...MENTATION PAGE

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12b DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

Technology Insertion (TI)/Industrial Process Improvement (IPI) Data Base Documentation Book Volume, for OO-ALC/MANPWW (Misc Mgf) Book 1 of 5. This document contains detailed information about layouts equipment and processes for this RCC.

*Misc Manufacturing - Flame spray, casting, heat treat, welding

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TECHNOLOGY INSERTION-ENGINEERING SERVICES
PROCESS CHARACTERIZATION
TASK ORDER NO. 1

BOOK 1 OF 5

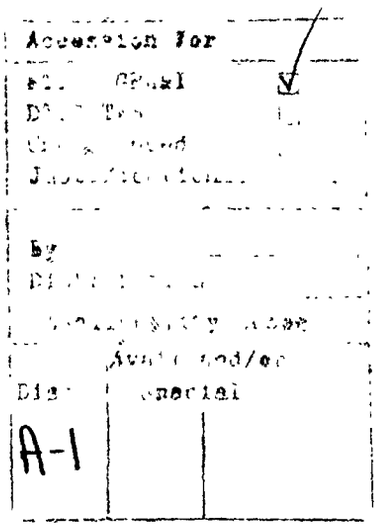
DATABASE DOCUMENTATION BOOK

OO-ALC

MANPWW

(OVERVIEW LAYOUTS)

CONTRACT SUMMARY REPORT
15 DECEMBER 1989



CONTRACT NO. F33600-88-D-0567
CDRL SEQUENCE NO. B008

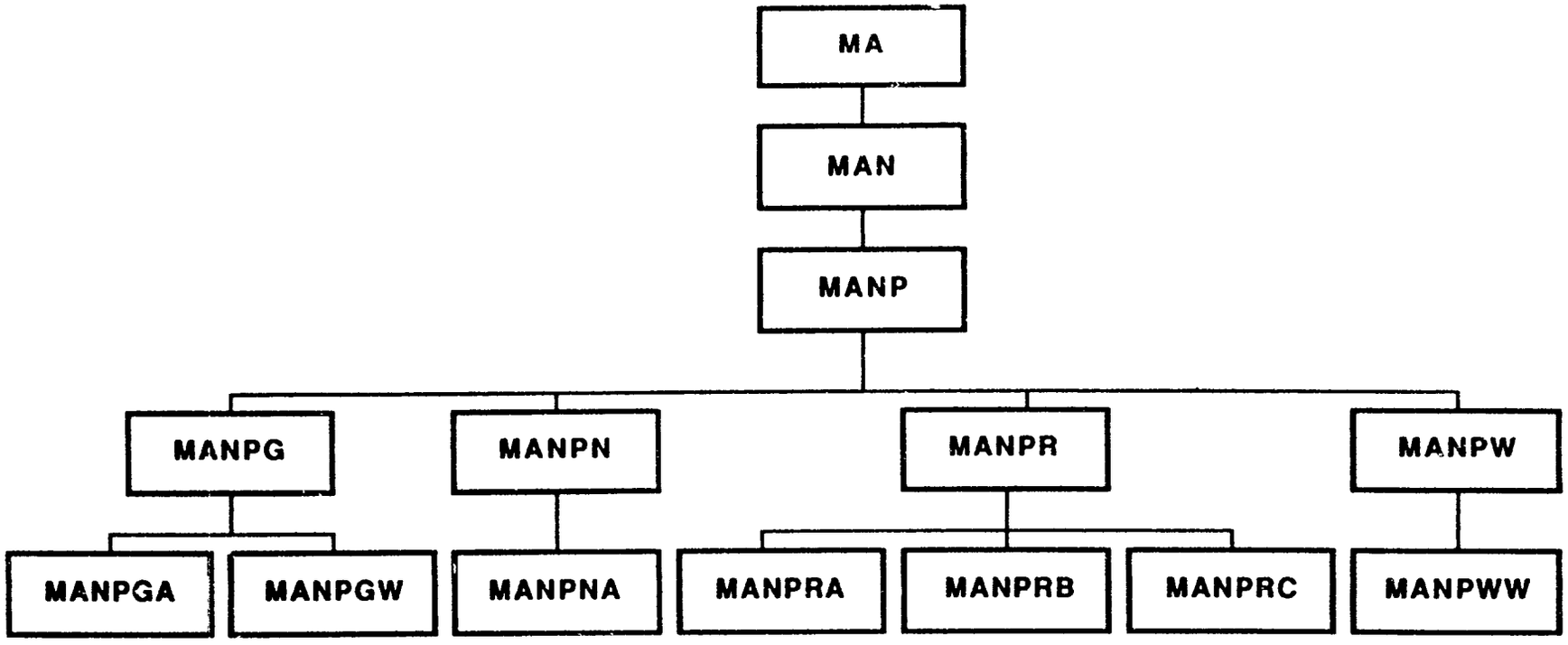


MCDONNELL DOUGLAS
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St. Louis, Missouri 63166-0516 (314) 232-0232



Distribution Statement A. Approved for public release; distribution is unlimited.

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