HOLD+PLACE HANDRAIL FROM BRKT-1 TO BRKT-PILE			
AO BO GO A1O B6 P3 AO	1.OO	190.
5 WINCH-C)PER LOOSEN (= SUING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6			
Al B6 G1 Al BO P1 L32 AO BO PO AO	0.17	70•
6 WINCH-OPER THROW CABLE FROMHENHOLE TO CARP-2 F 1 / 6			
Al BO G1 Al B& PO AO	a. 17	15.
7 CARP-2 GET+HANIPULATE WITH BEND CABLE AT BRKT-PI1.E (HOOK CABLE AROUND HANDRAIL) F 1 / 6			
Al B6 G3 M1O XO IO A0	0.17	33•
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6			
Al BO El H1 X67 IO A0	0.17	117.
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6			
Al BO G1 Ml X81 IO AO	0.17	140.
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO HENHOLE) F 1 / 6			
Al BO G1 HI X24!510 AO	0.17	413.
11 CARP-2 AND CARP1 WALK TO BRKT-2 F 1 / 2			
A24 BO GO AO BO PO AO	0.50	120.
	TOTAL TMU	1638.

DATA SYNTHESIS AND BACK-UP

400. TEAR DOWN STANCHION ON BULKHEAD WITH HAND AT (CENTER) MID TANKS AND VOIDS CARPENTER

PER STANCHION DFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STANCHION FROM.....
* ...STAGING BRACKETS IN A CENTER TANK.
* ...STANCHION IS THROWN TO A MATERIAL...
* ...PILE ON THE TANKTOP
CARP-2 BEGINS AT BRKT-1

1	CARP-2 LOOSEN STAN AT ERKT-1 4 ARM-STROKES USING HANDS Al B0 G1 Al BO P1 L24 AO B0 PO AO	1.00	280 l
2	CARP-2 HOLD+THROW STAN FROM BRKT-1 TO MATL-PILE AO B0 GO Al BO PO AO	1.OO	10.
3	CARP-2 WALK TO BRKT-2 A1O BO GO AO BO PO AO	1.00	100.
		TOTAL TMU	390.

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT AI TANKS AND VOIDS CARPENTER

PER STAGING PLANK OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER BOARD TO.....
* ...BD-PIL.E ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

1	CARP-1 AND CARP2 GET+MANIPULATE WITH BEND BOARD AT BRKT-1 (FLIP 2 BOARDS ONTO 3RD BOARD) Al B6 G3 M1O XO I0 AO	1.00	200.
2	WINCH-OPER LOOSEN (=SWING) WITH BEND CABLE AT BTRWTH 5 ARM-STROKE USING HANDS F 1 / 3 A1 B6 G1 Al BO P1 L32 AO BO PO AO	0.33	140.
3	WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-1 WITH BEND F 1 / 3 Al BO G1 Al B6 PO AO	0.33	30.
4	CARP-1 GET+MANIPULATE WITH BEND CABLE AT BRKT-1 (HOOK CABLE AROUNI BOARD ALLOW FOR 2 ATTEMPTS) F 2 / 3 Al B6 G3 M1O X0 IO AO	0.67	133.
5	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 MI X67 I0 AO	0.33	233.
6	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO BD PILE) F 1 / 3 Al BO G1 Ml X81 I0 AO	0.33	280.
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3 Al BO Gl Ml X245I0 A0	0.33	827.

8 CARP-1 AND CARP2 WALK TO BRKT-2
A10 BO GO AO BO PO AO 1.00 100.

TOTAL TMU 1943.

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD WITH TORCH (AND WINCH) AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 PULL TORCH AT LDR
A10 BO G1 Ml XO IO AO 1.00 120.
2 CARP-1 OPERATE TORCH AT LDR PTIME 0.47 M F 4 (BURN OFF 4 CLIPS)
Al BO G1 H6 X81 IO AO 4.00 3560•
3 CARP-1 GET+THROW 4 LCLIPS FROM LDR TO MATL-PILE WITHOUT BEND F 4
A1 BO G3 Al B0 PO AO 4.00 200.
4 CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN ON BOARDS)
Al BO G3 A10 B6 P6 AO 1.00 260.
5 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS
A1 B6 G1 Al BO P1 L32 AO BO PO AO 1.00 420.
6 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BEND
Al BO G1 Al B6 PO AO 1.00 90.
7 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND LADR)
A1 B6 G3 M1O XO I0 AO 1.00 200.
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
Al BO G1 Ml X67 IO AO 1.00 700 .
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE)
Al BO G1 M1 X81 I0 AO 1.00 840.
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH)
Al BO G1 Ml X245I0 AO 1.00 2480.
11 CARP-1 WALK TO BRKT-2
A10 BO GO AO BO PO AO 1.00 100.

TOTAL TMU 8970.

405. TEAR DOWN LADDER (AND WIRE ROPE) ON BULKHEAD WITH PLIER (AND WINCH) A
ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKKHEAD
* ...THERE IS 1 WIRE ROPE PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...WIRE-ROPE IS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1	CARP-1 TWIST WIRE-ROPE AT LDR USING PLIER-1 ASIDE TO CARP-1 Al BO G1 A1O B0 P3 C6 Al Bo PI Ao	1.00	230.
2	CARP-1 GET+MANIPULATE WIRE-ROPE AT LDR (PULL. WIRE ROPE OFF BOARD AND LADDER.) Al BO G3 M1O XO I0 AO	1.00	140.
3	CARP-1 HOLD+THROW WIRE-ROPE FROM LDR TO MATL-PILE WITHOUT BEND A0 BO GO Al BO P0 AO	1.00	10.
4	CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN O BOARDS) Al BO G3 A1O B6 P6 AO	1.00	260.
5	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROK USING HANDS Al B6 G1 Al BO P1 L32 AO BO PO AO	1.00	420.
6	WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BEND Al BO G1 Al B6 Po Ao	1.00	90.
7	CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND LADR Al B6 G3 M1O XO IO AO	1.00	200.
8	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) Al BO G1 M1 X67 IO AO	1.00	700.
9	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE) Al BO G1 M1 X81 IO AO	1.00	840.
10	WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) A1 BO G1 M1 X245I0 AO	1.00	2480.
11	CARP-1 WALK TO BRKT-2 A1O BO GO AO BO PO A0	1.00	100.
	TOTAL TMU		5470.

406. TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER

PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK. BRACKETS ARE LOWERED TO
* ...MATL-PILE BY WINCH.
* MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
CARP-1 BEGINS AT BRKT-2

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOLD Al BO G1 A10 BO P3 L3 AO BO PO AO	1.00	180.
2 CARP-1 HOLD+LOOSEN NUT AT BRKT-l 13 WRIST-STROKES USING WRENCH-1 ASIDE TO CARP-1 AO BO GO Al BO P3 L42 Al BO P1 AO	1.00	480.
3 CARP-1 GET+REMOVE BOLT FROM BRKT-1 TO CARP-1 Al BO G3 Al BO P1 AO	1.00	60.
4 CARP-1 THROW NUT AND BOLT FROM CARP-1 TO MATL-PILE WITHOUT BEND Al BO G1 Al BO PO AO	1.00	30.
5 CARP-2 GET+PLACE BRKT FROM BRKT-1 TO BRKT-PILE Al BO G3 A1O B6 P3 AO	1.00	230.
6 WINCH-OPER.LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS F 1 / 3 Al B6 G1 Al BO P1 L32 AO BO PO AO	0.33	140.
7 WINCH-OPER THROW CABLE FROM BTRUTH TO CARP-2 F 1 / 3 Al BO G1 Al B6 PO AO	0.33	30.
8 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK AROUND BRACKETS) F 1 / 3 Al B6 G3 M10 XO I0 AO	0.33	67.
9 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 M1 X67 IO A0	0.33	233.
10 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 3 Al BO G1 M1 X81 IO AO	0.33	280.
11 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3 Al BO G1 Ml X245I0 AO	0.33	827.
12 CARp-2 AND CARP1 WALK To BRKT-2 A24 Bo Go Ao Bo po Ao	1.00	240.
TOTAL TMU		2797.

5.2 SYNTHESIS AND ANALYSIS

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK
ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUI
MANUAL ELEMENT.

1 WELD VERTICAL 3/8" FILLET WELD (10" PER CLIP) WITH 10% OVERWELD
USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WI
STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LAUDERS (400 CLIPS)
RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD USI
6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU . 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY
TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS, RATE PER 100 PIECES OF AHNDRAIL
(AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELD HORIZONTAL 1/4′ FILLET WELD (5′ PER CONNECTION) USING 6011 3/
ELECTRODE OR COMPARABLE (7018 5/32),

TOTAL TMU 196090.

404. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON BULKHEAD AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND...
* ...DOWN LADDERS TO REMOVE STAGING.
* AVERAGE LADDER SIZE = 12 RUNGS.
CARP-1 BEGINS AT LDR

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
(A1)B16(G1 M3)XO IO A0 (12) 1.00 760.
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF 12 (34)
(A1)B16(G1 M1)XO IO AO (I2) 1.00 520.

TOTAL TMU 1280.

407. REMOVE HANDRAIL ON (MATERIAL-PILE) WITH WINCH AT ANY TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ..MANHOLE).
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
CARP-3 BEGINS AT TANKTOP

1 CARP-3 GET+SLIDE HANDRAIL (ONTO BOLSTER) AT MATL-PILE
Al B6 G3 M3 XO IO AO 1.00 130.
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
Al BO G1 Ml X81 IO AO 0.17 140.
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
Al B6 G1 Al BO P1 L32 AO BO PO AO 0.17 70.
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1/ 6
Al BO G1 Al B6 PO AO 0.17 15.
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND HANDRAIL) F 1 / 6
Al B6 G3 M1O XO IO AO 0.17 33.
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
Al BO G1 M1 X67 I0 AO 0.17 117.
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6
Al BO G1 M1 X245I0 AO 0.17 413.

TOTAL TMU 918.

408. REMOVE STANCHION ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER STANCHION OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM...
* ...MATL-PILE ON TANKTOP TO DECK (GOING
* ...THRU MANHOLE).
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+PLACE WITH BEND STAN FROM MATL-PILE TO)MATL-PILE WITH BEND
Al B6 G3 A1 B6 P3 A0 1.00 200 .
2 WINC-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 6
Al BO G1 M1 X81 IO A0 0.17 140.
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6
A1 B6 G1 A1 Bo P1 L32 A0 BO PO AO 0.17 70•
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 6
Al BO G1 Al B6 PO AO 0.17 15.
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND STANCHION) F 1 / 6
Al B6 G3 M1O XO IO AO 0.17 33.
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6
Al BO G1 M1 X67 IO AO 0.17 117.
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6
Al BO G1 M1 X245I0 AO 0.17 413.

TOTAL TMU 988.

409. REMOVE STAGING BRACKET ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND UOIDS CARPENTER
PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKET FROM MATL
* ... PILE ON TANKTOP TO DECK (GOING THRU
* ... MANHOLE).
* MAXIMUM NUMBER OF BRACKET IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1	CARP-3 GET+PLACE WITH BEND BRKT FROM MATL-PILE TO MATL-PILE WITH BEND Al B6 G3 Al B6 P3 AO	1.00	200.
2	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3 Al BO G1 M1 X81 IO AO	0.33	280.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3 Al B6 G1 Al BO P1 L32 AO BO PO AO	0.33	140.
4	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3 A1 BO G1 Al B6 PO AO	0.33	30.
5	CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND BRACKET) F 1 / 3 A1 B6 G3 M1O XO IO 40	0.33	67.
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 M1 X67 IO AO	0.33	233.
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3 Al BO G1 M1 X245I0 AO	0.33	827.
	TOTAL TMU		1777.

410. REMOVE STAGING PLANK ON (BOARD PILE) WITH WINCH AT ANY TANKS AND VOID
CARPENTER
PER STAGING PLANK OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING BOARDS FROM BOARDS...
* ...-PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-3 BEGINS AT MATL-PILE

1	CARP-3 GET+SLIDE BOARD (ONTO BOLSTER) AT BD-PILE AND ADJUST A16 B6 63 M3 XO I6 AO	1.00	340.
2	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3 Al BO G1 M1 X81 IO AO	0.33	280.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES. USING HANDS F 1 / 3 Al B6 G1 Al BO P1 L32 AO BO PO AO	0.33	140.
4	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3 Al BO G1 Al B6 PO AO	0.33	30.
5	CARP-3 GET+MANIPULATE WITH BEND CABLE AT BD-PILE (HOOK AROUND BOARDS) (ALLOW FOR 2 ATTEMPTS) F 2 / 3 A1 B6 G3 M1O XO IO AO	0.67	133.
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 MI X67 IO AO	0.33	233.
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3 Al BO G1 M1 X245I0 AO	0.33	827.
	TOTAL TMU		1983.

411. REMOVE LADDER ON (LADDER-PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER LADDER OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENT REMOVING LADDERS FROM LADDER
* ...-PILE ON TANKTOP TO DECK (GOES THRU..
* ...MANHOLE).
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
CARP-3 BEGINS AT BD-PILE

1 CARP-3 GET+SLIDE LADR (ONTO BOLSTER) AT LDR-PILE AND ADJUST	A16 B6 G3 M3 XO 16 AO	1.00	340.
2 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 1 / 3	A1 BO G1 M1 X81 IO AO	0.33	280.
3 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 3	Al B6 G2 Al BO P1 L32 A0 BO PO AO	0.33	140.
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 1 / 3	Al BO G1 A1 B6 PO AO	0.33	30.
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT LDR-PILE (HOOK AROUND LADDERS.) (ALLOW FOR 2 ATTEMPTS) F 2 / 3	Al B6 G3 M1O XO IO AO	0.67	133.
6 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3	Al BO G1 M1 X67 IO A0	0.33	233.
7 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 3	Al BO G1 M1 X245I0 AO	0.33	827.
	TOTAL TMU		1983.

412. REMOVE TOOLBOX ON (MATERIAL PILE) WITH WINCH AT ANY TANKS AND VOIDS
CARPENTER
PER TOOLBOX OFG: 3 08-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING TOOLBOX FROM MATL...
* ...-PILEON TANKTOP TO DECK (GOES THRU...
* ...MANHOLE).
* TOOLBOX CONTAINS:
* ...28 BOLTS
* ...28 NUTS
* ...28 LADDER CLIPS
CARP-3 BEGINS AT LDR-PILE

1 CARP-3 GET+PLACE 7 NUTS AND 7 BOLTS FROM MATL-PILE TO TOOLBOX-1 WI BEND (TOTAL OF 28)PF 4 (23456) A32 (B6 G3 Al B6 P3)AO (4)	1.00	1080.
2 CARP-3 GET+PLACE WITH BEND 4 LCLIPS FROM MATL-PILE TO TOOLBOX-1 WI BEND (TOTAL OF 28) F 7 A1 B6 G3 Al B6 P3 AO	7.00	1400.
3 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) A1 BO G1 M1 X81 IO A0	1.00	840.
4 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS Al B6 G1 Al BO P1 L32 A0 BO PO AO	1.00	4204.
5 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 Al BO G1 Al B6 PO AO	1.00	90.
6 CARP-3 GET+MANIPULATE WITH BEND CABLE AT MATL-PILE (HOOK AROUND TOOLBOX) Al B6 G3 M10 XO IO AO	1.00	200.
7 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) Al BO G1 M1 X67 IO AO	1.00	700.
8 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) Al BO GI M1 X245I0 AO	1.00	2480.
TOTAL TMU		7210

431. (WALK UP OR DOWN) MOVE OPERATOR (ON INCLINED STAIRS) ON BULKHEAD AT ANY TANKS AND VOIDS CARPENTER
PER SET OF INCLINED STAIRS OFG: 4 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER WALKING UP OR DOWN
* ...A SET OF INCLINED STAIRS. AVERAGE
* ...NUMBER OF TREADS IN A SET OF INCLINED
* ...STAIRS = 16.
* CARPENTERS ARE WALKING UP OR DOWN STAIRS
* AT THE SAME TIME.
CARP-1 BEGINS AT LEVEL-1

1 CARP-1 WALK TO LEVEL-2
A32 B0 G0 A0 B0 P0 A0 1.00 320.
2 CARP-2 WALK TO LEVEL-2 SIMO
<A32B0 G0 A0 B0 P0 A0 > 1.00 0.

TOTAL TMU 320.

563. TRANSPORT STAGING BRACKET WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPENTER
PER STAGING BRACKET OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BRACKETS FROM...
* ...BIN-1 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-1 AND..
* ...FROM BIN-1 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF BRKTS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT BRKT FROM BIN-1 USING CRANE WITH HOOK+SLING TO BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6
A1 T32 K24 T16 P3 T32 A0 0.17 1800.

TOTAL TMU 1800.

564. TRANSPORT LADDER WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS CARPEN
PER LADDER OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING LADDERS FROM
* ...LDR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LDR-PILE
* ...AND FROM LDR-PILE TO BULKHEAD ARE
* ...AVERAGE DISTANCE FROM SIDE OF BASIN
* ...1200'x200'
* MAXIMUM NUMBER OF LADDERS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT LADR FROM LDR-PILE USING CRANE WITH HOOK+SLING TO BULKHE
(AT. LDR) PLACE+ADJUST RETURN TO CR-1 F 1 / 3
Al T32 K24 T16 P3 T32 AO 0.33 3600.

TOTAL TMU 3600.

565. TRANSPORT STAGING PLANK WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
PER STAGING PLANK OFG: 3 23-HAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* ...LU-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO LU-PILE AND
* ...FROM LU-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...12OO'X2OO'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM LU-PILE USING CRANE WITH HOOK+SLING TO BULKHE
(BTWN BRKTS) PLACE+MANEUVER RETURN TO CR-1 F 1 / 3
Al T32 K24 T16 P16 T32 AO 0.33 4033 .

TOTAL TMU 4033.

566. TRANSPORT STANCHION WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
PER STANCHION OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING STANCHION FROM..
* ...BIN-2 TO BULKHEAD
* DISTANCES FROM CRANE-REST TO BIN-2 AND..
* ...FROM BIN-2 TO BULKHEAD ARE AVERAGE...
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SLING TO BULKHEAD (
BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6
A1 T32 K24 T16 P3 T32 A0 0.17 1800.

TOTAL TMU 1800.

567. TRANSPORT HANDRAIL WITH (TOWER CRANE) AT (WING) TANKS AND VOIDS
CARPENTER
PER HANDRAIL OFG: 3 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM...
* ...HR-PILE TO BULKHEAD
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* ...FROM HR-PILE TO BULKHEAD ARE AVERAGE
* ...DISTANCES FROM THE SIDE OF A BASIN
* ...1200'X200'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO
BULKHEAD (BTWN BRKTS) PLACE+ADJUST RETURN TO CR-1 F 1 / 6
A1 T32 K24 T16 P3 T32 A0 0.17 1800.

TOTAL TMU 1800.

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TIM
MULT BY 6 TO OBTAIN TOTAL TIME,
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (1) .....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND.....
* ....EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP...
* ...FRO NUMBER OF CUTS >1 USE THE .....
* ...FORMULA: FREQ = 1+ [(N-1) X .23]....
* ...WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

	Combined sub-operation elements	FreQ,	TMU
9,	HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP	8.00	2240
10.	IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK	1.00	660
	Total TMU		2900

376. SET-UP (STAGING CLIP) ON BULKHEAD WITH HAMMER (AND STEEL-TAPE) AT TANK CARPENTER

PER STAGING CLIP OFG: 4 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE BULKHEAD
* WELDING OF THE CLIP WILL BE DONE IN A...
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS.AT TANKTOP

1	CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1 Al BO G1 Al BO P1 M32 A1 BO P1 AO	1.00	380.
2	CARP-1 LOOSEN PAINT ON BHD AT BRKT-1 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1 Al BO G1 Al BO PO L1O Al BO P1 AO	1.00	150.
3	CARP-1 GET+PLACE WITH BEND SCLIP FROM TOOLBOX-2 TO BRKT-1 (TACKING UPON PLACEMENT) Al B6 G3 Al BO P3 AO	1.00	140.
	TOTAL TMU		670.

377. MAKE READY STAGING BRACKET FOR (TRANSPORTING) WITH HAND AT TANK (OR WAY) CARPENTER

PER STAGING BRACKET OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1	CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BIN-1 Al B6 G3 Al BO P3 AO	1.00	140.
2	CARP-3 GET+PLACE WITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSERT BOLT IN BRKT Al B6 G3 A1 BO P3 Al	1.00	150.
3	CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS Al BO G1 Al BO PI F1O AO BO PO AO	1.00	140.
4	CARP-3 GET+PLACE BRKT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR TRANSPORTATION) Al BO G3 Al BO P3 AO	1.00	80•
	TOTAL TMU		510.

383. SET-UP (ACCESS) LADDER ON BULKHEAD WITH HAND AT TANK CARPENTER
PER LADDER OFG: 3 01-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER..
* ...ON THE BULKHEAD SO THAT THE CARPENTER
* ...CAN CLIMB TO THE NEXT LADDER.
* ALSO INCLUDES CLIMBING UP AND DOWN THE..
* ...LADDER.
* AVERAGE NUMBER OF RUNGS = 12
CARP-1 BEGINS AT TANKTOP

1 CARP-1 GET+PLACE WITH BEND LADR FROM TANKTOP TO LDR
B6 G3 Al B0 P3 A0 1.00 140.
2 CARP-1 SLIDE (CLIMB-Up) LADDER AT LDR (12 RUNGS) PF 12 (1) F
12 (34)
(A1)B16(G1 M3)XO IO AO (12) 1.00 760.
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1)
12 (34)
(A1)B16(G1 Ml)XO IO AO (12) 1.00 520.

TOTAL TMU 1420.

384. POSITION (SECURE) (ACCESS) LADDER FOR BULKHEAD WITH HAMMER (AND LADDI
CLIPS) AT TANK CARPENTER
PER LADDER OFG: 3 03-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE....
* ...BULKHEAD USING 4 LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON BHD AT LDR 4 STRIKES USING HAMMER-1 ASIDE
TO CARP-1
A1 BO G1 AO B0 (PO Al L1O)A1 BO P1 A0 (4) 1.00 480.
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKIN
UPON PLACEMENT) PF 4 (6)
A1 B6 G3 Al B0 (P3)AO (4) 1.00 230.

TOTAL TMU 710.

388. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT TANK CARPENTER
PER BOARD OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BOARDS BETWEEN....
* ...BRACKETS.
* TWO MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ..BRACKETS, THEY BOTH LIFT THE BOARD....
* ..TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE LEVEL BELOW THE BOARDS.
CARP-1 BEGINS AT BRKT-1

1 CARP-l+CARP-2 GET+SLIDE WITH 1 STEP BOARD AT BRKT-1 AND ALIGN	A3 BO G3 M3 XO I1O AO	1.00	190.
2 CARP-1 WALK TO BRKT-2 (TO DO NEXT SECTION OF BOARDS, CARP2 ALSO MOVES TO ANOTHER BRACKET)	A1O BO GO AO BO PO AO	1.00	100.
		TOTAL TMU	290.

393. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT TANK CARPENTER
PER STANCHION OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE.....
*....BRACKET SLEEVE.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PLACE WITH BEND STAN FROM TANKTOP TO BRKT-1 AND INSERT	Al B6 G3 Al BO P3 Al	1.OO	150.
2 CARP-1 WALK TO BRKT-2 (DO NEXT STANCHION)	A10 BO GO AO BO PO AO	1.OO	100.
		TOTAL TMU	250.

396. SET-UP HANDRAIL ON STANCHION WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 3 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE....
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR....
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL CONNECTIONS WILL
* ...BE DONE IN A SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT BRKT-2 AND ALIGN (THRU 2 EYELETS ON THE STANCHIONS AT. BRKT1 & BRKT2) RETURN TO BRKT-1 PI (4 5 6) A10 B6 G3 (M3 X0 I10)A10 (2)	1.00	550.
2 CARP-1 WALK TO BRKT-2 (DO NEXT SECTION) A10 B0 G0 A0 B0 P0 A0	1.00	100.
TOTAL TMU		650.

397. SET-UP HANDRAIL (END PIECES) ON HANDRAIL (AND BULKHEAD) WITH HAND AT TANK CARPENTER
PER HANDRAIL OFG: 4 02-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)....
* ...CONNECTIONS WILL BE DONE IN A.....
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+HOLD WITH BEND HANDRAIL FROM TANKTOP TO CARP-1 A1 B6 G3 A1 B0 P0 A0	1.00	110.
2 PTIME 1.02 M (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)	1.00	1700.
3 CARP-1 GET+PLACE 2 HANDRAIL (END PIECES) FROM CARP-1 TO BRKT-1 A1 B0 G3 A1 B0 P3 A0	2.00	160.
TOTAL TMU		1970.

399. TEAR DOWN HANDRAIL ON BULKHEAD WITH TORCH (AND WINCH) AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL IN A...
* ...WING TANK, HANDRAIL IS LOWERED TO THE
* ....MATL-PILE WITH A WINCH BECAUSE THE...
* ...TANK IS TO SMALL FOR THE HANDRAIL TO
* ...BE THROWN.
* CARPENTERS REMOVE 2 HANDRAIL BEFORE.....
* ...MOVING TO THE NEXT SECTION.
* MAXIMUM NUMBERS OF HANDRAIL IN LIFT = 6
CARP-1 BEGINS AT BULKHEAD

1	CARP-1 PULL TORCH FROM BULKHEAD TO BRKT-1 Al BO G1 M1 XO IO Al	1.00		40.
2	CARP-1 OPERATE TORCH AT BRKT-1 PTIME 0.26) (BURN OFF HANDRAIL) Al BO G1 M6 X42 IO AO	1.00	500	.
3	CARP-2 GET+HOLD HANDRAIL FROM BRKT-1 TO BRKT-1 SIMO <Al BO G3 Al BO PO AO >	1.00		0.
4	CARP-2 HOLD+PLACE HANDRAIL FROM BRKT-1 TO BRKT-PILE A0 BO GO A1O B6 P3 AO	1.00		190.
5	WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6 Al B6 G1 Al BO P1 L32 AO BO PO AO	0.17		70.
6	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-2 F 1 / 6 Al BO G1 Al B6 PO AO	0.17		15.
7	CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PIL.E (HOOK CABLE AROUND HANDRAIL) F 1 / 6 Al B6 G3 M1O XO IO AO	0.17		33.
8	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6 Al BO G1 M1 X67 IO A0	0.17		117.
9	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6 Al BO G1 M1 X81 IO A0	0.17		140.
10	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6 Al B0 G1 M1 X245I0 A0	0.17		413.
11	CARP-2 AND CARP1 WALK TO BRKT-2 F 1 / 2 A24 B0 GO AO BO PO AO	0.50		120.
	TOTAL TMU			1638•

DATA SYNTHESIS AND BACK-UP

401. TEAR DOWN STANCHION ON BULKHEAD WITH HAND (AND WINCH) AT (WING) TANK AND VOIDS CARPENTER
PER STANCHION OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION IN A..
* ...WING TANK, STANCHION IS LOWERED TO...
* ...THE MATL-PILE WITH A WINCH BECAUSE...
* ...THE TANK IS TO SMALL FOR THE.....
* ...STANCHION TO BE THROWN.
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
CARP-2 BEGINS AT BRKT-PILE

1	CARP-2 LOOSEN STAN AT BRKT-1 4 ARM-STROKES USING HANDS Al B0 G1 A10 B0 P1 L24 A0 B0 P0 h0	1.00	370.
2	CARP-2 H0LIJ+PLACE STAN FROM BRKT-1 TO BRKT-PILE A0 R0 G0 Al0 B6 P3 A0	1*00	190.
3	WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 1 / 6 Al B6 G1 Al B0 P1 L32 A0 B0 P0 A0	0.17	70.
4	WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-2 F 1 / 6 Al B0 G1 Al B6 P0 A0	0.17	15.
5	CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK CABLE AROUND STANCHIONS) F 1 / 6 Al B6 G3 M10 X0 I0 A0	0.17	3
6	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 6 A1 B0 G1 M1 X67 I0 A0	0.17	117.
7	UINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 6 Al B0 G1 M1 X81 I0 A0	0.17	140.
8	WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 1 / 6 Al D0 G1 M1 X245I0 A0	0.17	413.
9	CARP-2 WALK TO BRKT-2 A24 B0 Go A0 B0 P0 A0	1.00	240.
	TOTAL TMU		1588.

402. TEAR DOWN STAGING PLANK ON STAGING BRACKET WITH HAND (AND WINCH) AT ANY TANKS AND VOIDS CARPENTER

PER STAGING PLANK OFG: 3 04-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM ANY TANK
* ...WINCH IS USED TO LOWER BOARD TO.....
* ...BD-PILE ON TANKTOP.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 3
CARP-1 BEGINS AT BULKHEAD

1	CARP-1 AND CARP2 GET+MANIPULATE WITH BEND BOARD AT BRKT-1 (FLIP 2 BOARDS ONTO 3RD BOARD)	A1	B6	G3	M10	X0	I0	A0		1.00	200.
2	WINCH-OPER LOOSEN (=SWING) WITH BEND CABLE AT BTRWTH 5 ARM-STROKES USING HANDS F 1 / 3	A1	B6	G1	A1	B0	P1	L32	A0	0.33	140.
3	WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-1 WITH BEND F 1 / 3	A1	B0	G1	A1	B6	P0	A0		0.33	30.
4	CARP-1 GET+MANIPULATE WITH BEND CABLE AT BRKT-1 (HOOK CABLE AROUND BOARD ALLOW FOR 2 ATTEMPTS) F 2 / 3	A1	B6	G3	M10	X0	I0	A0		0.67	133.
5	WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3	A1	B0	G1	M1	X67	I0	A0		0.33	233.
6	WINCH-OPER PUSH WINCH-DOWN PROCESS (TO BD PILE) F 1 / 3	A1	B0	G1	M1	X81	I0	A0		0.33	280.
7	WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3	A1	B0	G1	M1	X245	I0	A0		0.33	827.
8	CARP-1 AND CARP2 WALK TO BRKT-2	A10	B0	G0	A0	B0	P0	A0		1.00	100.

TOTAL TMU 1943.

403. TEAR DOWN LADDER (AND LADDER CLIPS) ON BULKHEAD WITH TORCH (AND WINCH
AT ANY TANKS AND VOIDS CARPENTER
PER LADDER OFG: 3 05-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING LADDER FROM BULKHEAD
* ...THERE ARE 4 LADDER CLIPS PER LADDER.
* ...LADDER LOWERED TO LDR-PILE BY WINCH
* ...LADDER CLIPS THROWN TO MATL-PILE.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 PULL TORCH AT LDR			
	A10 B0 G1 Ml X0 I0 A0	1.00	120.
2 CARP-1 OPERATE TORCH AT LDR PTIME 0.47 M F 4 (BURN OFF 4 CLIPS)			
	Al B0 G1 M6 X81 I0 A0	4.00	3560.
3 CARP-1 GET+THROW 4 LCLIPS FROM LDR TO MATL-PILE WITHOUT BEND F 4			
	- Al B0 G3 Al B0 PO A0	4.00	200.
4 CARP-2 GET+POSITION LADR FROM LDR TO BRKT-2 WITH BEND (LAY DOWN C BOARDS)			
	Al B0 G3 A10 B6 P6 A0	1.00	260.
5 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROK USING HANDS			
	Al B6 G1 Al B0 P1 L32 A0 B0 P0 A0	1.00	420.
6 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 WITH BEND			
	Al B0 G1 Al B6 PO A0	1.00	90.
7 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-2 (HOOK AROUND LADR			
	Al B6 G3 M10 X0 IO A0	1.00	200.l
8 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)			
	Al BO G1 M1 X67 I0 A0	1.00	700.
9 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO LDR PILE)			
	Al B0 G1 Ml X81 IO A0	1.00	840.
10 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH)			
	Al B0 G1 Ml X245I0 A0	1.00	2480.
11 CARP-1 WALK TO BRKT-2			
	A10 B0 G0 A0 B0 P0 A0	1.00	100.
	TOTAL TMU		8970.

406. TEAR DOWN STAGING BRACKET ON BULKHEAD WITH WRENCH AT ANY TANKS AND VOIDS CARPENTER

PER STAGING BRACKET OFG: 3 05-FEB-82
REPRESENTS ELAPSED) TIME
* REPRESENTS TEARING DOWN STAGING BRACKET
* ...IN ANY TANK BRACKETS ARE LOWERED TO
* ...MATL-P.ILE BY WINCH.
* MAXIMUM NUMBER OF BRACKETS IN LIFT = 3
CARP-1 BEGINS AT BRKT-2

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOLD Al BO G1 A1O BO P3 L3 AO BO PO 40	1.00	180+
2 CARP-1 HOLD+LOOSEN NUT AT BRKT-1 13 WRIST-STROKES USING WRENCH-1 ASIDE TO CARP-1 AO BO GO Al BO P3 L42 Al BO P1 AO	1.00	480.
3 CARP-1 GET+REMOVE BOLT FROM BRKT-1 TO CARP-1 Al BO G3 Al BO P1 AO	1.00	60.
4 CARP-1 THROW NUT AND BOLT FROM CARP-1 TO MATL-PILE WITHOUT BEND Al BO G1 Al BO PO AO	1.00	30.
5 CARP-2 GET+PLACE BRKT FROM BRKT-1 TO BRKT-PILE Al BO G3 A1O B6 P3 AO	1.00	230.
6 WINCH-OPER LOOSEN (=SWING) CABLE WITH BEND AT BTRWTH 5 ARM-STROKES USING HANDS F 1 / 3 Al B6 G1 Al BO P1 L32 AO BO PO AO	0.33	140.
7 WINCH-OPER THROW CABLE FROM BTRWTH TO CARP-2 F 1 / 3 Al BO G1 Al B6 PO AO	0.33	30.
8 CARP-2 GET+MANIPULATE WITH BEND CABLE AT BRKT-PILE (HOOK AROUND BRACKETS) F 1 / 3 Al B6 G3 M1O XO IO AO	0.33	67•
9 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 1 / 3 Al BO G1 M1 X67 IO AO	0.33	233 .
10 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO MATL PILE) F 1 / 3 A1 BO G1 M1 X81 IO AO	0.33	280.
11 WINCH-OPER PUSH WINCH-UP PROCESS (TO BTRWTH) F 1 / 3 Al BO G1 M1 X245I0 A0	0.33	827.
12 CARP-2 AND cARP1 WALK To BRKT-2 A24 BO GO AO BO PO AO	1.00	240.
TOTAL TMU		2797.

426. MAKE READY STAGING BRACKET FOR (TRANSPORTNG) WITH HAND AT ANY WAYS CARPENTER
PER STAGING BRACKET OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BRACKET READY TO BE..
* ...TRANSPORTED TO TANK OR BULKHEAD
* CARPENTER IS LOCATED EITHER ON THE WAY..
* ...OR IN TANK AT THE MATERIAL (BIN-1)
CARP-3 BEGINS AT BIN-1

1	CARP-3 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BIN-1	A1	B6	G3	A1	B0	P3	A0	1.00	140.
2	CARP-3 GET+PLACE WITH BEND BOLT FROM TOOLBOX-1 TO BIN-1 AND INSER BOLT IN BRKT	A1	B6	G3	A1	B0	P3	A1	1.00	150.
3	CARP-3 FASTEN NUT AT BIN-1 4 WRIST-TURNS USING HANDS	A1	B0	G1	A1	B0	P1	F10 A0	B0 P0 A0	1.00	140.
4	CARP-3 GET+PLACE BRKT FROM BIN-1 TO BIN-1 (PILE UP BRKTS FOR TRANSPORTATION)	A1	B0	G3	A1	B0	P3	A0	1.00	80.
								TOTAL TMU		510.

427. MAKE READY LADDER FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER LADDER OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING LADDER ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT BIN-1

1	CARP-3 GET+SLIDE LADR AT LDR-PILE AND ADJUST (ON BOLSTERS)	A54	B6	G3	M3	X0	I6	A0	1.00	720.
								TOTAL TMU		720.

428. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* ...THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-1

1	CARP-3 GET+SLIDE BOARD AT LU-PILE AND ADJUST (ON BOLSTERS)	A32	B6	G3	M3	X0	I6	A0	1.00	500.
								TOTAL TMU		500.

429. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STANCHION OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* ...TRANSPORTED.
CARP-3 BEGINS AT LU-PILE

1	CARP-3 GET+PLACE WITH BEND STAN FROM BIN-2 TO BIN-2	A16	B6	G3	A1	B0	P3	A0	1.00	290.
								TOTAL TMU		290.

430. MAKE READY HANDRAIL FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER HANDRAIL OFG: 3 10-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING HANDRAIL ON BOLSTERS
* ...SO THAT THE CRANE CAN TRANSPORT IT
CARP-3 BEGINS AT BIN-2

1	CARP-3 GET+SLIDE HANDRAIL AT HR-PILE AND ADJUST (ON BOLSTERS)	A32	B6	G3	M3	X0	I6	A0	1.00	500.
								TOTAL TMU		500.

569. SET-UP STAGING BRACKET ON WEB FRAME WITH WRENCH AT (WING) TANKS AND VOIDS CARPENTER

PER STAGING BRACKET OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING BRACKET
* ...ON A EXISTING STAGING CLIP (LOCATED
* ...ON A WEB FRAME)
CARP-1 BEGINS AT WING-TANK

1	CARP-1 GET+HOLD WITH BEND BRKT FROM WING-TANK TO CARP-1												
				A1	B6	G3	A1	B0	P0	A0		1.00	110.
2	CARP-1 LOOSEN NUT AT WEB-1 4 WRIST-TURNS USING HANDS												
	A1	B0	G1	A1	B0	P1	L10	A0	B0	P0	A0	1.00	140.
3	CARP-1 REMOVE BOLT FROM WEB-1 ON BRKT TO CARP-1												
				A1	B0	G1	A1	B0	P1	A0		1.00	40.
4	CARP-1 GET+PLACE BRKT FROM CARP-1 TO WEB-1 AND INSERT BOLT												
				A1	B0	G3	A1	B0	P3	A1		1.00	90.
5	CARP-1 FASTEN NUT AT WEB-1 13 WRIST-TURNS USING HANDS												
	A1	B0	G1	A1	B0	P1	F24	A0	B0	P0	A0	1.00	280.
6	CARP-1 FASTEN NUT AT WEB-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1												
	A1	B0	G1	A1	B0	P3	F24	A1	B0	P1	A0	1.00	320.
7	CARP-1 WALK TO WEB-2 (TO DO NEXT BRKT)												
				A10	B0	G0	A0	B0	P0	A0		1.00	100.
											TOTAL TMU		1080.

570. SET-UP (ACCESS) LADDER ON (INBOARD OR OUTBOARD) BULKHEAD WITH HAND
AT (WING) TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP AN ACCESS LADDER
* ...ON THE INBOARD OR OUTBOARD BULKHEAD
* ...SO THAT THE CARPENTER CAN CLIMB TO
* ...THE NEXT LEVEL OF STAGING
* ALSO INCLUDES CLIMBING UP AND DOWN THE
* ...LADDER
CARP-1 BEGINS AT WING-TANK

1 CARP-1 GET+PLACE WITH BEND LADR FROM WING-TANK TO LDR
A1 B6 G3 A1 B0 P3 A0 1.00 140.
2 CARP-1 SLIDE (CLIMB-UP) LADDER AT LDR (12 RUNGS) PF 12 (1) PF
12 (3 4)
(A1)B16(G1 M3)X0 I0 A0 (12) 1.00 760.
3 CARP-1 PULL (CLIMB-DOWN) LADDER AT LDR (12 RUNGS) PF 12 (1) PF
12 (3 4)
(A1)B16(G1 M1)X0 I0 A0 (12) 1.00 520.

TOTAL TMU 1420.

571. POSITION (SECURE) (ACCESS) LADDER ON (INBOARD OR OUTBOARD)
BULKHEAD WITH HAMMER AT (WING) TANKS AND VOIDS CARPENTER
PER LADDER OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SECURING A LADDER TO THE
* ...INBOARD OR OUTBOARD BULKHEAD USING
* ...FOUR LADDER CLIPS
* WELDING OF CLIPS WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT LDR

1 CARP-1 LOOSEN 4 PAINT ON (INBOARD OR OUTBOARD) BULKHEAD AT LDR 4
STRIKES USING HAMMER-1 ASIDE TO CARP-1
A1 B0 G1 A0 B0 (P0 A1 L10)A1 B0 P1 A0 (4) 1.00 480.
2 CARP-2 GET+PLACE WITH BEND 4 LCLIPS FROM TOOLBOX-2 TO LDR (TACKING
UPON PLACEMENT) PF 4 (6)
A1 B6 G3 A1 B0 (P3)A0 (4) 1.00 230.

TOTAL TMU 710.

573. SET-UP STAGING PLANK ON STAGING BRACKET WITH HAND AT (WING) TANKS A
VOIDS CARPENTER
PER STAGING FLANK OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN WEBS
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT TWO DIFFERENT
* ...WEBS, THEY BOTH PICK UP THE BOARD
* ...TOGETHER AND SLIDE IT INTO POSITION.
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT WEB-1

1 CARP-1 AND CARP2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT WEB-1 AN
ALIGN
A3 B6 G3 H3 *(I I10 A0 1400 250.
2 CARP-1 WALK TO WEB-2 (TO DO NEXT SECTION OF BOARDSS CARP2 ALSO
MOVES TO ANOTHER BRACKET)
A10 B0 G0 A0 B0 P0 A0 1.00 100.

TOTAL TMU 350.

575. SET-UP STAGING PLANK ON (EXISTING) BRACKET STAGING WITH HAND AT (
WING) TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN
* ...EXISTING STAGING AND INBOARD OR
* ...OUTBOARD BULKHEAD
* 2 MAN OPERATION:
* CARPENTERS ARE LOCATED AT DIFFERENT WEBS
* ...EACH CARPENTER SPREADS TWO BOARDS
* ...SIMULTANEOUSLY
* IN THIS ANALYSIS CARPENTERS ARE LOCATED
* ...ON THE SAME LEVEL AS THE BOARDS.
CARP-1 BEGINS AT WEB-1

1 CARP-1 GET+MANIPULATE (FLIP) WITH BEND WITH 1 STEP BOARD AT WEB-
AND ALIGN
A3 B6 G3 M10 X0 I10 A0 1.00 320.
2 CARP-1 WALK TO WEB-2
A10 B0 G0 A0 B0 P0 A0 1.00 100.

TOTAL TMU 420.

577. SET-UP STANCHION IN STAGING BRACKET WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER STANCHION OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING STANCHION IN THE
* ...BRACKET SLEEVE IN A WING TANK
CARP-1 BEGINS AT WEB-1

1	CARP-1 GET+PLACE WITH BEND STANCHION FROM WING-TANK TO WEB-1 AND INSERT	A1	B6	G3	A1	B0	P3	A1	1.00	150.
2	CARP-1 WALK TO WEB-2 (TO DO NEXT STANCHION)	A10	B0	G0	A0	B0	P0	A0	1.00	100.
								TOTAL TMU		250.

578. SET-UP HANDRAIL IN STANCHION WITH HAND AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL INTO THE
* ...EYELETS ON THE STANCHION
* INCLUDES ACTION DISTANCES NEEDED FOR
* ...ALIGNING THE HANDRAIL
* WELDING OF THE HANDRAIL WILL BE DONE IN
* ...A SEPARATE SUB OPERATION
CARP-1 BEGINS AT WEB-1

1	CARP-1 GET+SLIDE WITH BEND HANDRAIL AT WEB-2 AND ALIGN (THRU 2 EYELETS ON THE STANCHIONS AT. WEB1 AND WEB2) RETURN TO WEB-1 PF 2 4 5 6)	A10	B6	G3	(M3	X0	I10	)A10 (2)	1.00	550.
2	CARP-1 WALK TO WEB-2 (TO DO NEXT SECTION OF HANDRAIL)	A10	B0	G0	A0	B0	P0	A0	1.00	100.
								TOTAL TMU		650.

579. SET-UP HANDRAIL (END PIECES) ON (HANDRAIL AND) BULKHEAD WITH HANI
AT (WING) TANKS AND VOIDS CARPENTER
PER HANDRAIL OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING HANDRAIL (END PIECES)
* ...AT THE END OF A STAGING LEVEL
* WELDING OF THE HANDRAIL (END PIECES)
* ... CONNECTIONS WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT WEB-1

1	CARP-1 GET+HOLD WITH BEND HANDRAIL FROM WING-TANK TO CARP-1 Al B6 G3 Al BO PO AO	1.00	110.
2	PTIME 1.02 M (CUT HANDRAIL INTO 2 PIECES WITH ELECTRODE)	1.00	1700.
3	CARP-1 GET+PLACE 2 HANDRAIL (END PIECES) FROM CARP-1 TO WEB-1 F Al B0 G3 Al BO P3 AO	2.00	160.
	TOTAL TMU		1970

568. SET-UP (STAGING CLIP) ON WEB FRAME WITH HAMMER (AND STEEL-TAPE) A
(WING) TANKS AND VOIDS CARPENTER
PER STAGING CLIP OFG: 4 24-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...A WEB FRAME
* WELDING OF THE CLIP WILL BE DONE IN A
* ...SEPARATE SUB OPERATION
CARP-1 BEGINS AT WING-TANK

1	CARP-1 MEASURE AT WEB-1 USING STEEL-TAPE-1 ASIDE TO CARP-1 Al BO G1 Al Bo. P1 M32 Al BO P1 AO	1.00	380.
2	CARP-1 LOOSEN PAINT ON WEB AT WEB-1 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1 Al BO G1 Al BO PO L10 Al BO P1 AO	1.00	150.
3	CARP-1 GET+PLACE WITH BEND SCLIP FROM TOOLBOX-2 TO WEB-1 (TACKINC UPON PLACEMENT) Al B6 G3 A1 BO P3 AO	1.00	140.
	TOTAL TMU		670.

5.2 SYNTHESIS AND ANALYSIS

545. ASSEMBLE I-BEAMS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE BOLTING I-BEAMS
* STEPS:
* 1-4 ARE FOR THE CONNECTIONS OF I-6 & I-7
* ...AT I-l,I-2,I-3,I-4, AND I-5
* 5,6 ARE FOR MOVEMENT OF THE CARPENTER
* ...BETWEEN THE CONNECTIONS
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 GET+POSITION 4 BOLTS FROM TOOLBOX-1 TO I-1 WITH BEND AND INSERT BOLT PF 4 (4 5 6 7)F1O
A1 B6 G3 (Al B6 P6 Al) 10.00 6600.
2 CARP-1 GET+POSITION WITH BEND 4 WASHERS AND NUTS FROM TOOLBOX-1 TO I-1 WITH BEND PF 8 (4 5 6) F 1O
Al B6 G3 (Al B6 P6)AO (8) 10.00 11400.
3 CARP-1 FASTEN 4 NUTS AT I-1 13 SPINS DIFFICULT USING FINGERS F 10
Al BO G1 AO BO (P6 A1 F16)AO BO PO AO (4) 10.00 9400.
4 CARP-1 FASTEN 4 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
Al BO G1 AO BO (P1O A1 F 42)A1 BO P1 AO (4) 10.OO 21600.
5 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 PF 10 (2) PF1O (56)
Al (B32)G3 A16 (B6 P3)AO (10) 1.OO 4300.
6 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-5 (AT, I-6) TO I-5 (AT. I-7) WITH 10 STEPS WITH BEND
Al B6 G3 A16 B6 P3 AO 1.00 350 .

TOTAL TMU 53650.

546. ASSEMBLE ANGLE-BARS FOR TANK STAGING PLATFORM WITH WRENCH AT ANY PLA
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE ASSEMBLING ANGLES
* STEPS:
* 1-6 ARE FOR CONNECTIONS OF A-4 AND A-1
* ...AT I-1,I-2,I-3,I-4, AND I-5
* 7-13 ARE FOR CONNECTIONS OF
* ...A-3 AT I-5,I-4, AND I-3 AND
* ...A-1 AT I-3,I-2, AND I-1
* 14-20 ARE FOR CONNECTIONS OF A-5 AND A-6
* ...AT I-1,I-2,I-3,I-4, AND I-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 GET+POSITION ANGLE FROM A-4 TO I-1 WITHOUT BEND F 10
A1 B6 G3 A1 B0 P6 A0 10.00 1700.
2 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-1 TO I-1 WITH
BEND AND INSERT BOLT PF 2 (4 5 6 7) F 10
A1 B6 G3 (A1 B6 P6 A1) 10.00 3800.
3 CARP-1 GET+POSITION WITH BEND 2 WASHERS AND NUTS FROM TOOLBOX-1 T
I-1 WITH BEND PF 2 (4 5 6) F 10
A1 B6 G3 (A1 B6 P6)A0 (2) 10.00 3600.
4 CARP-1 FASTEN 2 NUTS AT I-1 13 SPINS DIFFICULT USING FINGERS F 10
A1 B0 G1 A0 B0 (P6 A1 F16)A0 B0 P0 A0 (2) 10.00 4800.
5 CARP-1 FASTEN 2 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WREN
ASIDE TO CARP-1 F 10
A1 B0 G1 A0 B0 (P10 A1 F42)A1 B0 P1 A0 (2) 10.00 11000.
6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WITH
STEPS PF 10 (2) PF 10 (5 6)
A1 (B32)G3 A24 (B6 P3)A0 (10) 1.00 4380.
7 CARP-1 GET+POSITION ANGLE FROM A-3 TO I-5 WITHOUT BEND F 6
A1 B6 G3 A1 B0 P6 A0 6.00 1020.
8 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-1 TO I-5 WITH
BEND AND INSERT BOLT PF 2 (4 5 6 7) F 6
A1 B6 G3 (A1 B6 P6 A1) 6.00 2280.
9 CARP-1 GET+POSITION WITH BEND 2 WASHERS AND NUTS FROM TOOLBOX-1 T
I-5 WITH BEND PF 2 (4 5 6) F 6
A1 B6 G3 (A1 B6 P6)A0 (2) 6.00 2160.
10 CARP-1 FASTEN 2 NUTS AT I-5 13 SPINS DIFFICULT USING FINGERS F 6
A1 B0 G1 A0 B0 (P6 A1 F16)A0 B0 P0 A0 (2) 6.00 2880.
11 CARP-1 FASTEN 2 NUTS AT I-5 13 WRIST-STROKES DIFFICULT USING WRE
ASIDE TO CARP-1 F 6
A1 B0 G1 A0 B0 (P10 A1 F42)A1 B0 P1 A0 (2) 6.00 6600.
12 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-5 TO I-3 WIT
10 STEPS PF 3 (2) PF 3 (5 6)
A1 (B32)G3 A16 (B6 P3)A0 (3) 1.00 1430.

13 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-l FROM I-3 TO I-1 WITH 10 STEPS PF3(2)PF3 (56)
A1 (B32)G3 A16 (B6 P3)Ao (3) 1.00 1430.
14 CARP-1 GET+POSITION ANGLE FROM A-6 TO I-1 (AT. A-6) F 10
Al B6 G3 Al B6 P6 AO 10.00 2300{
15 CARP-1 GET+POSITION WITH BEND 2 BOLTS FROM TOOLBOX-1 TO I-1 WITH BEND AND INSERT BOLT PF 2 (4 5 6 7) F 10
Al B6 G3 (Al B6 P6 Al) 10.00 3800 .
16 CARP-1 GET+PLACE WITH BEND 2 WASHERS AND NUTS FROM TOOLBOX-1 TO (I-1 WITH BEND PF2 (4 5 6) F1O
A1 B6 G3 (Al B6 P3)AO (2) 10.00 3000.
17 CARP-1 FASTEN 2 NUTS AT I-1 13 SPINS DIFFICULT USING FINGERS F 10
A1 BO G1 AO BO (P6 Al F16)AO BO PO AO (2) 10.OO 4800.
18 CARP-1 FASTEN 2 NUTS AT I-1 13 WRIST-STROKES DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
A1 BO G1 AO BO (P1O Al F42)Al BO P1 AO (2) 10.OO 11000.
19 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-1 TO I-5 PF 10 (2) PF 10 (5 6)
Al (B6)G3 A16 (B6 P3)AO (10) 1.OO 1700 .
20 CARP-1 GET+pLACE WITH BEND TooLBOx-1 FROM I-5 (AT* A-6) To I-5 (AT, A-S) WITH 10 STEPS WITH BEND
Al B6 G3 Al6 B6 P3 AO 1.00 350.

TOTAL TMU 74030.

539. READ MATERIAL LIST (PRINT) FOR TANK STAGING PLATFORM WITH (EYES) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER READS PRINT BEFORE LAYING OUT
* ...TABLE, READS 48 DIGITS PER LOCATION
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 OPEN+SHUT PRINT F 6
Al BO G1 M6 XO 10 AO 6.00 480.
2 CARP-1 READ 12 DIGITS F 24
AO BO GO AO BO PO T1O A0 BO PO AO 24• 00 2400.
3 CARP-1 HOLD+PLACE PRINT TO CARP-1 (IN POCKET) F 6
AO BO GO Al BO P3 AO 6.00 240.

TOTAL TMU 3120.

540. MEASURE (PLATEN) FOR TANK STAGING PLATFORM WITH (STEEL) TAF'E AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS MEASURING TABLE FOR LAYOUT
* ANALYSIS INCLUDES ALL THE WALKING....
* ...DISTANCES FOR THE LAYOUT.
* STEPS:
* 2,3,4 ARE FOR I-1,I-2, I-3,I-4,AND I-5
* ...AT A-5 AND A-6.
* 5,6,7 ARE FOR A-5,I-7,A-4,A-3,A-1, I-6,
*●..AND A-6 AT I-5
* 5,6,7 ARE FOR A-5, I-7,A-4,A-2,A-1, *-6v
* ...AND A-6 AT I-1
* 9,10,11 ARE FOR A-2 AND A-3 AT I-3
CARP-1 BEGINS AT STORE-2

1 CARP-1 WALK TO TANK-STAGING-PLATFORM (AT. I-1) WITH CLIMB (ON TABLE)			
	A32 B16 GO A0 B0 P0 A0	1.00	480.
2 CARP-1 MEASURE AT I-1 USING STEEL-TAPE ASIDE TO CARP-1 F 10			
Al B0 G1 Al B6 P1 M32 A1 B0 P1 A0		10.00	4400.
3 CARP-1 WALK TO I-5 WITHOUT BEND F 2			
	A16 B0 GO A0 B0 PO A0	2.00	320.
4 CARP-1 WALK TO I-1 WITHOUT BEND AND RETURN TO I-5 WITHOUT BEND F 2			
	A16 B0 GO A0 B0 PO A16	2.00	640.
5 CARP-1 MEASURE AT A-5 USING STEEL-TAPE ASIDE TO CARP-1 F 14			
A1 B0 G1 Al B6 P1 M32 A1 B0 P1 A0		14.00	6160.
6 CARP-1 WALK TO A-6 WITHOUT BEND F 2			
	A24 B0 GO A0 B0 P0 A0	2.00	480.
7 CARP-1 WALK TO A-5 WITHOUT BEND AND RETURN TO A-6 WITHOUT BEND F 2			
	A24 B0 GO A0 B0 P0 A24	2.00	960.
8 CARP-1 WALK TO I-3 WITH 6 STEPS WITHOUT BEND			
	A10 B0 GO A0 B0 PO A0	1.00	100.
9 CARP-1 MEASURE WITH 8 STEPS AT A-2 USING STEEL-TAPE ASIDE TO CARP-			
A16 B0 G1 Al B6 P1 M32 Al B0 P1 A0		1.00	590.
10 CARP-1 MEASURE AT A-3 USING STEEL-TAPE ASIDE TO CARP-1			
Al B0 G1 A32 B6 P1 M32 Al B0 P1 A0		1.00	750.
11 CARP-1 WALK TO STORE-2 WITH DESCEND (OFF TABLE)			
	A42 B16 GO A0 B0 P0 A0	1.00	580.
	TOTAL TMU		15460.

541. MARK (PLATEN) FOR TANK STAGING PLATFORM WITH MARKER AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* REPRESENTS MARKING THE LAYOUT FOR A TANK
* ...STAGING PLATFORM AND INSPECTING WORK.
* THE FOLLOWING PLACES ARE LAID OUT:
*●..AT A-5 AND A-6:
* ...I-1,I-2,I-3,I-4, AND I-5
* ...AT I-1 AND I-5:
*. ..A-6,I-6,A-1 ,A-4,I-7, AND A-5
* ...A-2 IS LAID OUT AT I-3 AND I-1
* ...A-3 IS LAID OUT AT I-3 AND I-5
CARP-1 BEGINS AT TANK-STAGING-PLATFORM

1 CARP-1 MARK AT I-1 5 DIGITS USING MARKER ASIDE TO CARP-1 F 25				
Al B0 G1 Al B6 P1 R16 Al B0 P1 A0			25.00	7000.
2 CARP-1 INSPECT 5 POINTS F 25				
A0 B0 GO A0 B0 PO T6 A0 B0 PO A0			25.00	1500.
		TOTAL TMU		8500.

542. TRANSPORT PALLET (I-BEAMS AND ANGLES) FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* MATERIAL NEEDED FOR ONE PLATFORM:
* . ..1-BEAMS - 7
*c ...ANGLES - 6
HOOKER-ON BEGINS AT CR-1

1 HOOKER-ON TRANSPORT PALLET FROM STORE-1 USING CRANE-1 WITH 2 HOOK+SLING TO STORE-2 PLACE+ADJUST RETURN TO CR-1			
Al TIO K24 T16 P3 T24 A0		1.00	7800.
	TOTAL TMU		7800.

547. TRANSPORT STAGING PLANKS FOR TANK STAGING PLATFORM WITH (CRANE) AT AI
PLATEN CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* BOARDS ARE TRANSPORTED FROM LUMBER PILE
* ...WHICH IS LOCATED (IN THE PLATEN.
* TOTAL NUMBER OF BOARDS IN LIFT = 64
* TOTAL LIFTS = 2 (PORT AND STARBOARD)
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT BOARDS FROM LUMBER-PILE USING CRANE-2 WITH 2 HOOK+SLING TO TANK-STAGING-PLATFORM (AT. A-5) PLACE+MANEUVER RN CRANE-2 TO CR-2 RETURN HOOKER-ON TO STORE-2 F 2
Al6 T1O K24 T24 P16 T24 A16 2.OO 26000 .

TOTAL TMU 26000 .

549. TRANSPORT (FINISHED) TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEI
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* TRANSPORT FINISHED PLATFORM TO A STORAGE
* ...PILE
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT FIN-PLATFORM FROM TANK-STAGING-PLATFORM USING CRANE-2 WITH 2 HOOK+SLING TO FIN-PILE PLACE+MANEUVER RETURN CRANI TO CR-2 AND RETURN HOOKER-ON TO STORE-2
A16 T24 K24 T6 P16 T24 A16 1.00 12600 .

TOTAL TMU 12600.

555. POSITION (RAISE) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS RAISING TYPICAL PLATFORM IN A
* ...CENTER TANK AND SECURING IT TO THE
* ...MAIN DECK.
* 2 CARPENTERS WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ...HOLES ON MAIN DECK
* 7-12 CONNECTION OF SHACKLES ON PLATFORM
* 14-19 CONNECTION OF SUSPENSION CABLES ON
* ...PLATFORM AND MAIN DECK
* 21-26 REMOVING SHACKLES FROM PLATFORM
* 27-29 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

1 CARP-3 GET+PLACE WITH BEND CABLE-SLEEVE FROM MENHOLE TO BTRWTH4 AND INSERT
A1 B6 G3 A32 B6 P3 A1 1.00 520.
2 CARP-3 GET+PLACE CABLE-SLEEVE FROM MENHOLE TO BTRWTH2 AND INSERT
A32 B6 G3 A16 B6 P3 A1 1.00 670.
3 CARP-3 GET+MANIPULATE CABLE AT BTRWTH4 AND ADJUST
A24 B6 G3 M10 X0 I6 A0 1.00 490.
4 CARP-3 GET+MANIPULATE CABLE AT BTRWTH2 AND ADJUST
A24 B6 G3 M10 X0 I6 A0 1.00 490.
5 WAIT 5 M (CRANE LOWERS 4 CABLES TO PLATFORM)
1.00 8335.
6 CARP-1 AND CARP2 WALK TO PLATFORM WITH 24 STEPS WITH CLIMB-OBJECT
A42 B32 G0 A0 B0 P0 A0 1.00 740.
7 CARP-1 LOOSEN NUT (ON SHACKEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
A1 B0 G1 A1 B6 P1 L16 A0 B0 P0 A0 2.00 520.
8 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
A1 B0 G3 A1 B0 P1 A0 2.00 120.
9 CARP-1 GET+MANIPULATE WITH BEND SHACKLE AT BTRWTH4 AND ALIGN F 2
A1 B6 G3 M10 X0 I10 A0 2.00 600.
10 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
A1 B0 G3 A1 B0 P6 A1 2.00 240.
11 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
A1 B0 G1 A1 B0 P1 F16 A0 B0 P0 A0 2.00 400.
12 CARP-1 WALK TO BTRWTH2 WITHOUT BEND
A24 B0 G0 A0 B0 P0 A0 1.00 240.

13 WAIT 15 M (CRANE RAISES PLATFORM JUST BELOW MAIN DECK)
1.00 25005,

14 CARP-1 LOOSEN WITH BEND+STAND NUT (ON SUSPENSION CABLE SHACKELS AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
Al B16 G1 Al B0 P1 L16 AO B0 PO AO 4.00 1440.

15 CARP-1 GET+REMOVE BOLT FROM BTRWTH2 TO CARP-1 F 4
Al BO G3 Al BO P1 AO 4.OO 240.

16 CARP-1 GET+MANIPULATE WITH BEND+STAND SUSPENSION-CABLE AT BTRWTH2 AND ALIGN F 4
Al B16 G3 M1O XO I10 AO 4.00 1600.

17 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH2 F 4
Al BO G3 Al BO F6 AO 4.00 4404

18 CARP-1 FASTEN WITH BEND+STAND NUT AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
Al B16 G1 Al BO P1 F16 AO BO PO AO 4.00 1440.

19 CARP-1 WALK TO BTRWTH4 WITH FLAT-CRAWL
A24 B42 GO AO BO PO AO 1.OO 660.

20 WAIT 1 M (CRANE TO LOWER PLATFORM TO TIGHTEN SLACK ON SUSPENSION CABLE)
1.00 1667.

21 CARP-1 LOOSEN NUT WITH BEND (ON SHACKEL) AT BTRWTH4 8 WRIST-TUR USING HANDS F 2
Al B6 G1 A1 BO P1 L16 AO BO PO AO 2.OO 520.

22 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
Al BO G3 Al BO P1 AO 2.00 120.

23 CARP-1 GET+PICKUP WITH BEND SHACKLE FROM PLATFORM F 2
Al B6 G3 Al BO PO AO 2.00 220.

24 CARP-1 GET+PLACE BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
Al BO G3 Al B6 P3 Al 2.OO 300.

25 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
Al BO G1 Al RO P1 F16 AO BO PO AO 2.00 400.

26 CARP-1 WALK TO BTRUTH2 WITH FLAT-CRAWL
A24 B42 GO AO BO PO AO 1.OO 660.

27 WAIT 5 M (CRANE RAISES 4 CABLES OUT OF THE CENTER TANK)
1.00 8335,

28 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH4 TO MENHOLE
A24 B6 G3 A32 B6 p3 AO 1.OO 740.

29 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH2 TO MENHOLE
A16 B6 G3 A16 R6 P3 AO 1.00 500.

TOTAL TMU 57652.

556. POSITION (LOWER) TANK STAGING PLATFORM WITH (CRANE) AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS LOWERING TYPICAL PLATFORM IN
* ...A CENTER TANK AND REMOVING IT FROM
* ...THE MAIN DECK.
* 2 CARPENTERS WORK SIMULTANEOUSLY ON THE
* ...MAIN DECK
* 2 CARPENTERS WORK SIMULTANEOUSLY IN THE
* ...CENTER TANK ON THE PLATFORM
* STEPS:
* 1-4 FEEDING 4 CABLES THROUGH BUTTERWORTH
* ...HOLES ON MAIN DECK
* 6-11 CONNECTION OF SHACKLES ON PLATFORM
* 13-18 REMOVAL OF SUSPENSION CABLES FROM
* ...PLATFORM AND MAIN DECK
* 23-28 REMOVING SHACKLES FROM PLATFORM
* 29-31 REMOVING CABLES FROM CENTER TANK
CARP-3 BEGINS AT MENHOLE

1 CARP-3 GET+PLACE WITH BEND CABLE-SLEEVE FROM MENHOLE TO BTRWTH4 AND INSERT
A1 B6 G3 A32 B6 P3 A1 1.00 520.
2 CARP-3 GET+PLACE CABLE-SLEEVE FROM MENHOLE TO BTRWTH2 AND INSERT
A32 B6 G3 A16 B6 P3 A1 1.00 670.
3 CARP-3 GET+MANIPULATE CABLE AT BTRWTH4 AND ADJUST
A24 B6 G3 M10 X0 I6 A0 1.00 490.
4 CARP-3 GET+MANIPULATE CABLE AT BTRWTH2 AND ADJUST
A24 B6 G3 M10 X0 I6 A0 1.00 490.
5 WAIT 5 M (CRANE LOWERS 4 CABLES TO PLATFORM)
1.00 8335.
6 CARP-1 LOOSEN NUT (ON SHACKEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
A1 B0 G1 A1 B6 P1 L16 A0 B0 P0 A0 2.00 520.
7 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
A1 B0 G3 A1 B0 P1 A0 2.00 120.
8 CARP-1 GET+MANIPULATE WITH BEND SHACKLE AT BTRWTH4 AND ALIGN F 2
A1 B6 G3 M10 X0 I10 A0 2.00 600.
9 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
A1 B0 G3 A1 B0 P6 A1 2.00 240.
10 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
A1 B0 G1 A1 B0 P1 F16 A0 B0 P0 A0 2.00 400.
11 CARP-1 WALK TO BTRWTH2 WITH FLAT-CRAWL
A24 B42 G0 A0 B0 P0 A0 1.00 660.
12 WAIT 1 M (CRANE RAISES PLATFORM JUST ENOUGH TO PUT SLACK ON SUSPENSION CABLES)

1.00 1667.

13 CARP-1 LOOSEN WITH BEND+STAND NUT (ON SUSPENSION CABLE SHACKELS AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
Al B16 G1 41 BO P1 L16 AO RO PO AO 4*OO 1440.

14 CARP-1 GET+REMOVE BOLT FROM BTRWTH2 TO CARP-1 F 4
Al Bo G3 Al Ro P1 Ao 4.00 240.

15 CARP-1 GET+MANIPULATE WITH BEND+STAND SUSPENSION-CABLE AT BTRUTH2 AND ALIGN F 4
Al B16 G3 M1O XO 110 AO 4.00 1600.

16 CARP-1 GET+POSITION BOLT FROM CARP-1 TO BTRUTH2 F 4
Al BO G3 Al BO P6 AO 4.00 440.

17 CARP-1 FASTEN WITH BEND+STAND NUT AT BTRWTH2 8 WRIST-TURNS USING HANDS F 4
Al B16 G1 Al BO P1 F16 AO BO PO AO 4*OO 1440.

18 CARP-1 WALK TO BTRWTH4 WITH FLAT-CRAWL
A24 B42 Go Ao Bo po A0 1.00 660•

19 WAIT 15 M (CRANE TO LOWER PLATFORM TO APPROXIMATELY 3 FEET ABOVE THE TANK-TOP)
1.00 25005•

20 CARP-1 AND CARP2 WALK TO MENHOLE WITH CLIMB-OBJECT
A32 B32 GO AO BO PO AO 1.00 640.

21 CARP-1 GET+MANIPULATE BLOCK FROM MENHOLE TO PLATFORM WITH 12 STEP AND ADJUST F 2
Al BO G3 H1O XO 16 A24 2.00 880

22 WAIT 1 M (CRANE LOWERS PLATFORM ON 4 WOODEN BLOCKS)
1.OO 1667.

23 CARP-1 LOOSEN NUT WITH CLIMB-OBJECT (ON SHACKEL) AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
Al B32 G1 Al B6 P1 L16 AO BO PO AO 2.00 11600

24 CARP-1 GET+REMOVE BOLT FROM BTRWTH4 TO CARP-1 F 2
Al BO G3 Al BO P1 AO 2400 1204

25 CARP-1 GET+PICKUP WITH BEND SHACKLE FROM PLATFORM F 2
A1 R6 G3 Al BO PO AO 2.00 2204

26 CARP-1 GET+PLACE BOLT FROM CARP-1 TO BTRWTH4 AND INSERT F 2
Al BO G3 Al BA P3 Al 2.OO 300 .

27 CARP-1 FASTEN NUT AT BTRWTH4 8 WRIST-TURNS USING HANDS F 2
Al BO G1 Al BO P1 F16 AO BO PO AO 2.00 400.

28 CARP-1 WALK TO BTRWTH2 WITHOUT BEND
A24 Bo GO AO BO PO A0 1.00 240.

29 WAIT 5 M (CRANE RAISES 4 CABLES OUT OF THE CENTER TANK)
1400 8335

30 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH4 TO MENHOLE
A24 B6 G3 A32 B6 P3 AO 1.OO 740

31 CARP-3 GET+PLACE CABLE-SLEEVE FROM BTRWTH2 TO MENHOLE
A16 B6 G3 A16 B6 P3 AO 1.00 500.

32 CARP-1 AND CARP2 WALK TO MENHOLE WITH CLIMB-OBJECT
A16 B32 GO AO BO PO AO 1.00 480.

TOTAL TMU 61219.

557. POSITION (PLACE) TANK STAGING PLATFORM (AND BOARDS) IN (TYPICAL TANK) WITH (CRANE) AT ANY SHIP CARPENTER
PER PLATFORM OFG: 4 17-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING TANK STAGING PLATFORM
* ...IN A TYPICAL TANK ON THE SHIP. ALSO
* ...THE BOARDS NEEDED TO EXTEND THE
* ...PLATFORM UNDER THE MAIN DECK.
* 2 HOOKER-ONS: ONE AT THE MATERIAL AND
* ...ONE ON THE SHIP IN THE TANK.
* TOTAL OF 280 FOR TYPICAL TANK
* 7 LIFTS (40 BOARDS PER LIFT)
HOOKER-ON1 BEGINS AT S-7

1 TRANSPORT TANK-STAGING-PLATFORM FROM S-7 USING CRANE-1 WITH 2-HOOK+SLING TO TANK POSITION+MANEUVER RETURN TO S-7 PF 4 (3)
A24 T32 (K32)T16P24 T16 A0 (4) 1.00 24000.
2 TRANSPORT BOARDS FROM S-7 USING CRANE-1 WITH HOOK+SLING TO TANK PLACE+ADJUST RETURN TO S-7 F 6
A1 T3 K24 T16 P3 T16 A0 6.00 37800.
3 TRANSPORT BOARDS FROM S-7 USING CRANE-1 WITH HOOK+SLING TO TANK PLACE+ADJUST RETURN TO CR-1
A1 T3 K24 T16 P3 T32 A0 1.00 7900.

TOTAL TMU 69700.

543. SET-UP I-BEAMS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ...HOOKER-ON
* STEP 3 INCLUDES SPREADING I-BEAMS AT:
* ...I-2,I-3,I-4, AND I-5
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT I-BEAM FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO I-6 PLACE+MANEUVER RETURN TO STORE-2			
	A16 T24 K24 TIO P16 TIO A0	1.00	10000.
2 HOOKER-ON TRANSPORT I-BEAM FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO I-7 PLACE+MANEUVER RETURN TO STORE-2			
	A1 T3 K24 T6 P16 T6 A0	1.00	5600.
3 HOOKER-ON TRANSPORT I-BEAM FROM STORE-2 USING CRANE-2 WITH HOOK+SLING TO I-1 PLACE+MANEUVER RETURN TO STORE-2 F 5			
	A1 T3 K24 T6 P16 T6 A0	5.00	28000.
	TOTAL TMU		43600.

544. SET-UP ANGLE-BARS FOR TANK STAGING PLATFORM WITH (CRANE) AT ANY PLATE
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS SIMULTANEOUSLY WITH THE
* ● **HOOKER-ON
* STEP 1 INCLUDES SPREADING ANGLES AT:
* ...A-6,A-1, AND A-2
* STEP 2 INCLUDES SPREADING ANGLES AT:
* ...A-3,A-4, AND A-5
HOOKER-ON BEGINS AT STORE-2

1 HOOKER-ON TRANSPORT ANGLE FROM STORE-2 USING CRANE-2 WITH HOOK+SLI TO A-6 PLACE+MANEUVER RETURN TO STORE-2 F 3			
	A16 T24 K24 TIO P16 TIO A0	3.00	30000.
2 HOOKER-ON TRANSPORT ANGLE FROM STORE-2 USING CRANE-2 WITH HOOK+SLI TO A-4 PLACE+MANEUVER RETURN TO STORE-2 F 3			
	A1 T3 K24 T6 P16 T6 A0	3.00	16800.
	TOTAL TMU		46800.

548. SET-UP STAGING PLANKS ON TANK STAGING PLATFORM WITH HANDS AT ANY PLATEN
CARPENTER
PER PLATFORM OFG: 4 02-FEB-83
REPRESENTS ELAPSED TIME

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 * CARPENTERS SPREAD BOARDS SIMULTANEOUSLY
 * BOARDS ARE SPREAD ON PORT SIDE FIRST...
 * ...THEN STARBOARD SIDE.
 * TOTAL BOARDS PER SIDE = 32
 * STEPS:
 * 2-5 SPREAD  BOARDS BETWEEN A-6 & 1-6 F/s
 * 6-8 SPREAD BOARDS BETWEEN I-6 & A-1 P/S
 * 9-11 SPREAD BOARDS BETWEEN A-1 & A-3 S
 * ...AND A-1 & A-2 P
 * 12-14 SPREAD BOARDS BETWEEN A-3 & A-4 s
 * ...AND A-2 & A-4 P
 * 15-17 SPREAD BOARDS BTWN A-4 & I-7 P/S
 * 18-20 SPREAD  BOARDS BTWN I-7 & A-5 p/s
 * 21-22 SPREAD BOARD AT A-5 P/S
CARP-1 BEGINS AT STORE-2

 1 CARP-l+CARP-2 WALK TO TANK-STAGING-PLATFORM WITH CLIMB ( ONTO
    PLATFORM )
                        A32  B16  GO  AO  BO  PO  AO        1.00      4804
 2 CARP-l+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-6 F 2
                        Al   B6  G3  A24  B6  P6  A0        2.00      920.
 3 CARP-l+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-6 F 6
                        A24  B6  G3  A24  B6  P6  AO        6.00     4140.
 4 CARP-l+CARP-2 GET+SLIDE WITH BEND BOARD AT A-6 AND ALIGN F 8
                        Al  B6  G3  M3  XO  I10  AO         8.00     1840.
 5 CARP-l+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-6 WITH
    BEND F 16
                        Al  BO  G3  Al  B6  P3  AO         16.00     2240.
 6 CARP-l+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO I-6 F 2
                        A24  B6  G3  A24  B6  P6  AO        2.00     1380.
 7 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT I-6 AND ALIGN F 2
                        Al   B6  G3  M3  XO  I10  AO        2.00      460.
 8 CARF-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO 1-6 WITH
    BEND F 4
                        Al   BO  G3  Al  B6  P3  AO         4.00      560.
 9 CARP-l+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-1 F 8
                        A24  B6  G3  A16  B6  P6  AO        8.OO     4880.
10 CARP-l+CARP-2 GET+SLIDE WITH BEND BOARD AT A-1 AND ALIGN F 8
                        A1  B6  G3  M3  XO  I10  I10        8.00     1840.
11 CARP-l+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-1 WITH
    BEND F 16
                        Al  BO  G3  Al  B6  P3  AO         16.00     2240.
12 CARP-l+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-3 ( PORT OR A-2
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   STAR ) F 6
                        A16 B6  G3  A16 B6  P6  A0        6.00    3180.
13 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT A-3 ( PORT OR A-2 STA
   AND ALIGN WITH BEND F 6
                        A1  B6  G3  M3  X0  I10 A0        6.00    1380.
14 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-3 (
   PORT OR A-2 STAR ) WITH BEND F 12
                        A1  B0  G3  A1  B6  P3  A0       12.00    1680.
15 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO A-4 F 6
                        A16 B6  G3  A6  B6  P6  A0        6.00    2580.
16 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT A-4 AND ALIGN F 6
                        A1  B6  G3  M3  X0  I10 A0        6.00    1380.
17 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-4 WI
   BEND F 12
                        A1  B0  G3  A1  B6  P3  A0       12.00    1680.
18 CARP-1+CARP-2 GET+POSITION 2 BOARDS FROM A-5 TO I-7 F 2
                        A6  B6  G3  A3  B6  P6  A0        2.00     600.
19 CARP-1+CARP-2 GET+SLIDE WITH BEND BOARD AT I-7 AND ALIGN F 2
                        A1  B6  G3  M3  X0  I10 A0        2.00     460.
20 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO I-7 WI
   BEND F 4
                        A1  B0  G3  A1  B6  P3  A0        4.00     560.
21 CARP-1+CARP-2 GET+SLIDE BOARD AT A-5 AND ALIGN F 2
                        A3  B6  G3  M3  X0  I10 A0        2.00     500.
22 CARP-1+CARP-2 GET+PLACE 2 BLOCKS FROM CARP-1 AND CARP2 TO A-5 WI
   BEND F 4
                        A1  B0  G3  A1  B6  P3  A0        4.00     560.
23 CARP-1+CARP-2 WALK TO STORE-2 WITH DESCEND ( OFF PLATFORM )
                        A32 B16 G0  A0  B0  P0  A0        1.00     480.

                                                  TOTAL TMU      36020.
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550. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING ANGLES
* STEPS:
* 1-5 ARE FOR REMOVING BOLTS ON A-4 & A-1
* ...AT I-1,I-2,I-3,I-4,AND I-5
* 7-11 ARE FOR REMOVING BOLTS
* ...ON A-3 AT I-1,I-2, & I-3
* ...ON A-1 AT I-3,I-4, & I-5
* 14-18 FOR REMOVING BOLTS ON A-5 & A-6
* ...AT I-1,I-2,I-3,I-4 & I-5
CARP-1 BEGINS AT I-1

1 CARP-1 LOOSEN 2 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENCH ASIDE TO CARP-1 F 10
A1 B0 G1 A0 B0 (P10 A1 L10)A1 B0 P1 A0 (2) 10.00 4600.
2 CARP-1 LOOSEN 2 NUTS AT I-1 20 SPINS USING FINGERS F 10
A1 B0 G1 A0 B0 (P1 A1 L24)A0 B0 P0 A0 (2) 10.00 5400.
3 CARP-1 GET+PLACE 2 NUTS AND WASHERS FROM I-1 TO TOOLBOX-1 WITH BEND F 20
A1 B0 G3 A1 B6 P3 A0 20.00 2800.
4 CARP-1 LOOSEN 2 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CARP-1 F 10
A1 B0 G1 A0 B0 (P0 A1 L6)A1 B0 P1 A0 (2) 10.00 1800.
5 CARP-1 GET+PLACE 2 BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 20
A1 B0 G3 A1 B6 P3 A0 20.00 2800.
6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WITH 14 STEPS PF 10 (2) PF 10 (5 6)
A1 (B32)G3 A24 (B6 P3)A0 (10) 1.00 4380.
7 CARP-1 LOOSEN 2 NUTS AT I-5 5 WRIST-TURNS DIFFICULT USING WRENCH ASIDE TO CARP-1 F 6
A1 B0 G1 A0 B0 (P10 A1 L10)A1 B0 P1 A0 (2) 6.00 2760.
8 CARP-1 LOOSEN 2 NUTS AT I-5 20 SPINS USING FINGERS F 6
A1 B0 G1 A0 B0 (P1 A1 L24)A0 B0 P0 A0 (2) 6.00 3240.
9 CARP-1 GET+PLACE NUTS AND WASHERS FROM I-5 TO TOOLBOX-1 WITH BEND F 12
A1 B0 G3 A1 B6 P3 A0 12.00 1680.
10 CARP-1 LOOSEN 2 BOLTS AT I-5 3 STRIKES USING HAMMER ASIDE TO CARP-1 F 6
A1 B0 G1 A0 B0 (P0 A1 L6)A1 B0 P1 A0 (2) 6.00 1080.
11 CARP-1 GET+PLACE 2 BOLTS FROM I-5 TO TOOLBOX-1 WITH BEND F 12
A1 B0 G3 A1 B6 P3 A0 12.00 1680.
12 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-5 TO I-3 WITH 10 STEPS PF 3 (2) PF 3 (5 6)
A1 (B32)G3 A16 (B6 P3)A0 (3) 1.00 1430.

13 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-3 TO I-1 WIT
10 STEPS PF 3(2)PF3 (5 6)
Al (B32)G3 A16 (B6 P3)AO (3) 1.00 1430.
14 CARP-1 LOOSEN 2 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENCH
ASIDE TO CARP-1 F 10
Al BO G1 AO BO (P10 Al L10)Al BO P1 AO (2) 10.00 4600.
15 CARP-1 LOOSEN 2 NUTS AT I-1 20 SPINS USING FINGERS F 10
Al BO G1 AO BO (Pl Al L24)AO 80 PO AO (2) 10000 5400 .
16 CARP-1 GET+PLACE 2 NUTS AND WASHERS FROM I-1 TO TOOLBOX-1 WITH BI
F 20
Al BO G3 Al B6 P3 A0 20. 00 2800 .
17 CARP-1 LOOSEN 2 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CARI
F 10
Al BO G1 AO BO (PO Al L6)Al BO P1 AO (2) 10.00 1800+
18 CARP-1 GET+PLACE BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 20
Al BO G3 Al B6 P3 AO 20.00 2800.
19 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WIT
14 STEPS PF 10 (2) PF 10 (5 6)
Al (B32)G3 A24 (B6 P3)40 (10) 1.00 4380.

TOTAL TMU 56860.

551. TEAR DOWN I-BEAMS ON TANK STAGING PLATFORM WITH WRENCH AT MID TANKS /
VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* CARPENTER WORKS ALONE UNBOLTING I-BEAMS
* STEPS:
* 1-5 ARE FOR REMOVING BOLTS ON I-6 & I-7
* ...AT I-l,I-2, I-3,I-4,AND I-5
* 6,7 ARE FOR MOVEMENT OF THE CARPENTER
* ...BETWEEN THE CONNECTIONS
CARP-1 BEGINS AT I-1

1 CARP-1 LOOSEN 4 NUTS AT I-1 5 WRIST-TURNS DIFFICULT USING WRENCH
ASIDE TO CARP-1 F 10
Al BO G1 AO BO (P10 Al L10)Al BO P1 AO (4) 10.00 8800.
2 CARP-1 LOOSEN 4 NUTS AT I-1 20 SPINS USING FINGERS F 10
Al BO G1 AO EO (P1 Al L24)AO B6 PO AO (4) 10.00 10600.
3 CARP-1 GET+PLACE 4 NUTS AND WASHERS FROM I-1 TO TOOLBOX-1 WITH BEN
F 40
Al BO G3 Al B6 P3 AO 40.00 5600.
4 CARP-1 LOOSEN 4 BOLTS AT I-1 3 STRIKES USING HAMMER ASIDE TO CARP-
F 10
Al BO G1 AO BO (PO Al L6)Al BO P1 AO (4) 10*00 3200.
5 CARP-1 GET+PLACE 4 BOLTS FROM I-1 TO TOOLBOX-1 WITH BEND F 40

A1 B0 G3 A1 B6 P3 A0 40.00 5600.

6 CARP-1 GET+PLACE WITH CLIMB-OBJECT TOOLBOX-1 FROM I-1 TO I-5 WITH 14 STEPS PF 10 (2) PF 10 (5 6)
A1 (B32)G3 A24 (B6 P3)A0 (10) 1.00 4380.

7 CARP-1 GET+PLACE WITH BEND TOOLBOX-1 FROM I-5 (AT. I-6) TO I-5 (AT. I-7) WITH 10 STEPS WITH BEND
A1 B6 G3 A16 B6 P3 A0 1.00 350.

TOTAL TMU 38530.

552. TEAR DOWN STAGING PLANKS ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 18-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL BOARDS = 64 (22 LIFTS)
* 2 CARPENTERS MOVE BOARDS FROM THE TANK
* ...STAGING PLATFORM TO A LUMBER-PILE
* ...LOCATED NEAR A MANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ...BOARDS FROM THE TANK. THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ...BOARDS ON THE DECK. THEIR TIME IS
* ...INTERNAL TO THE WINCH PROCESS TIME.
CARP-1 BEGINS AT I-5

1 CARP-1 AND CARP2 LOOSEN BOARD AT I-5 WITH BEND 2 ARM-STROKES USING HANDS F 32
A1 B0 G1 A1 B6 P1 L10 A0 B0 P0 A0 32.00 6400.

2 CARP-1 AND CARP2 GET+MANIPULATE BOARD WITH CLIMB-OBJECT AT LUMBER-PILE ALIGN AND RETURN TO I-5 WITH CLIMB-OBJECT F 32
A24 B32 G3 M10 X0 I10 A24 B32 32.00 43200.

3 CARP-1 AND CARP2 WALK TO I-3 WITH CLIMB-OBJECT
A6 B32 G0 A0 B0 P0 A0 1.00 380.

4 CARP-1 AND CARP2 LOOSEN BOARD AT I-3 WITH BEND 2 ARM-STROKES USING HANDS F 32
A1 B0 G1 A1 B6 P1 L10 A0 B0 P0 A0 32.00 6400.

5 CARP-1 AND CARP2 GET+MANIPULATE WITH CLIMB-OBJECT BOARD AT LUMBER-PILE ALIGN AND RETURN TO I-3 WITH CLIMB-OBJECT F 32
A16 B32 G3 M10 X0 I10 A16 B32 32.00 38080.

6 CARP-3 GET+SLIDE WITH BEND BOARD (ONTO BOLSTER) AT LUMBER-PILE AND ADJUST F 64
A1 B6 G3 M3 X0 I6 A0 64.00 12160.

7 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP) F 22
A1 B0 G1 M1 X81 I0 A0 22.00 18480.

8 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5 ARM-STROKES USING HANDS F 22
A1 B6 G1 A1 B0 P1 L32 A0 B0 P0 A0 22.00 9240.
9 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 22
A1 B0 G1 A1 B6 P0 A0 22.00 1980.
10 CARP-3 GET+MANIPULATE WITH BEND CABLE AT LUMBER-PILE (HOOK AROU BOARDS) (ALLOW FOR 2 ATTEMPTS) F 44
A1 B6 G3 M10 X0 I0 A0 44.00 8800.
11 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES) F 22
A1 B0 G1 M1. X67 I0 A0 22.00 15400.
12 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE) F 22
A1 B0 G1 M1 X245I0 A0 22.00 54560.

TOTAL TMU 215080.

553. TEAR DOWN ANGLES ON TANK STAGING PLATFORM WITH WINCH AT MID TANKS AN VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF ANGLES ON A TANK
* ...STAGING PLATFORM (IN A CENTER TANK)
* TOTAL ANGLES = 6 (1 LIFT)
* 1 CARPENTER MOVES ANGLES TO ONE AREA ON
* ...THE TANK STAGING PLATFORM
* ...LOCATED NEAR A MANHOLE. A WINCH
* ...OPERATOR AND A CARPENTER REMOVE THE
* ...ANGLES FROM THE TANK. THERE ARE 2
* ...CARPENTERS WHO RECEIVE AND STACK THE
* ...ANGLES ON THE DECK. THEIR TIME IS
* ...INTERNAL TO THE WINCH PROCESS TIME.
CARP-3 BEGINS AT LUMBER-PILE

1 CARP-3 WALK TO A-5 WITH 12 STEPS WITH CLIMB-OBJECT
A24 B32 G0 A0 B0 P0 A0 1.00 560.
2 CARP-3 GET+MANIPULATE ANGLE WITH BEND+CLIMB-STEP AT A-6 ALIGN AND RETURN TO A-4 WITH CLIMB-STEP
A24 B16 G3 M10 X0 I10 A16 B10 1.00 890.
3 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN AND RETURN TO A-3 WITH CLIMB-STEP
A16 B16 G3 M10 X0 I10 A16 B10 1.00 810.
4 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN AND RETURN TO A-2 WITH CLIMB-STEP
A16 B16 G3 M10 X0 I10 A16 B10 1.00 810.
5 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN AND RETURN TO A-1 WITH CLIMB-STEP
A16 B16 G3 M10 X0 I10 A10 B10 1.00 750.

6 CARP-3 GET+MANIPULATE WITH BEND+CLIMB-STEP ANGLE AT A-6 ALIGN
A10 B16 G3 H10 XO 110 AO 1.00 490.
7 WINCH-OPER PUSH WINCH-DOWN PROCESS (TO TANKTOP)
Al BO G1 Ml X81 IO AO 1.00 840.
8 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS
Al B6 G1 Al BO P1 L32 AO BO PO AO 1.00 420,
9 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3
A1 BO G1 Al B6 PO A0 1.00 90•
10 CARP-3 GET+MANIPULATE WITH BEND CABLE AT A-6 (HOOK AROUND. ANGLES)
(ALLOW FOR 2 ATTEMPTS) F 2
A1 B6 G3 M10 XO IO AO 2.00 400.
11 WINCH-OPER PUSH WINCH-FREE PROCESS (CLEAR OBSTACLES)
Al BO G1 Ml X67 IO AO 1.00 700 .
12 WINCH-OPER PUSH WINCH-UP PROCESS (TO MENHOLE)
Al BO G1 M1 X245I0 AO 1.00 2480.

TOTAL TMU 9240 .

554. TEAR DOWN I-BEAMS FOR TANK STAGING PLATFORM WITH WINCH AT MID TANKS AND VOIDS CARPENTER
PER PLATFORM OFG: 4 11-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF I-BEAMS FROM THE
* ...TANK STAGING PLATFORM
* TOTAL I-BEAMS = 7 (7 LIFTS)
* A CARPENTER AND WINCH OPERATOR REMOVE
* ...THE I-BEAMS FROM THE TANK. THERE ARE
* ...2 CARPENTERS WHO RECEIVE AND STACK
* ...THE I-BEAMS ON THE DECK. THEIR TIME
* ...IS INTERNAL TO THE WINCH PROCESS TIME
CARP-3 BEGINS AT A-6

1 CARP-3 WALK TO I-5 WITH 8 STEPS WITH CLIMB-STEP PF 4 (2)
A16 (B10)G0 A0 B0 P0 A0 (4) 1.00 560.
2 WINCH-OPER PUSH WINCH-DOWN PROCESS F 7
A1 B0 G1 M1 X81 I0 A0 7.00 5880.
3 WINCH-OPER LOOSEN (= SWING) CABLE WITH BEND AT MENHOLE 5
ARM-STROKES USING HANDS F 7
A1 B6 G1 A1 B0 P1 L32 A0 B0 P0 A0 7.00 2940.
4 WINCH-OPER THROW CABLE FROM MENHOLE TO CARP-3 F 7
A1 B0 G1 A1 B6 P0 A0 7.00 630.
5 CARP-3 GET+MANIPULATE WITH BEND CABLE AT I-5 (HOOK AROUND I-BEAM)
(ALLOW FOR 2 ATTEMPTS) PF 2 (2 3 4)
A1 (B6 G3 M10)X0 I0 A0 (2) 1.00 390.
6 CARP-3 GET+MANIPULATE CABLE AT I-4 (HOOK AROUND I-BEAM) (ALLOW

```
   FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A3  (B6  G3  M10 )X0 I0  A0  (2)  1.00     410.
 7 CARP-3 GET+MANIPULATE CABLE AT I-3 ( HOOK AROUND I-BEAM ) ( ALLOW
   FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A3  (B6  G3  M10 )X0 I0  A0  (2)  1.00     410.
 8 CARP-3 GET+MANIPULATE CABLE AT I-2 ( HOOK AROUND I-BEAM ) ( ALLOW
   FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A3  (B6  G3  M10 )X0 I0  A0  (2)  1.00     410.
 9 CARP-3 GET+MANIPULATE CABLE AT I-1 ( HOOK AROUND I-BEAM ) ( ALLOW
   FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A3  (B6  G3  M10 )X0 I0  A0  (2)  1.00     410.
 10 CARP-3 GET+MANIPULATE WITH 13 STEPS CABLE AT I-7 ( HOOK AROUND
   I-BEAM ) ( ALLOW FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A24 (B6  G3  M10 )X0 I0  A0  (2)  1.00     620.
 11 CARP-3 GET+MANIPULATE CABLE AT I-6 ( HOOK AROUND I-BEAM ) ( ALLO
   FOR 2 ATTEMPTS ) PF 2 ( 2 3 4 )
                        A24 (B6  G3  M10 )X0 I0  A0  (2)  1.00     620.
 12 WINCH-OPER PUSH WINCH-FREE PROCESS ( CLEAR OBSTACLES ) F 7
                         A1  B0  G1  M1  X67 I0  A0       7.00    4900.
 13 WINCH-OPER PUSH WINCH-UP PROCESS ( TO MENHOLE ) F 7
                         A1  B0  G1  M1  X245I0  A0       7.00   17360.

                                                    TOTAL TMU      35540.
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538. (BRUSH) CLEAN (PLATEN) FOR TANK STAGING PLATFORM WITH BROOM AT ANY PLATEN CARPENTER

PER PLATFORM OFG: 4 31-JAN-83
REPRESENTS ELAPSED TIME
* REPRESENTS CLEANING THE TABLE BEFORE THE
* ...TANK STAGING PLATFORM IS ASSEMBLED.
* SQUARE FOOTAGE OF AREA CLEANED = 700
CARP-1 BEGINS AT STORE-2

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 1 CARP-1 BRUSHCLEAN TANK-STAGING-PLATFORM ( TABLE ) WITH CLIMB ( ON
   TABLE ) 7 SQ.FT. USING BROOM RETURN TO STORE-2 WITH DESCEND ( OFF
     BLE ) PF 99 ( 7 )
      A1  B0  G1  A32 B16 P1  (S42 )A32B16 P1  A0 (99)  1.00   42580.

                                                    TOTAL TMU      42580.
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DATA SYNTHESIS AND BACK-UP

559. SET-UP STAGING PLANKS FOR TANK STAGING PLATFORM WITH HAMMER AT MID TANKS AND VOIDS CARPENTER

PER STAGING PLANK OFG: 4 20-MAY-83

REPRESENTS ELAPSED TIME

* REPRESENTS SPREADING BOARDS FROM A TANK
* ...STAGING PLATFORM TO EXISTING STAGING
* ...ON THE BULKHEADS.
* 2 CARPENTERS WHO ARE NOT WORKING
* ...SIMULTANEOUSLY.

CARP-1 BEGINS AT STAR-BHD

1 CARP-2 GET+MANEUVER WITH BEND BOARD AT STAR-BHD AND RETURN TO PLATFORM
A16 B6 G3 M10 X0 I0 A16 1.00 510.

2 CARP-1 GET+MANIPULATE WITH 1 STEP WITH BEND BOARD AT STAR-BHD AND ALIGN
A3 B6 G3 M10 X0 I10 A0 1.00 320.

3 CARP-2 GET+PLACE WITH 6 STEPS WITH BEND NAILS FROM TOOLBOX-1 TO CARP-2 WITH 6 STEPS (POCKET)
A10 B6 G3 A10 B0 P3 A0 1.00 320.

4 CARP-1 GET+PLACE WITH BEND NAILS FROM TOOLBOX-1 TO CARP-1 (POCKET)
A16 B6 G3 A16 B0 P3 A0 1.00 440.

5 CARP-2 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-2 TO PLATFORM (ON BOARDS) WITH BEND PF 3 (2 3 4 5 6 7)
A3 (B0 G3 A1 B6 P6 A0) 1.00 510.

6 CARP-1 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-1 TO STAR-BHD (ON BOARDS) WITH BEND PF 3 (2 3 4 5 6 7)
A3 (B0 G3 A1 B6 P6 A0) 1.00 510.

7 CARP-2 FASTEN 3 NAILS AT PLATFORM 16 STRIKES USING HAMMER-2 ASIDE TO CARP-2 F 2
A1 B0 G1 A0 B0 (P0 A1 F32)A1 B0 P1 A0 (3) 2.00 2060.

8 CARP-1 FASTEN 3 NAILS AT STAR-BHD 16 STRIKES USING HAMMER-1 ASIDE TO CARP-1 F 2
A1 B0 G1 A0 B0 (P0 A1 F32)A1 B0 P1 A0 (3) 2.00 2060.

TOTAL TMU 6730.

560. TEAR DOWN HANDRAIL (AND STANCHION) ON (LONGITUDINAL) BULKHEAD WI
TORCH AT MID TANKS AND VOIDS CARPENTER
PER ASSEMBLY OFG: 4 20-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM TOP
* ...LEVEL OF BULKHEAD STAGING IN A CENTER
* ...TANK. THIS IS DONE AFTER BOARDS HAVE
* ...BEEN SPREAD TO TANK STAGING PLATFORM
* CARPENTER WORKS ALONE
* HOOKUP, IGNITE AND EXTINQUISH TORCH ARE
* ...IN A SEPARATE SUB-OP
CARP-3 BEGINS AT PLATFORM

1 CARP-3 GET+MOVE WITH BEND TORCH FROM PLATFORM TO BRKT-1
A1 B6 G3 A16 B0 P1 A0 1.00 270.
2 CARP-3 OPERATE TORCH FROM BRKT-1 TO BRKT-2 AND BURN OFF 2 HANDRAI
PROCESS PF 4 (5)
A1 B0 G1 M6 (X173)I0 A10 (4) 1.00 7100.
3 CARP-3 HOLD+PLACE TORCH FROM BRKT-2 TO STAR-BHD
A0 B0 G0 A1 B0 P3 A0 1.00 40.
4 CARP-3 GET+MANIPULATE 2 HANDRAIL AT STAR-BHD F 2
A1 B0 G3 M10 X0 I0 A0 2.00 280.
5 CARP-3 HOLD+PLACE 2 HANDRAIL FROM STAR-BHD TO PLATFORM WITH BEND
RETURN TO STAR-BHD
A0 B0 G0 A16 B6 P3 A16 1.00 410.
6 CARP-3 LOOSEN 2 STANCHIONS AT STAR-BHD WITH 6 STEPS (AT. BRKT1 A
BRKT2) 4 ARM-STROKES USING HANDS
A1 B0 G1 A10 B0 (P1 A1 L24)A0 B0 P0 A0 (2) 1.00 640.
7 CARP-3 GET+PLACE 2 STANCHIONS FROM STAR-BHD TO PLATFORM WITH BEND
RETURN TO STAR-BHD PF 2 (1 2 3)
(A1 B0 G3)A16B6 P3 A16 (2) 1.00 490.
8 CARP-3 GET+MOVE WITH BEND TORCH FROM STAR-BHD TO PLATFORM WITH BE
A1 B6 G3 A16 B6 P1 A0 1.00 330.

TOTAL TMU 9560.

561. SET-UP STAGING BRACKETS FOR (BETWEEN) TANK STAGING PLATFORM WITH WRENCH
AT MID TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP BRACKETS ON 2 TANK
* ...STAGING PLATFORMS. BOARDS ARE SPREAD
* ...BETWEEN THE BRACKETS.
* THIS ASSEMBLY IS USED TO CONNECT THE TWO
* ...TANK STAGING PLATFORMS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORKING ON A DIFFERENT PLATFORM.
* STEPS:
* 1-6 REPRESENTS SETTING UP BRACKETS AT
* ...BR-1, BR-2, AND BR-3
* 7 REPRESENTS SPREADING BOARDS BETWEEN
* ...BR-1 AND BR-2; BR-2 AND BR-3
CARP-1 BEGINS AT PLFM1

1	CARP-1 GET+HOLD WITH BEND BRKT FROM PLFM1 TO CARP-1 F 3									3.00	330.
		A1	B6	G3	A1	B0	P0	A0			
2	CARP-1 LOOSEN NUT AT PLFM1 4 WRIST-TURNS USING HANDS F 3									3.00	420.
	A1	B0	G1	A1	B0	P1	L10	A0	B0	P0	A0
3	CARP-1 GET+POSITION BRKT FROM CARP-1 TO BR-1 AND INSERT BOLT F 3									3.00	810.
		A1	B0	G3	A10	B6	P6	A1			
4	CARP-1 FASTEN NUT AT BR-1 13 WRIST-TURNS USING HANDS F 3									3.00	840.
	A1	B0	G1	A1	B0	P1	F24	A0	B0	P0	A0
5	CARP-1 FASTEN NUT AT BR-1 4 ARM-TURNS USING WRENCH-1 ASIDE TO CARP-1 F 3									3.00	540.
	A1	B0	G1	A1	B0	P3	F10	A1	B0	P1	A0
6	CARP-1 WALK TO PLFM1 F 3									3.00	300.
		A10	B0	G0	A0	B0	P0	A0			
7	CARP-1 GET+MANEUVER 3 BOARDS AT BR-1 AND ALIGN RETURN TO PLFM1 WITH BEND F 6									6.00	3300.
		A10	B6	G3	M10	X0	I10	A10	B6		

TOTAL TMU 6540.

562. SET-UP STAGING PLANKS FOR (BETWEEN) TANK STAGING PLATFORMS WITH HAMM
AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 23-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING BOARDS BETWEEN TWO
* ...TANK STAGING PLATFORMS
* 2 CARPENTERS ARE NOT WORKING
* ...SIMULTANEOUSLY
CARP-1 BEGINS AT PLFM1

1 CARP-1 GET+MANEUVER WITH BEND BOARD AT CARP-2 RETURN TO PLFM1
A32 B6 G3 M10 X0 I0 A32 1.00 830.
2 CARP-2 GET+MANIPULATE WITH 1 STEP WITH BEND BOARD AT PLFM2
A3 B6 G3 M10 X0 I0 A0 1.00 220.
3 CARP-1 GET+PLACE NAILS FROM TOOLBOX-1 TO CARP-1
A10 B6 G3 A10 B0 P3 A0 1.00 320.
4 CARP-2 GET+PLACE NAILS FROM TOOLBOX-2 TO CARP-2
A10 B6 G3 A10 B0 P3 A0 1.00 320.
5 CARP-1 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-1 TO PLFM1 (ON
BOARD) WITH BEND PF 3 (2 3 4 5 6 7)
A3 (B0 G3 A1 B6 P6 A0) 1.00 510.
6 CARP-2 GET+POSITION WITH 1 STEP 3 NAILS FROM CARP-2 TO PLFM2 (ON
BOARD) WITH BEND PF 3 (2 3 4 5 6 7)
A3 (B0 G3 A1 B6 P6 A0) 1.00 510.
7 CARP-1 FASTEN 3 NAILS AT PLFM1 16 STRIKES USING HAMMER-1 ASIDE TO
CARP-1 F 2
A1 B0 G1 A0 B0 (P0 A1 F32)A1 B0 P1 A0 (3) 2.00 2060.
8 CARP-2 FASTEN 3 NAILS AT PLFM2 16 STRIKES USING HAMMER-2 ASIDE TO
CARP-2 F 2
A1 B0 G1 A0 B0 (P0 A1 F32)A1 B0 P1 A0 (3) 2.00 2060.

TOTAL TMU 6830.

9. HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP
PER EA OFG: 1 31-JUL-81
* TORCH AND HOSE LOCATED AT MANIFOLD
* UNHOOK IS THE REVERSE OF HOOKUP
CARP4 BEGINS AT HOOK-UP

1	FASTEN HOSE TO MANIFOLD 4 SPINS USING FINGERS												
	A1	B0	G1	A1	B0	P1	F10	A0	B0	P0	A0	1.00	140.
2	FASTEN HOSE TO MANIFOLD 2 WRIST-STROKES USING WRENCH4 AND ASIDE												
	A1	B0	G1	A1	B0	P3	F6	A1	B0	P1	A0	1.00	140.

TOTAL TMU 280.

10. IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK
PER EA OFG: 1 03-AUG-81
* HOOK-UP NOT INCLUDED
FITTER BEGINS AT JOB

1	LOOSEN 2 KNOBS ON TORCH AT JOB CLOSE 1 SPIN USING FINGERS												
	A1	B0	G1	A0	B0	(P1	L1	)A0	B0	P0	A0	(2) 1.00	60.
2	PRESS STRIKER AT TORCH FOR IGNITING AND CLEAR												
			A1	B0	G1	M3	X0	I0	A0			1.00	50.
3	PULL GOGGLES AT SELF OVER EYES												
			A1	B0	G1	M1	X0	I0	A0			1.00	30.
4	TURN KNOB AT TORCH AND ADJUST FLAME F 3												
			A1	B0	G1	M3	X0	I6	A0			3.00	330.
5	HOLD+PLACE TORCH ON TO JOB WITH BEND												
			A0	B0	G0	A1	B6	P3	A0			1.00	100.
6	FASTEN 2 KNOBS AT TORCH CLOSE 1 SPIN USING FINGERS												
	A1	B0	G1	A0	B0	(P1	F1	)A0	B0	P0	A0	(2) 1.00	60.
7	PULL GOGGLES AT SELF OFF EYES												
			A1	B0	G1	M1	X0	I0	A0			1.00	30.

TOTAL TMU 660.

582. TEAR DOWN STAGING PLANK FOR TANK STAGING PLATFORM WITH (PRYBAR) AND HAND AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BELOW
* ...THE MAIN DECK. BOARDS ARE CONNECTED
* ...TO THE TANK STAGING PLATFORM AND THE
* ...EXISTING PERIMETER STAGING BY NAILS.
* 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH
* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON THE
* ...TANK STAGING PLATFORM.
CARP-1 BEGINS AT STAR-BHD

1 CARP-1 PUSH AND LOCATE PRYBAR WITH 1 STEP AT STAR-BHD (UNDER BOA)
A3 B0 G1 M1 X0 I1 A0 1.00 60.
2 CARP-1 LOOSEN 3 NAILS AT STAR-BHD 3 ARM-STROKES USING PRYBAR AND ASIDE TO STAR-BHD
A1 B0 G1 A0 B0 (P3 A1 L16)A1 B0 P1 A0 (3) 1.00 640.
3 CARP-1 LOOSEN BOARD WITH BEND AT STAR-BHD 3 ARM-STROKES USING HAN
A1 B6 G1 A1 B0 P1 L16 A0 B0 P0 A0 1.00 260.
4 CARP-1 GET+MANIPULATE WITH BEND BOARD AT PLATFORM AND ADJUST RETU TO STAR-BHD
A16 B6 G3 M10 X0 I6 A16 1.00 570.

TOTAL TMU 1530.

583. TEAR DOWN STAGING PLANK FOR (BETWEEN) TANK STAGING PLATFORM WITH (PRYBAR) AND HAND AT MID TANKS AND VOIDS CARPENTER
PER STAGING PLANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BOARDS FROM BETWEEN
* ...THE TWO TANK STAGING PLATFORMS. THE
* ...BOARDS ARE CONNECTED TO THE PLATFORMS
* ...BY NAILS.
* 2 MAN OPERATION:(WORKING SIMULTANEOUSLY)
* ...CARPENTERS LOOSEN THE NAILS ON EACH
* ...END OF THE BOARD, THEN PICK UP THE
* ...BOARD AND PLACE IT ON A PILE ON ONE
* ...OF THE TANK STAGING PLATFORMS.
CARP-1 BEGINS AT PLFM1

1 CARP-1 PUSH AND LOCATE PRYBAR WITH 1 STEP AT PLFM1 (UNDER BOARD)
A3 B0 G1 M1 X0 I1 A0 1.00 60.
2 CARP-1 LOOSEN 3 NAILS AT PLFM1 3 ARM-STROKES USING PRYBAR AND ASIDE TO PLFM1
A1 B0 G1 A0 B0 (P3 A1 L16)A1 B0 P1 A0 (3) 1.00 640.
3 CARP-1 LOOSEN BOARD WITH BEND AT PLFM1 3 ARM-STROKES USING HANDS
A1 B6 G1 A1 B0 P1 L16 A0 B0 P0 A0 1.00 260.
4 CARP-1 GET+MANIPULATE WITH BEND BOARD AT PLFM2 AND ADJUST RETURN TO PLFM1
A32 B6 G3 M10 X0 I6 A32 1.00 890.

TOTAL TMU 1850.

584. TEAR DOWN STAGING BRACKETS ON TANK STAGING PLATFORM WITH WRENCH AT M
TANKS AND VOIDS CARPENTER
PER CENTER TANK OFG: 4 31-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS ON 2 TANK .
*...STAGING PLATFORMS. ALSO REMOVAL OF
* ...BOARDS THAT ARE SPREAD BETWEEN THE
* ...BRACKETS.
* 2 CARPENTERS WORKING SIMULTANEOUSLY EACH
* ...WORNING ON A DIFFERENT PLATFORM.
* STEPS:
* 1 REPRESENTS REMOVAL OF BOARDS BETWEEN
*...BR-1 AND BR-2; BR-2 AND BR-3
* 2-5 REPRESENTS REMOVAL OF BRACKETS FROM
* ...BR-1, BR-2 AND BR-3. BRACKETS ARE
* ...PLACED ON A PILE ON THE PLATFORM.
CARP-1 BEGINS AT BR-1

1 CARP-1 GET+MANEUVER WITH BEND BOARD AT PLFM1 AND ADJUST RETURN TO
BR-1 F 6
A10 B6 G3 M10 X0 I6 A10 B6 6.00 3060.
2 CARP-1 LOOSEN NUT AT BR-1 1 ARM-STROKE USING WRENCH-1 AND HOLD F
A1 B0 G1 A1 B0 P3 L3 A0 B0 P0 A0 3.00 270.
3 CARP-1 HOLD+LOOSEN NUT AT BR-1 13 WRIST-TURNS USING WRENCH-1 ASID
TO CARP-1 F 3
A0 B0 G0 A1 B0 P3 L24 A1 B0 P1 A0 3.00 900.
4 CARP-1 GET+PLACE WITH BEND BRKT FROM BR-1 TO PLFM1 WITH BEND RETU
TO BR-1 WITHOUT BEND F 3
A1 B6 G3 A10 B6 P3 A10 3.00 1170.
5 CARP-1 GET+PLACE NUT AND BOLT FROM CARP-1 TO TOOLBOX-1 F 3
A1 B0 G3 A1 B0 P3 A0 3.00 240.

TOTAL TMU 5640.

5.2 SYNTHESIS AND ANALYSIS

435. WELD STAGING BRACKET (CLIP) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 CLIPS. RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (10" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 1063356.

438. WELD LADDER (CLIP) (SECURES LADDER) ON BULKHEAD (OR ANY STRUCTURE) WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 LADDERS OR 400 CLIPS OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 LADDERS (400 CLIPS). RATE INCLUDES MANUAL ELEMENTS.

1 WELD VERTICAL 3/8" FILLET WELD (4" PER CLIP) WITH 10% OVERWELD USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 1701606.

440. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRODE AT ANY TANKS AND VOIDS (SHIP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF AHNDRAIL (AVG. 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEMENTS.

1 WELD HORIZONTAL 1/4" FILLET WELD (5" PER CONNECTION) USING 6011 3/16 ELECTRODE OR COMPARABLE (7018 5/32).

TOTAL TMU 196090.

516. TRANSPORT AREIAL PLATFORM FOR SIDE SHELL (STAGING) WITH (CRANE) AT AN
WAY CARPENTER
PER AERIAL-PLATFORM OFG: 4 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS MOVIES AERIAL PLATFORM FROM A
* ...WAY TO A SECTION OF SIDE SHELL
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT PLATFORM FROM P-REST USING CRANE WITH 2-HOOK+SLIN
TO AERIAL-PLATFORM POSITION+MANEUVER PF 2 (3)
Al T32 (K32)TIOP24 TO AO (2) 1.00 13100.

TOTAL TMU 13100.

521. (CLIMB UP AND DOWN) MOVE OPERATOR (ON LADDER) ON SIDE SHELL AT ANY WA
CARPENTER
PER LADDER OFG: 4 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS CLIMBING UP AND
* ...DOWN LADDERS TO GET ON AND OFF
* ...STAGING AT OUTSIDE SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORM.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 SLIDE (CLIMB-UP) LADDER AT BRKT-1 (12 RUNGS) PF 12 (. 1
PF 12 (3 4)
(A1)B16(G1 M3)X0 I0 A0 (12) 1.00 760.
2 CARP-1 PULL (CLIMB-DOWN) LADDER AT BRKT-1 (12 RUNGS) PF 12 (1
PF 12 (3 4)
(A1)B16(G1 M1)X0 I0 A0 (12) 1.00 520.

TOTAL TMU 1280.

529. TRANSPORT AERIAL PLATFORM FOR SIDE SHELL (STAGING) WITH CRANE AT ANY WAY CARPENTER
PER AERIAL PLATFORM OFG: 4 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS MOVING AERIAL PLATFORM
* ...FROM A SECTION OF THE SIDE SHELL
* ...TO A WAY.
C-OPER BEGINS AT-CR-l

1 C-OPER TRANSPORT PLATFORM FROM AERIAL-PLATFORH USING CRANE TO P-REST POSITION+M$NEUVER RETURN TO CR-1
Al T32 KO T1O P24 T32 40 1OO 9900.

TOTAL TMU 9900.

580, LOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS SPREADING MATERIAL ON AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:
* ...5 BRACKETS PER LEVEL.
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
CARP-1 BEGINS AT P-REST

1 CARP-1 GET+PLACE 15 BRKTS FROM BIN-1 TO BIN-1 (PILE UP BRKTS) PF 15 (2 3 4 5 6)
A32 (B6 G3 A1 BO P3)AO (15) 1.00 2270.
2 C-OPER TRANSPORT)RT 15 BRKTS FROM BIN-1 USING CRANE WITH HOOK+SLING TO P-REST PLACE+ADJUST RETURN TO BIN-2
Al T16 K24 T6 P3 T6 AO 1.OO 5600.
3 CARP-1 GET+PLACE 15 STAN FROM BIN-2 TO BIN-2 AND RETURN TO Bit-PILE WITHOUT BEND PF 15 (2 3 4 5 6)
A16 (B6 G3 Al BO P3)A16 1.OO 2270.
4 C-OPER TRANSPORT 15 STANS FROM BIN-2 USING CRANE WITH HOOK+SLING TO P-REST PLACE+ADJUST RETURN TO BD-PILE
Al T3 K24 T6 P3 T6 AO 1.00 4300.
5 CARP-1 GET+SLIDE WITH BEND 36 ROARDS FROM BD-PILE TO BD-PILE WITH 8

STEPS AND ADJUST (ON BOLSTERS) PF 2 (2 3 4 5 6) F 36
Al (B6 (G3 M3 XO 16)A16 (2) 36.00 19080.

6 C-OPER TRANSPORT 36 BOARDS FROM BD-PILE USING CRANE WITH 2-HOOK+SLING TO P-REST PLACE+MANEUVER RETURN TO HR-PILE
Al T3 K32 T6 P16 T6 AO 1.00 6400.

7 CARP-1 GET+SLIDE 24 HANDRAIL AT HR-PILE AND ADJUST (ON BOLSTERS) AND RETURN TO LDR-PILE WITHOUT BEND PF 24 (2 3 4 5 6)
A16 (B6 G3 M3 XO 16)A16 1.00 4640.

8 C-OPER TRANSPORT 24 HANDRAIL FROM HR-PILE USING CRANE WITH 2-HOOK+SLING TO P-REST PLACE+ADJUST RETURN TO LDR-PILE
Al T3 K32 T6 P3 T6 AO 1.00 5100.

9 CARP-1 GET+SLIDE WITH BEND 5 LADRS FROM LDR-PILE TO LDR-PILE WITH 5 STEPS AND ADJUST (ON BOLSTERS) PF 2 (2 3 4 5 6) F 5
Al (B6 G3 M3 XO 16)A10 (2) 5.00 2350.

10 C-OPER TRANSPORT 5 LADRS FROM LDR-PILE USING CRANE WITH 2 -HOOK+SLING *TO* P-REST PLACE+MANEUVER RETURN T0 CR-1
A1 T3 K32 T10 P16 T16 AO 1.00 7800.

11 CARP-1 GET+PLACE TOOL BOX-1 FROM BIN-1 TO P-REST WITH B END+CLIHB-STEP
A54 B6 G3 A32 B16 P3 AO 1.00 1140.

12 CARP-1 GET+PLACE TOOL BOX-2 FROM BIN-2 TO P-REST WITH B END+CLIMB-STEP
A32 B6 G3 A32 B16 P3 A0 1.00 920.

TOTAL TMU 61870.

581. UNLOAD (STAGING MATERIAL) ON AERIAL PLATFORM WITH (CRANE) AT ANY PLATEN
CARPENTER
PER AERIAL PLATFORM OFG: 4 27-MAY-83
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF MATERIAL FROM AN
* ...AERIAL PLATFORM
* AERIAL PLATFORM CAN HOLD ENOUGH STAGING
* ...MATERIAL FOR 3 LEVELS OF STAGING:
* ...5 BRACKETS PER LEVEL.
* TOTAL MATERIAL:
* MATL QUANTITY
* BRKTS 15
* STANS 15
* BOARDS 36
* HANDRAIL 24
* LADDERS 5
C-OPER BEGINS AT CR-1

1 C-OPER TRANSPORT 15 BRKTS FROM P-REST USING CRANE WITH HOOK+SLING TO BIN-1 PLACE+ADJUST RETURN TO P-REST
Al T16 K24 T6 P3 T6 AO 1.00 5600.
2 CARP-1 GET+PLACE 15 BRKTS FROM BIN-1 TO BIN-1 (PUT INTO BIN) PF 15 (2 3 4 5 6)
A32 (B6 G3 Al BO P3)AO (15) 1.00 2270.
3 C-OPER TRANSPORT 15 STANS FROM P-REST USING CRANE WITH HOOK+SLING TO BIN-2 PLACE+ADJUST RETURN TO P-REST
A1 T3 K24 T6 P3 T6 AO 1.00 4300.
4 CARP-1 GET+PLACE 15 STANS FROM BIN-2 TO BIN-2 (PUT INTO BIN) RETURN TO BD-PILE WITHOUT BEND PF 15 (2 3 4 5 6)
A16 (B6 G3 Al BO P3)A16 1.00 2270.
5 C-OPER TRANSPORT 36 BOARDS FROM P-REST USING CRANE WITH 2-HOOK+SLING TO BD-PILE PLACE+MANEUVER (ONTO BOLSTERS) RETURN TO P-REST
Al T3 K32 T6 P16 T6 AO 1.00 6400.
6 CARP-1 GET+SLIDE WITH BEND 36 BOARDS FROM BD-PILE TO BD-PILE WITH 8 STEPS AND ADJUST (ONTO PILE) PF 2 (2 3 4 5 6) F 36
Al (B6 G3 M3 XO I6)A16 (2) 36.00 19080,
7 C-OPER TRANSPORT 24 HANDRAIL FROM P-REST USING CRANE WITH 2-HOOK+SLING TO HR-PILE PLACE+ADJUST RETURN TO P-REST
Al T3 K32 T6 P3 T6 AO 1.00 5100.
8 CARP-1 GET+SLIDE 24 HANDRAIL AT HR-PILE AND ADJUST (ON PILE) RETURN TO LDR-PILE WITHOUT BEND PF 24 (2 3 4 S 6)
A16 (B6 G3 M3 Xo 16)A16 1.00 4640.
9 C-OPER TRANSPORT 5 LADRS FROM P-REST USING CRANE WITH 2-HOOK+SLING TO LDR-PILE PLACE+MANEUVER (ONTO BOLSTERS) RETURN TO CR-1
Al T3 K32 T10 P16 T10 AO 1.00 7200.
10 CARP-1 GET+SLIDE WITH BEND 5 LADRS FROM LDR-PILE TO LDR-PILE WITH 5 STEPS AND ADJUST (ONTO PILE) PF 2 (2 3 4 5 6) F 5

DATA SYNTHESIS AND BACK-UP

	Al (B6 G3 M3 XO I6)Al0 (2)	5.00	2350.
11	CARP-1 GET+PLACE WITH BEND+CLIMB-STEP TOOLBOX1 FROM P-REST TO BI		
	A42 B16 G3 A32 B6 P3 A0	1.00	1020.
12	CARP-1 GET+PLACE WITH BEND+CLIMB-STEP TOOLBOX2 FROM P-REST To BI		
	A32 B16 G3 A32 B6 P3 AO	1.00	920.

TOTAL TMU 61150.

132. COMBINED SUB-OP

HOOK-UP/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND
AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TI
MULT BY 6 TO OBTAIN TOTAL TIME,
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 UNHOOKS PER (l).....
* ...8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND .....
* ...EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP ...
* ...FRO NUMBER OF CUTS >1, USE THE .....
* ....FORMULA: FREQ = 1+ [(N-1) X . 231 ....
* ....WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

	Combined sub-operation elements	Free.	TM
9.	HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP		
		8.00	2240
10.	IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK		
		1.00	660
	Total TMU		2900

517. SET-UP (STAGING CLIP) ON SIDE SHELL WITH HAMMER AT ANY WAY CARPENTER
PER STAGING CLIP OFG: 3 16-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A STAGING CLIP ON
* ...THE SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ...PLATFORM.
* WELDING OF THE CLIP IS DONE IN A
* ...SEPERATE SUB OPERATION.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 MEASURE AT BRKT-1 USING STEEL-TAPE-1 ASIDE TO CARP-1
Al BO G1 A1O BO P1 M32 Al BO P1 AO 1.OO 470.
2 CARP-1 LOOSEN PAINT ON SIDE SHELL AT BRKT-1 4 STRIKES USING HAMMER-1 ASIDE TO CARP-1
Al BO G1 Al BO PO L1O Al BO P1 AO 1.00 150.
3 CARP-1 GET+PLACE SCLIP FROM TOOLBOX-2 TO BRKT-1 (TACKING UPON PLACEMENT)
A1O B6 G3 A1O BO P3 AO 1.00 320.

TOTAL TMU 940.

518. SET-UP STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY CARPENTER
PER STAGING BRACKET OFG: 3 16-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP A BRACKET ON THE
* ...SIDE SHELL.
* CARPENTERS ARE WORKING FROM AN AERIAL
* ...PLATFORM.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 GET+PICKUP NUT AND BOLT FROM TOOLBOX-1 TO SELF (IN POCKET)
A16 B6 G3 Al BO PO AO 1.00 260.
2 CARP-1 GET+PLACE WITH BEND BRKT FROM BIN-1 TO BRKT-1
Al B6 G3 A16 BO P3 AO 1000 290.
3 CARP-1 PLACE BOLT FROM CARP-1 TO BRKT-1 AND INSERT
Al BO G1 Al BO P3 Al 1.OO 70.
4 CARP-1 FASTEN NUT AT BRKT-1 13 WRIST-TURNS USING HANDS
Al BO G1 Al BO P1 F24 AO BO PO AO 1.00 280.
5 CARP-1 FASTEN NUT AT BRKT-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1
Al BO G1 Al BO P3 F24 Al BO P1 AO 1.00 320.

TOTAL TMU 1220.

519. SET-UP STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STAGING PLANK OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING BOARDS uP BETWEEN TUll
* ...STAGING BRACKETS.
* CARPENTERS ARE WORKING ON AN AREIAL
* ...PLATFORM AND THEY ARE WORKING
* ...SIHULTANEOUSLY.
CARP-3 BEGINS AT BIN-1

1 CARP-3 GET+SLIDE BOARDS FROM BD-PILE TO BD-PILE UITH 8 STEPS (ON BOLSTERS) AND ADJUST	A1O B6 G3 H3 XO 14 A16	1.00	440.
2 CARP-1 AND CARP 2 GET+MANEUVER BOARDS FROM BD-PILE TO BRKT-1 SPANNING BRKT2 AND ALIGN	A24 B6 G3 M1O XO 110 A24	1.00	770.
	TOTAL TMU		1210.

520, SET-UP (ACCESS) LADDER ON SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER ACCESS LADDER OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP A LADDER ON THE
* *...SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* ...PLATFORllS BUT ARE NOT WORKING
*... SIMULTANEOUSLY.
* WELDING DONE IN A SEPERATE
* ...SUB OPERATION.
CARP-3 BEGINS AT BD-PILE

1 CARP-3 GET+SLIDE LADR FROM LDR-PILE TO LIIR-PILE WITH 5 STEPS (ON BOLSTER) AND ADJUST	A1O B6 G3 M3 XO 16 AIO	1.00	380.
2 CARP-1 GET+PLACE LADR FROM LDR-PILE To BRKT-1	A24 B6 G3 A24 Bo P3 Ao	1.00	600.
3 CARP-2 LOOSEN 4 PAINT ON SIDE SHELL AT BRKT-1 4 STRIKES USING HAMMER-2 ASIDE TO CARP-2	Al BO G1 A1O BO (PO Al L1O)Al BO P1 AO (4)	1.00	580.
4 CARP-2 GET+PLACE 4 LCLIPS FRCM TOOLBOX-2 TO RRKT-1 (TACKING UPON PLACEMENT) PF 4 (6)	A1O B& G3 A1O BO (P3)AO (4)	1.00	410.
	TOTAL TMU		1970.

522, SET-UP STANCHION FOR SIDE SHELL WITH HAND AT ANY DAY CARPENTER
PER STANCHION 0FF3: 3 17-MAR-82
REPRESENTS ELAPSED TIME
*REPRESENTS PUTTING STANCHION IN STAGING
*.e.BRACKETS,
*TWOCARPENTERS ARE ON THE STAGING$ ONE
*...REMAINS ON THE AERIAL PLATFORM.
CARP-3 BEGINS AT LDR-PILE

1 CARP-3 GET+PLACE STAN FROM BIN-2 TO BRKT-1			
	A24 B6 G3 AlO BO P3 A0	1.00	460.
2 CARP-1 GET+PLACE WITH BEND STAN FROM BRKT-1 TO BRKT-1 AND INSERT			
	Al B6 G3 Al BO P3 Al	1.OO	150.
	TOTAL TMU		610,

523. SET-UP HANDRAIL FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER HANDRAIL OFG: 3 17-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS PUTTING UP HANDRAIL AT THE
* ...SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* ...REMAINS ON.THE AERIAL PLATFORM.
* WELDING IS DONE IN A SEPERATE SUB
* ...OPERATION,
CARP-3 BEGINS AT BIN-2

1 CARP-3 GET+SLIDE HANDRAIL FROM HR-PILE TO CARP-1			
	A24 B6 G3 M3 XO IO A24	1.00	6 0 0 .
2 CARP-1 GET+SLIDE HANDRAIL FROM BRKT-1 TO BRKT-2 AND ALIGN (THRU 2 STANCHION SLEEVES) PF 2 (4 5 6)			
	A1 BO G3 (H3 XO 110)A1O (2)	1,00	400.
	TOTAL TMU		1000.

524. TEAR DOWN HANDRAIL ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
PER HANDRAIL OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON THE
* . . . SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* . . .REMAINS ON THE AERIAL PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* . . . SINULTANEOUSLY.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 TO BRKT-1			
A1 B0 G3 HI X0 I0 A10	1.00	150.
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME .26 M (BURN OFF HANDRAIL)			
A1 B0 G1 M6 X42 IO A0	1.00	500.
3 CARP-2 GET+SLIDE HANDRAIL FROM BRKT-2 TO CARP-2			
Al B0 G3 M3 X0 IO A1	1.00	80.
4 CARP-2 HOLD+MOVE HANDRAIL FROM CARP-2 TO CARP-3			
A0 B0 G0 A24 B6 P1 A0	1.00	310.
5 CARP-3 GET+PLACE HANDRAIL FROM BRKT-2 TO HR-PILE			
A24 B0 G3 A16 B6 P3 A0	1.OO	520.
	TOTAL TMU	1560.

525. TEAR DOWN STANCHION FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STANCHION OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* . . .SIDE SHELL.
* TWO CARPENTERS ARE ON THE STAGING, ONE
* . . .EHAINS ON AERIAL PLATFORM.
* THE CARPENTERS DO NOT WORK
* . . .SIMUL TANEOUSLY.
CARP-3 BEGINS AT BRKT-1

1 CARP-1 LOOSEN STAN AT BRKT-1 4 ARM-STROKES USING HANDS			
Al B0 G1 A1 B0 P1 L24 A0 B0 P0 A0	1.OO	280.
2 CARP-1 HOLD+MOVE STAN FROM CARP-1 TO CARP-3			
A0 B0 GO Al B0 P1 A0	1.00	20.
3 CARP-3 GET+PLACE STAN FROM BRKT-1 TO BIN-2			
Al B0 G3 A10 B6 P3 A0	1.00	230.
	TOTAL TMU	530.

526. TEAR DOWN STAGING PLANK FOR SIDE SHELL WITH HAND AT ANY WAY CARPENTER
PER STAGING PLANK OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON THE
* . . .SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* . . .PLATFORM.
* THE CARPENTERS ARE WORKING
* . . .SIMUL TANEOUSLY.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 AND CARP 2 GET+MANIPULATE BOARD FROM BRKT-1 (CARP 2 AT. BRKT2) TO BD-PILE
Al B0 G3 M10 X0 I0 A24 B6 1.OO 440.

TOTAL TMU 440.

527. TEAR DOWN (ACCESS) LADDER ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
PER LADDER OFG: 2 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF LADDER FROM SIDE
* . . .SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* . . .PLATFORM.
* THE CARPENTERS ARE NOT WORKING
* . . .SIMUL TANEOUSLY.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 70 BRKT-1
Al B0 G3 M1 X0 I0 A10 1.00 150.
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME 0.47 M(BURN OFF 4 CLIPS) F 4
A1 B0 G1 M6 X81 IO A0 4.00 3560.
3 CARP-1 GET+PLACE 4 LCLIPS FROM BRKT-1 TO TOOLBOX-2 PF 4 (1 2 3)
(A1 B0 G3)A1OB6 P3 A0 (4) 1.00 350.l
4 CARP-2 GET+POSITION LADR FROM BRKT-1 TO LDR-PILE
A10 B0 G3 A24 B6 P6 A0 1.00 490.

TOTAL TMU 4550.

528. TEAR DOWN STAGING BRACKET ON SIDE SHELL WITH WRENCH AT ANY WAY
CARPENTER
PER STAGING BRACKET OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BRACKETS
* . . .FROM SIDE SHELL.
* CARPENTERS ARE WORKING ON AN
* . . .AERIAL PLATFORM.
CARP-1 BEGINS AT BRKT-1

1 CARP-1 LOOSEN NUT AT BRKT-1 1 ARM-STROKE USING WRENCH-1 AND HOLD
Al B0 G1 Al B0 P3 L3 A0 B0 P0 A0 1.00 90.
2 CARP-1 HOLD+LODSEN NUT AT BRKT-1 13 WRIST-STROKES USING WRENCH-1
ASIDE TO CARP-1
A0 R0 G0 Al B0 P3 L42 Al B0 P1 A0 1.00 480.
3 CARP-1 GET+REMOVE BOLT FROM BRKT-1 TO CARP-1
A1 B0 63 A1 B0 P1 A0 1.OO 60.
4 CARP-1 PLACE NUT AND BOLT FROM BRKT-1 TO TOOLBOX-1
Al B0 G1 A16 B6 P3 A0 1.00 270.

TOTAL TMU 900.

530. TEAR DOWN (STAGING CLIP) ON SIDE SHELL WITH TORCH AT ANY WAY CARPENT
PER STAGING CLIP OFC: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STAGING CLIPS FROm
* . . .THE SIDE SHELL.
* CARPENTERS ARE WORKING ON AN AERIAL
* . . .PLATFORM.
CARP-1 BEGINS AT BRKT-2

1 CARP-1 GET+PULL TORCH FROM BRKT-2 TO BRKT-1
Al B0 G3 M1 X0 I0 A10 1.00 150.
2 CARP-1 OPERATE TORCH AT BRKT-1 PTIME .55 M (BURN OFF STAGING CLI
Al B0 G1 M6 X96 IO A 1*OO 1040.
3 CARP-1 GET+PLACE SCLIP FROM BRKT-1 TO TOOLBOX-2
Al B0 G3 A1O B6 P3 A0 1.00 230.

TOTAL TMU 1420.

DATA SYNTHESIS AND BACK-UP

530. TEAR DOWN (STAGING CLIP) ON SIDE SHELL WITH TORCH AT ANY WAY CARPENTER
PER STAGING CLIP OFG: 3 18-MAR-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING STAGING CLIPS FROM
* . . . THE SIDE SHELL,
* CARPENTERS ARE WORKING ON AN AERIAL
* . . . PLATFORM.
CARP-1 BEGINS AT BRKT-2

TOTAL TMU 1420.

5.2 SYNTHESIS AND ANALYSIS

446. WELD HANDRAIL (CONNECTIONS) ON STANCHION WITH STICK ELECTRONE AT ANY PLATEN (SHOP) WELDING
PER 100 PIECES OF HANDRAIL OFG: 3
WELD TO MEET SAFETY REQUIREMENTS. RATE PER 100 PIECES OF HANDRAIL (AVG, 1 CONNECTION EACH). RATE INCLUDES MANUAL ELEHENTS.

1 WELD HORIZONTAL l/4' FILLET WELD (5' PER CONNECTION) USING 6011 3/ ELECTRODE (OR COMPARABLE (7018 5/32).

TOTAL TMU 186012.

454. (CLIMB UP AND DOWN) MOVE OPERATOR (ON PIPE STAGING) FOR SIDE SHELL AT ANY WAYS CARPENTER
PER PIPE STAGING SECTION (16' LONG) OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTER CLIMBING UP AND
* . . . DOWN END PIECE OF PIPE STAGING.
* AVERAGE NUMBER OF STEPS NEEDED = 6.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 SLIDE (CLIME-UP) LADDER (END PIECE) AT END-PC-1 (6 STEPS,) PF 6 (1) PF 6 (3 4)
(A1)B16(G1 M3)X0 10 AO (6) 1.00 460.
2 CARP-1 PULL (CLIMB-DOWN) LADDER (END PIECE) AT END-PC-1 (6 STEPS.) PF6 (1) PF 6 (34)
(Al)B16(G1 M1)X0 IO A0 (6) 1.00 340.

TOTAL TMU 800.

456. TRANSPORT STAGING PLANK FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* . . . BD-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BD-PILE AND
* . . . FROM RD-PILE TO SIDE SHELL ARE
* . . . AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM BD-PILE USING CRANE WITH HOOK+SLING TO SIDE-SHELL (ON PIPE STAGING SECTION (16' LONG)) PLACE+MANEUVER ETURN TO CR-1 F 1 / 4

Al T42 K24 T6 P16 T42 A0	0.25	3275.

TOTAL TMU 3275.

459. TRANSPORT STANCHION FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STANCHION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TINE.
* REPRESENTS TRANSPORTING STANCHION FROM
* . . . BIN-2 TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO BIN-2 AND.
* . . . FROM BIN-2 TO SIDE SHELL ARE AVERAGE
* . . . DISTANCES FROM A WAY 740'X120'
* MAXIMUM NUMBER OF STANCHIONS IN LIFT = 6
C-OPER BEGINS AT CR-1

1 TRANSPORT STAN FROM BIN-2 USING CRANE WITH HOOK+SLING TO SIDE-SHELL (ON PIPE STAGING) PLACE+ADJUST RETIURN TO CR-1 F 1 / 6

Al T42 K24 T6 P3 T42 AO	0.17	1967.

TOTAL TMU 1967.

461. TRANSPORT HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRANE
AT ANY WAYS CARPENTER
PER SECTION (16'LONG OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS TRANSPORTING HANDRAIL FROM
* . . . HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* . . . FROM HR-PILE TO SIDE SHELL ARE
* . . . AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER BEGINGS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO
SIDE-SHELL (ON PIPE STAGING) PLACE+ADJUST RETIURN TO CR-1 F 1 /
Al T42 K24 T10 P3 T42 A0 0.17 2033.

TOTAL TMU 2033.

463. TRANSPORT STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS)
WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TRANSPORTING BOARDS FROM
* . . . BD-PILE T0 SIDE SHELL.
* DISTANCES FROM CRANE-REST TO ED-PILE AND
* . . . FROH BD-PILE TO SIDE SHELL ARE
* . . . AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
C-OPER BEGINS AT CR-1

1 TRANSPORT BOARD FROM MI-PILE USING CRANE WITH HOOK+SLING TO
SIDE-SHELL (BTWN 2 PIPE STAGING SECTIONS) PLACE+MANEUVER RETURN
CR-1 F 1 / 4
Al T42 K24 T6 P16 T42 A0 0.25 3275.

TOTAL TMU 3275.

465. TRANSPORT HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH (TOWER CRANE) AT ANY WAYS CARPENTER

PER HANDRAIL OFG: 3 12-FEB-82
REPRESENTS ELAPSESD TIME
* REPRESENTS TRANSPORTING HANDRAIL FROM
* . . . HR-PILE TO SIDE SHELL.
* DISTANCES FROM CRANE-REST TO HR-PILE AND
* . . . FROM HR-PILE TO SIDE SHELL ARE
* . . .AVERAGE DISTANCES FROM WAY 740'X120'
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
C-OPER REGINS AT CR-1

1 TRANSPORT HANDRAIL FROM HR-PILE USING CRANE WITH HOOK+SLING TO SIDE-SHELL (BTWN 2 PIPE STAGING SECTIONS) PLACE+ADJUST RETURN R-1 F 1 / 6

A1 T42 K24 T10 P3 T42 A0 0.17 2033

TOTAL TMU 2033.

476. REMOVE HANDRAIL ON (NATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER

PER HANDRAIL OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF HANDRAIL FROM
* . . . MATERIAL PILE AT WAY TO HANDRAIL PILE
* . . . DISTANCES ARE AVERAGE DISTANCES FOR A
* . . . WAY 740'X120'.
* MAXIMUM NUMBER OF HANDRAIL IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT HATL-PILE

1 CARP-3 GET+SLIDE WITH BEND HANDRAIL (ONTO BOLSTER) AT MATL-PILE
Al B6 G3 M3 X0 I0 A0 1.00 130.
2 C-OPER TRANSPORT HANDRAIL FROM MATL-PILE USING CRANE WITH HOOK+SLING TO HR-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / .6
Al T42 K24 T1O P3 T42 A0 0.17 2033.

TOTAL TMU 2163.

477. REMOVE STANCHION ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER STANCHION OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF STANCHION FROM
* . . . NATERIAL FILE AT WAY TO BIN-2
* . . . DISTANCES ARE AVERAGE DISTANCES FOR A
* . . . WAY 740'X120'.
* MAXIMUM NUMBER OF STANCHION IN LIFT = 6
* TOWER CRANE IS USED FOR REMOVAL,
CARP-3 BEGINS AT MATL-PILE

1	CARP-3 GET+PLACE WITH BEND STAN FROM MATL-PILE T0 HATL-PILE (STA UP FOR TRANSPORTING) Al B6 G3 Al B0 P3 A0	1.00	140.
2	C-OPER TRANSPORT STAN FROM MATL-PILE USING CRANE WITH HOOK+SLING BIN-2 PLACE+ADJUST RETURN TO CR-1 F 1 / 6 A1 T42 K24 T6 F3 T42 A0	0.17	1967.
	TOTAL TMU		2107.

478. REMOVE STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH (TOWER CRAN AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVAL OF BOARDS FROM PIPE
* . . . STAGING AT SIDE SHELL TO BOARD PILE
* . . . DISTANCES ARE AVERAGE DISTANCES FOR A
* . . . WAY 740'X120'.
* MAXIMUM NUMBER OF BOARDS IN LIFT = 4
* TOWER CRANE IS USED FOR REMOVAL.
C-OPER BEGINS AT CR-1

1	C-OPER TRANSPORT BOARD FROM SIDE-SHELL USING CRANE WITH HOOK+SLIN TO BD-PILE PLACE+MANEUVER RETURN TO CR-1 F 1 / 4 A1 T42 K24 T6 P16 T42 A0	0.25	3275.
	TOTAL TMU		3275.

479. REMOVE BRACE ON (HATERIAL FILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER BRACE OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS REMOVING BRACES FROM MATERIAL
* . . . PILE AT WAY TO BRACE PILE.
* . . . DISThNCES ARE AVERAGE DISTANCES FOR A
* . . . WAY 740'X120'.
* MAXIMUM NUMBER OF BRACES IN LIFT = 60
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+SLIDE WITH BEND BRACE (ONTO BOLSTER) AT HATL-PILE				
	Al B6 G3 M3 X0 I0 A0	1.00	1.30.
2 C-OPER TRANSPORT BRACE FROM HATL-PILE USING CRANE WITH HOOK+SLING TO BRACE-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / 6			
	Al T42 K24 T6 P3 T42 A0	0.17	1967.
		TOTAL TMU	2097.

480. REMOVE END RAIL (END PIECE) ON (MATERIAL PILE) WITH (TOWER CRANE) AT ANY WAYS CARPENTER
PER END RAIL (END PIECE) OFG: 3 16-FEB-82
REFRESENTS ELAPSED TIME
* REPRESENTS REMOVING END PIECES FROM
* . . . MATERIAL PILE AT WAY T0 END-PC-RACK.
* . . . DISTANCES ARE AVERAGE DISTANCES FOR A
* . . . WAY 740'X120'.
* MAXIMUM NUMBER OF END PIECES IN LIFT = 3
* TOWER CRANE IS USED FOR REMOVAL.
CARP-3 BEGINS AT MATL-PILE

1 CARP-3 GET+SLIDE WITH BEND END-F'IECE (ONTO BOLSTER) AT MATL-PILE			
	Al B6 G3 M3 X0 IO A0	1.00	130.
2 C-OPER TRANSPORT END-PIECE FROM MATL-PILE USING CRANE WITH HOOK+SLING TO END-PC-RACK PLACE+MANEUVER RETURN TO CR-1 F 1 / 3			
	Al T42 K24 T6 P16 T32 A0	0.33	4033.
3 CARP-3 GET+MANIPULATE WITH REND END-PIECE AT END-PC-RACK AND ALIGN			
	A42 B6 G3 M10 X0 I10 A0	1.00	710.
		TOTAL TMU	4873.

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486. TRANSPORT END RAIL (END PIECE) ON (END-PIECE RACK) WITH (TOWER CRANE
       AT ANY WAYS CARPENTER
     PER END RAIL (END PIECE) OFG: 3 18-FEB-82
       REPRESENTS ELAPSED TIME
       * REPRESENTS TRANSPORTING END PIECES FROM
       * . . . END-PC-RACK TO MATL-PILE.
       * DISTANCES FROM CRANE REST TO END-PC-RACK
       * . . . AND FROM END-PC-RACK TO HATL-PILE ARE
       * . . . AVERAGE DISTANCES ON A WAY 740'X120'
       * MAXIMUM NUMBER END-PCS IN LIFT = 3
       * . . . THERE ARE 2 LIFTS DONE PER SECTION OF
       * . . . PIPE STAGING (16'LONG),
     C-OPER BEGINS AT CR-1

       1 C-OPER TRANSPORT END-PIECE FROM END-PC-RACK USING CRANE WITH
          HOOK+SLING TO HATL-PILE PLACE+ADJUST RETURN TO END-PC-RACK F 1 /
                              A1  T32  K24  T6  P3  T6  A0        0.17    1200.
       2 C-OPER TRANSPORT END-PIECE FROM END-PC-RACK USING CRANE WITH
          HOOK+SLING TO HATL-PILE PLACE+ADJUST RETURN TO CR-1 F 1 / 6
                              Al   T3  K24  16   P3  T42  A0        0.17    1317

                                                          TOTAL TMU        2517.
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DATA SYNTHESIS AND BACK-UP

132. **COMBINED SUB-OF**

HOOK-UF/UNHOOK AND IGNITE/EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK CARPENTER
CREW SIZE = 6 (3 CARPS ABOVE DECK AND 3 BELOW). RATE IN ELAPSED TIME.
HULT BY 6 TO OBTAIN TOTAL TIME.
PER 8-HR SHIFT AND (1) CUT OFG: 4 20-NOV-81
* THE FOLLOWING IS INCLUDED IN THIS SUBOP:
* --2 HOOK-UPS AND 2 **UNHOOKS** PER (l). . . . .
* . . . 8-HR SHIFT
* --(1) OCCURRENCE FOR IGNITE AND . . . . .
* . . . EXTINGUISH TORCH
* --TO DETERMINE THE FREQ OF THE SUB-OP. . .
* . . . FRO NUMBER OF CUTS >1, USE THE . . . . .
* . . . FORMULA: FREQ = 1+ [(N-1) X .231] . . . .
* . . . WHERE 'N' = THE NUMBER OF CUTS(BURNS)

TOTAL TMU 2900.0

	Combined sub-operation elements	Freq.	TMU
9.	HOOK-UP AND UNHOOK TORCH ON MANIFOLD WITH WRENCH AT SHIP	8.00	2240.0
10.	IGNITE AND EXTINGUISH TORCH FOR BURNING WITH HAND AT TANK	1.00	660.0
	Total TMU		2900.0

455. MAKE READY STAGING PLANK FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 11-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING BOARD ON BOLSTERS SO
* . . . THAT THE CRANE CAN TRANSPORT IT
CARP-3. BEGINS AT SIDE-SHELL

1 CARP-3 GET+SLIDE BOARD AT BD-PILE AND ADJUST (ON BOLSTERS)
A32 B6 G3 M3 X0 I6 A0 1.00 500.

TOTAL TMU 500.

457. SET UP STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY
WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS CARPENTERS SPREADING BOARDS
* . . . ON PIPE STAGING SECTION (16'LONG).
* . . . CARPENTERS HAVE TO CLIMB UP AND DOWN
* . . . THE PIPE STAGING TO SPREAD THE BOARDS
* . . .(SEE SEPARATE ANAYLSIS FOR CLIMBING).
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE WITH BEND WITH 1 STEP BOARD AT
SIDE-SHELL AND ALIGN
A3 B6 G3 M3 X0 I10 A0 1.00 250.

TOTAL TMU 250.

458. MAKE READY STANCHION FOR (TRANSPORTING) WITH HAND AT ANY WAYS CARPENT
PER STANCHION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING STANCHION READY TO BE
* . . . TRANSPORTED.
CARP-3 BEGINS AT BSI-PILE

1 CARP-3 GET+PLACE STAN FROM BIN-2 TO BIN-2
A16 B6 G3 Al B0 P3 A0 1.00 290.

TOTAL TMU 290.

460. SET UP STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP STANCHIONS ON PIPE
* . . . STAGING.
* . . . CARPENTERS INSTALL SIMULTANEOUSLY.
* . . . CARPENTERS ARE STILL ON PIPE STAGING
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+PLACE WITH BEND STAN FROM END-PC-2 TO END-PC-1 AND INSERT (INTO END PIECE)
A6 B6 G3 A6 B0 P3 A1 1.00 250.
2 CARP-2 GET+PLACE WITH BEND WITH 3 STEPS STAN FROM END-PC-2 TO END-PC-3 AND INSERT (INTO END PIECE) SIMO
<A6 B6 G3 A6 R0 P3 Al > 1*OO 0.
3 CARP-1 GET+PLACE 2 BOLTS FROM CARP-1 TO END-PC-1 WITH KNEEL AND INSERT BOLT (INTO STANCHION) PF 2 (6 7)
Al B0 G3 Al B16 (P3 Al) 1.00 290.
4 CARP-2 GET+PLACE 2 BOLTS FROM CARP-2 TO END-PC-3 WITH KNEEL AND INSERT BOLT (INTO STANCHION) PF 2 (6 7) SIMO
<Al B0 G3 Al B16 (P3 Al)> 1.00 0 .
5 CARP-1 FASTEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING HANDS
Al)B0 G1 A0 B0 (Pl Al F24)A0 B0 P0 A0 (2) 1.00 540.
6 CARP-1 FASTEN 2 NUTS AT END-PC-1 4 ARM-STROKES USING WRENCH-1 ASIDE TO CARP-1
A1 B0 G1 A0 B0 (P3 Al F24)A1 B0 P1 A0 (2) 1.00 600.
7 CARP-2 FASTEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING HANDS SIMO
<A1 B0 G1 A0 B0 (P1 Al F24)A0 B0 P0 A0 > 1.00 0.
8 CARP-2 FASTEN 2 NUTS AT END-PC-3 4 ARM-STROKES USING WRENCH-2 ASIDE TO CARP-2 SIMO
<Al BO G1 A0 B0 (P3 Al F24)Al B0 P1 A0 > 1.00 0.

TOTAL THU 1680.

462. SET UP HANDRAIL (ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WA
CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* . . . HANDRAIL THRU EYELETS IN STANCHIONS.
* . . . CARPENTERS DON'T WORK SIMULTANEOUSLY.
* . . . WELDING DONE IN A SEPARATE SUB-OP.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+SLIDE WITH BEND HANDRAIL AT END-PC-3 AND ALIGN (THRU
STANCHION EYELETS) PF 2 (4 5 6 7)
A10 36 G3 (M3 X0 I10 A0) 1.00 450.
2 CARP-2 GET+SLIDE WITH BEND HANDRAIL AT END-PC-1 AND ALIGN (THRU
STANCHION EYELETS) PF 2 (4 5 6 7)
A10 B6 G3 (M3 X0 I10 A0) 1.00 450.

TOTAL TMU 900

464. SET UP STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) \
HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS SPREADING BOARDS
* . . . BETWEEN PIPE STAGING SECTIONS.
* . . . THERE IS A 16' GAP BETWEEN SECTIONS.
* . . . CARF'ENTERS HAVE TO CLIMB UP AND DOWN
* . . . THE PIPE STAGING TO SPREAD THE BOARDS
* . . .(SEE SEPARATE ANAYLSIS FOR CLIMBING)
CARP-1 BEGINS **AT** SECTION-1

1 CARP-1 AND CARP 2 GET+SLIDE WITH BEND) WITH 1 STEP BOARD AT
SIDE-SHELL AND ALIGN
A3 B6 G3 H3 X0 I10 A0 1.00 250.

TOTAL TMU 250.

466. SET UP HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH HAND
AT ANY WAYS CARPENTER
PER SECTION OFG: 3 12-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS CARPENTERS INSTALLING
* . . . HANIIRAIL ON EXISTING HANDRAIL.
* . . . CARPENTERS DON'T WORK SIMULTANEOUSLY.
* . . . WELDING DONE IN A SEPARATE SUB-OP.
CARP-1 BEGINS AT SECTION-1

1 CARP-1 GET+PLACE WITH BEND HANDRAIL FROM SECTION-1 TO SECTION-2 AND
RETURN TO SECTION-1 (TACKING DONE UPON PLACEMENT) PF 2 (6)
Al B6 G3 A10 B0 (P3)A10 (2) 1.00 360.
2 CARP-2 GET+PLACE WITH BEND HANDRAIL FROM SECTION-2 To SECTION-1 AND
RETURN TO SECTION-2 (TACKING DONE UPON PLACEMENT) PF 2 (6)
Al B6 G3 A10 B0 (P3)A10 (2) 1.00 360.

TOTAL TMU 720.

469. TEAR DOWN HANDRAIL FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH
TORCH AT ANY WAYS CARPENTERS
PER SECTION OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* . . .STAGING (BTMN 2 SECTIONS). A TORCH IS
* . . . USED TO BURN THE HANDRAIL OFF. THE
* . . .HANDRAIL IS THROWN TO THE HATERIAL
* . . . PILE, CARPENTERS REMOVE 2 HANDRAIL
* . . . PIECES BEFORE MOVING TO NEXT SECTION.
CARP-1 BEGINS AT SECTION-1

1 CARP-1 PULL TORCH AT SECTION-1
Al B0 G1 Ml X0 I0 A0 1.OO 30.
2 CARP-1 OPERATE TORCH AT SECTION-1 PTIME 0.26 M (BURN OFF HANDRAIL:
2 CONNECTIONS PER HANDRAIL) F 4
Al B0 G1 M6 X42 I0 A0 4.00 2000.
3 CARP-2 GET+HOLD HANDRAIL FROM SECTION-2 TO CARP-2 F 2 SIMO
<Al B0 G3 A1 B0 P0 A0 > 2.00 0.
4 CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO HATL-PILE F 2
A0 B0 G0 A1 B0 P0 A0 2.00 20.
5 CARP-1 PULL TORCH AT SECTION-2
A10 B0 G1 M1 X0 IO A0 1.00 120.

TOTAL TMU 2170.

470. TEAR DOWN HANDRAIL FOR PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY
WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 15-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN HANDRAIL ON PIPE
* . . . STAGING (BTWN 2 STANCHIONS). THE
* . . . HANDRAIL IS THROWN TO THE MATERIAL
* . . .PILE, CARPENTERS REMOVE 2 HANDRAIL
* . . . PIECES BEFORE MOVING TO NEXT SECTION.
CARP-1 BEGINS AT END-PC-I

1	CARP-1 GET+SLIDE HANDRAIL AT END-PC-3 (OUT OF 2 STANCHION SLEEVES AND ADJUST PF 2 (4 5 6 7) A10 R0 G3 (H3 X0 16 A0)	1.00	310.
2	CARP-1 HOLD+THROW HANDRAIL FROM CARP-1 TO MATL-PILE A0 B0 G0 Al B0 P0 A0	1.00	10.
3	CARP-2 GET+SLIDE HANDRAIL AT END-PC-1 (OUT OF 2 STANCHION SLEEVES AND ADJUST PF 2 (4 5 6 7) A10 BO G3 (H3 X0 16 A0)	1.00	310.
4	CARP-2 HOLD+THROW HANDRAIL FROM CARP-2 TO HATL-PILE A0 B0 G0 Al B0 P0 A0	1.00	10.
	TOTAL TMU		640

471. TEAR DOWN STANCHION ON PIPE STAGING (AT SIDE SHELL) WITH WRENCH AT ANY WAYS CARPENTER

PER SECTION (16'LONG) OF PIPE STAGING OFG: **3** 16-FER-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN STANCHION ON
* . . . SECTION OF PIPE STAGING (l6'LONG).
* . . . CARPENTERS WORK SIMULTANEOUSLY.
* . . . STANCHIONS ARE THROWN TO HATERIAL
* . . . PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 LOOSEN WITH KNEEL 2 NUTS AT END-PC-l 1 ARM-STROKE USING WRENCH-1 AND HOLD			
A1 B16 G1 A0 B0 (P3 A1 L3)A0 B0 F0 A0 (2)	1.00		320.
2 CARP-1 HOLD+LOOSEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING WRENCH-1 ASIDE TO CARP-1			
A0 B0 G0 A0 B0 (P3 Al L24)A1 B0 P1 A0 (2)	1.00		580.
3 CARP-2 LOOSEN WITH KNEEL 2 NUTS AT END-PC-3 1 ARM-STROKE USING WRENCH-2 AND HOLD SIMO			
<Al B16 G1 A0 B0 (P3 A1 L3)AO BO PO A0 >	1.00		0.
4 CARP-2 HOLD+LOOSEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING WRENCH-2 ASIDE TO CARP-2 SIMO			
<A0 B0 G0 A0 B0 (P3 Al L24)A1 B0 P1 A0 >	1.00		0.
5 CARP-1 GET+REMOVE 2 BOLTS FROM END-PC-1 TO CARP-1 F 2			
Al 30 G3 Al B0 P1 A0	2.00		120.
6 CARP-2 GET+REMOVE 2 BOLTS FROM END-PC-3 TO CARP-2 F 2 SIMO			
<Al BO G3 Al BO P1 AO >	2.OO		0.
7 CARP-1 THROW 2 NUTS AND BOLTS FROM CARP-1 TO MATL-PILE WITHOUT BEND			
Al B0 G1 A1 B0 P0 A0	1.00		30.
8 CARP-2 THROW 2 NUTS AND BOLTS FROM CARP-2 TO HATL-PILE WITHOUT BEND SIMO			
<Al BO Gt Al B0 P0 A0 >	1.00		0.
9 CARP-1 GET+THROW STAN FROM END-PC-1 TO MATL-PILE WITHOUT BEND			
Al B0 G3 Al B0 P0 A0	1.00		50.
10 CARP-2 GET+THROW STAN FROM END-PC-3 TO MATL-PILE WITHOUT BEND SIMD			
<Al B0 G3 Al B0 P0 A0 >	1.00		0.
		TOTAL TMU	1100.

472. TEAR DOWN STAGING PLANK FOR SIDE SHELL (BTWN 2 PIPE STAGING SECTIONS) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS BETWEEN 2
* . . . PIPE STAGING SECTIONS. THERE IS A 16'
* . . . GAP BETWEEN SECTIONS. BOARDS ARE
* . . . STACKED SO THE CRANE CAN TRANSPORT
* . . . THEM, CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT SECTION-l

1 CARP-1 AND CARP 2 GET+MANIPULATE WITH BEND WITH 1 STEP BOARD AT SECTION-1 (STACK BOARDS)
A3 B6 G3 M10 X0 IO A0 1.00 220.

TOTAL TMU 220.

473. TEAR DOWN STAGING PLANK ON PIPE STAGING (AT SIDE SHELL) WITH HAND AT ANY WAYS CARPENTER
PER STAGING PLANK OFG: 3 16-FEB-S2
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN BOARDS ON PIPE
* . . . STAGING SECTION (16'LONG). BOARDS ARE
* . . . STACKED SO THE CRANE CAN TRANSPORT
* . . . THEM, CARPENTERS WORK SIMULTANEOUSLY.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+MANIPULATE WITH BEND WITH 1 STEP BOARD AT END-PC-1 (STACK BOARDS)
A3 B6 G3 M10 X0 - IO A0 1.00 220.

TOTAL TMU 220.

474. TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH
AT ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* ...BRACES ON PIPE STAGING (2ND LEVEL).
* ...END PIECES ARE BOLTED TO END PIECES
* ...ON 1ST LEVEL. BRACES ARE HELD ON BY A
* ...LOCKING PIN. CARPENTERS WORK
* ...SIMULTANEOUSLY. CARPENTER-1 HANDLES
* ...REMOVAL AT END-PC-1 AND END-PC-2.
* ...MATERIAL IS THROWN OR PLACED AT THE
* ...MATERIAL PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE (REMOVE) WITH CLIMB 2 BRACES AT
END-PC-2 (ALSO AT. END-PC-1) AND ADJUST (LOCKING PIN) F 2
A6 B16 G3 M3 X0 I6 A0 2.00 680.
2 CARP-1 GET+PLACE WITH DESCEND 4 BRACES FROM END-PC-2 TO MATL-PILE PF
4 (3) PF 4 (6)
A1 B16 (G3)A3 B6 (P3)A0 (4) 1.00 500.
3 CARP-2 AND CARP 1 GET+SLIDE (REMOVE) WITH CLIMB 2 BRACES AT
END-PC-2 (ALSO AT. END-PC-3) AND ADJUST (LOCKING PIN) F 2
A6 B16 G3 M3 X0 I6 A0 2.00 680.
4 CARP-2 GET+PLACE WITH DESCEND 4 BRACES FROM END-PC-2 TO MATL-PILE PF
4 (3) PF 4 (6)
A1 B16 (G3)A3 B6 (P3)A0 (4) 1.00 500.
5 CARP-1 LOOSEN 2 NUTS AT END-PC-1 1 ARM-STROKE USING WRENCH-1 AND
HOLD (ALSO AT. END-PC-2) F 2
A1 B0 G1 A3 B0 (P3 A1 L3)A0 B0 P0 A0 (2) 2.00 380.
6 CARP-1 HOLD+LOOSEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING WRENCH-1
ASIDE TO CARP-1 (ALSO AT. END-PC-2) F 2
A0 B0 G0 A0 B0 (P3 A1 L24)A1 B0 P1 A0 (2) 2.00 1160.
7 CARP-2 LOOSEN 2 NUTS AT END-PC-3 1 ARM-STROKE USING WRENCH-2 AND
HOLD SIMO
<A1 B0 G1 A3 B0 (P3 A1 L3)A0 B0 P0 A0 > 1.00 0.
8 CARP-2 HOLD+LOOSEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING WRENCH-2
ASIDE TO CARP-2 SIMO
<A0 B0 G0 A0 B0 (P3 A1 L24)A1 B0 P1 A0 > 1.00 0.
9 CARP-1 GET+REMOVE 2 BOLTS FROM END-PC-2 TO CARP-1 (ALSO AT.
END-PC-1) F 4
A6 B0 G3 A6 B0 P1 A0 4.00 640.
10 CARP-2 GET+REMOVE 2 BOLTS FROM END-PC-3 TO CARP-2 F 2 SIMO
<A1 B0 G3 A1 B0 P1 A0 > 2.00 0.
11 CARP-1 HOLD+THROW 4 NUTS AND BOLTS FROM CARP-1 TO MATL-PILE
A0 B0 G0 A1 B0 P0 A0 1.00 10.
12 CARP-2 HOLD+THROW 2 NUTS AND BOLTS FROM CARP-2 TO MATL-PILE SIMO

<A0 B0 G0 A1 B0 P0 A0 > 1.00 0.

13 CARP-1 GET+PLACE END-PIECE FROM END-PC-1 TO MATL-PILE (ALSO FROM END-PC-2) RETURN TO END-PC-1 F 2
A1 B0 G3 A3 B6 P3 A3 2.00 380.

14 CARP-2 GET+PLACE END-PIECE FROM END-PC-3 TO MATL-PILE RETURN TO END-PC-3 SIMO
<A1 B0 G3 A3 B6 P3 A3 > 1.00 0.

TOTAL TMU 4930.

475, TEAR DOWN PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND / ANY WAYS CARPENTER
PER SECTION (16'LONG) OF PIPE STAGING OFG: 3 16-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS TEARING DOWN END PIECES AND
* ...BRACES ON PIPE STAGING (1ST LEVEL).
* ...BRACES ARE HELD ON BY A LOCKING PIN
* ...CARPENTERS WORK SIMULTANEOUSLY.
* ...CARPENTER-1 HANDLES REMOVAL AT
* ...END-PC-1 AND END-PC-2. MATERIAL IS
* ...THROWN OR PLACED AT THE MATERIAL
* ...PILE.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 AND CARP 2 GET+SLIDE (REMOVE) 2 BRACES AT END-PC-2 (ALSO AT. END-PC-1) AND ADJUST (LOCKING PIN) F 2
A6 B0 G3 M3 X0 I6 A0 2.00 360.

2 CARP-1 GET+PLACE 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3) PF (6)
A1 B0 (G3)A3 B6 (P3)A0 (4) 1.00 340.

3 CARP-2 AND CARP 1 GET+SLIDE (REMOVE) 2 BRACES AT END-PC-2 (ALSO AT. END-PC-3) AND ADJUST (LOCKING PIN) F 2
A6 B0 G3 M3 X0 I6 A0 2.00 360.

4 CARP-2 GET+PLACE 4 BRACES FROM END-PC-2 TO MATL-PILE PF 4 (3) PF (6)
A1 B0 (G3)A3 B6 (P3)A0 (4) 1.00 340.

5 CARP-1 GET+PLACE END-PIECE FROM END-PC-1 TO MATL-PILE (ALSO FROM END-PC-2) RETURN TO END-PC-1 F 2
A3 B0 G3 A3 B6 P3 A3 2.00 420.

6 CARP-2 GET+PLACE END-PIECE FROM END-PC-3 TO MATL-PILE RETURN TO END-PC-3 SIMO
<A3 B0 G3 A3 B6 P3 A3 > 1.00 0.

TOTAL TMU 1820.

487. MAKE READY END RAIL (END PIECE) FOR (TRANSPORTING) AT ANY WAYS CARPENTER

PER END RAIL (END PIECE) OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS GETTING END PIECES ON BOLSTER
* ...SO THAT CRANE CAN TRANSPORT IT.
CARP-3 BEGINS AT END-PC-RACK

1	CARP-3	GET+PLACE	END-PIECE	FROM	END-PC-RACK	TO	END-PC-RACK	WITH	BEND	
		A1	B0	G3	A1	B6	P3	A0	1.00	140.
								TOTAL TMU		140.

488. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH HAND AT ANY WAYS CARPENTER

PER SECTION (16' LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME.
* REPRESENTS SETTING UP 1ST LEVEL OF A 16'
* ...LONG SECTION OF PIPE STAGING. SECTION
* ...INCLUDES 3 END PIECES AND 8 BRACES
* ...WHICH ARE HELD IN PLACE BY A LOCKING
* ...PIN.
* CARP-1 AND CARP-2 ARE WORKING
* ...SIMULTANEOUSLY IN PUTTING UP THE END
* ...PIECES AND BRACES.
CARP-1 BEGINS AT END-PC-1

1	CARP-1	GET+PLACE	END-PIECE	FROM	MATL-PILE	TO	END-PC-1			
		A3	B6	G3	A3	B0	P3	A0	1.00	180.
2	CARP-2	GET+PLACE	END-PIECE	FROM	MATL-PILE	TO	END-PC-2	SIMO		
		<A3	B6	G3	A3	B0	P3	A0 >	1.00	0.
3	CARP-3	GET+PLACE	4	BRACES	FROM	BRACE-PILE	TO	MATL-PILE		
		A16	B6	G3	A32	B6	P3	A0	1.00	660.
4	CARP-1 AND CARP 2 GET+SLIDE WITH BEND 2 BRACES AT END-PC-2 (ALSO AT. END-PC-1.) AND ADJUST (LOCKING PIN) F 4									
		A6	B6	G3	M3	X0	I6	A0	4.00	960.
5	CARP-1	GET+PLACE	END-PIECE	FROM	MATL-PILE	TO	END-PC-3			
		A3	B6	G3	A3	B0	P3	A0	1.00	180.
6	CARP-3	GET+PLACE	4	BRACES	FROM	BRACE-PILE	TO	MATL-PILE		
		A32	B6	G3	A32	B6	P3	A0	1.00	820.
7	CARP-1 AND CARP 2 GET+SLIDE WITH BEND 2 BRACES AT END-PC-2 (ALSO AT. END-PC-3.) AND ADJUST (LOCKING PIN) F 4									
		A6	B6	G3	M3	X0	I6	A0	4.00	960.
								TOTAL TMU		3760.

489. SET-UP PIPE STAGING (END PCS AND BRACES) FOR SIDE SHELL WITH WRENCH A
ANY WAYS CARPENTER
PER SECTION (16 LONG) OF PIPE STAGING OFG: 3 18-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS SETTING UP 2ND LEVEL OF A 16
* ...LONG SECTION OF PIPE STAGING. SECTION
* ...INCLUDES 3 END PIECES AND 8 BRACES
* ...WHICH ARE HELD IN PLACE BY A LOCKING
* ...PIN. END PIECES ARE BOLTED TO 1ST
* ...LEVEL END PIECES.
* CARP-1 AND CARP-2 ARE WORKING
* ...SIMULTANEOUSLY IN PUTTING UP THE END
* ...PIECES AND BRACES.
CARP-1 BEGINS AT END-PC-1

1 CARP-1 GET+MANIPULATE WITH BEND WITH 2 STEPS (FROM MATL PILE)
END-PIECE AT END-PC-1 AND ALIGN
A3 B6 G3 M10 X0 I10 A0 1.00 320.
2 CARP-2 GET+MANIPULATE WITH BEND WITH 2 STEPS (FROM MATL PILE)
END-PIECE AT END-PC-2 AND ALIGN SIMO
<A3 B6 G3 M10 X0 I10 A0 > 1.00 0.
3 CARP-1 GET+PLACE 2 BOLTS FROM TOOLBOX-1 TO END-PC-1 AND INSERT PF
(6 7)
A42 B6 G3 A42 B0 (P3 A1) 1.00 1010.
4 CARP-2 GET+PLACE 2 BOLTS FROM TOOLBOX-1 TO END-PC-2 AND INSERT PF
(6 7) SIMO
<A42R6 G3 A42 B0 (P3 A1)> 1.00 0.
5 CARP-1 FASTEN 2 NUTS AT END-PC-1 13 WRIST-TURNS USING HANDS
A1 B0 G1 A0 B0 (P1 A1 F24)A0 B0 P0 A0 (2) 1.00 540.
6 CARP-1 FASTEN 2 NUTS AT END-PC-1 4 ARM-STROKES USING WRENCH-1 AND
ASIDE TO CARP-1
A1 B0 G1 A0 B0 (P3 A1 F24)A1 B0 P1 A0 (2) 1.00 600.
7 CARP-2 FASTEN 2 NUTS AT END-PC-2 13 WRIST-TURNS USING HANDS SIMO
<A1 B0 G1 A0 B0 (P1 A1 F24)A0 B0 P0 A0 > 1.00 0.
8 CARP-2 FASTEN 2 NUTS AT END-PC-2 4 ARM-STROKES USING WRENCH-2 ASID
TO CARP-2 SIMO
<A1 B0 G1 A0 B0 (P3 A1 F24)A1 B0 P1 A0 > 1.00 0.
9 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PILE
A16 B6 G3 A32 B6 P3 A0 1.00 660.
10 CARP-1 AND CARP 2 GET+SLIDE WITH CLIMB 2 BRACES AT END-PC-2 (ALS
AT. END-PC-1.) AND ADJUST (LOCKING PIN) F 4
A6 B16 G3 M3 X0 I6 A0 4.00 1360.
11 CARP-1 GET+MANIPULATE WITH DESCEND END-PIECE (FROM MATL PILE) A
END-PC-3 AND ALIGN
A6 B16 G3 M10 X0 I10 A0 1.00 450.
12 CARP-1 GET+PLACE 2 BOLTS FROM CARP-1 TO END-PC-3 AND INSERT PF 2

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6 7)

A1 B0 G3 A1 B0 (P3 A1 1.00 130.

13 CARP-1 FASTEN 2 NUTS AT END-PC-3 13 WRIST-TURNS USING HANDS
A1 B0 G1 A0 B0 (P1 A1 F24)A0 B0 P0 (A0 62) 1.00 540.

14 CARP-1 FASTEN 2 NUTS AT END-PC-3 4 ARM-STROKES USING WRENCH-1 ASID TO CARP-1
A1 B0 G1 A0 B0 (P3 A1 F24)A1 B0 P1 A0 (2) 1.00 600.

15 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO MATL-PILE
A32 B6 G3 A32 B6 P3 A0 1.00 820.

16 CARP-1 AND CARP 2 GET+SLIDE WITH CLIMB 2 BRACES AT END-PC-2 (ALSO AT. END-PC-3.) AND ADJUST (LOCKING PIN) F 4
A6 B16 G3 M3 X0 I6 A0 4.00 1360.

TOTAL TMU 8390.

490. SET UP PIPE STAGING (END-PCS & BRACES) FOR (8'LONG) SECTION WITH HAND AT ANY PLATEN CARPENTER

PER 8' LONG SECTION OFG: 3 22-FEB-82
REPRESENTS ELAPSED TIME
* REPRESENTS THE ASSEMBLY OF ONE 8' LONG
* ...SECTION OF PIPE STAGING. THESE 8'LONG
* ...SECTIONS CAN BE STACKED TO MAKE
* ...STAGING FOR HARD TO REACH OR HIGH
* ...AREAS. FINISHED 8' LONG SECTIONS ARE
* ...TRANSPORTED TO THE FIN-PILE BY THE
* ...CRANE.
* CARPENTERS WORK SIMULTANEOUSLY.
CARP-3 BEGINS AT END-PC-RACK

1 CARP-3 GET+PLACE 2 END-PIECES FROM END-PC-RACK TO END-PC-RACK WITH BEND F 3
A1 B0 G3 A1 B6 P3 A0 3.00 420.

2 CARP-1 GET+PLACE END-PIECE FROM END-PC-RACK TO END-PC-1 SIMO
<A16B6 G3 A6 B0 P3 A0 > 1.00 0.

3 CARP-2 GET+PLACE END-PIECE FROM END-PC-RACK TO END-PC-2
A16 B6 G3 A16 B0 P3 A0 1.00 440.

4 CARP-3 GET+PLACE 4 BRACES FROM BRACE-PILE TO ASSEMBLY-AREA WITH BEI PF 4 (3)
A3 B6 (G3)A6 B6 P3 A0 (4) 1.00 360.

5 CARP-1 AND CARP 2 GET+SLIDE WITH BEND 2 BRACES AT END-PC-2 AND ADJUST (LOCKING PIN) F 4.
A6 B6 G3 M3 X0 I6 A0 4.00 960.

6 CARP-2 AND CARP 1 GET+SLIDE WITH BEND 2 BRACES AT END-PC-1 AND ADJUST (LOCKING PIN) F 4.
A6 B6 G3 M3 X0 I6 A0 4.00 960.

7 C-OPER TRANSPORT 8FT-SECTION FROM ASSEMBLY-AREA USING CRANE WITH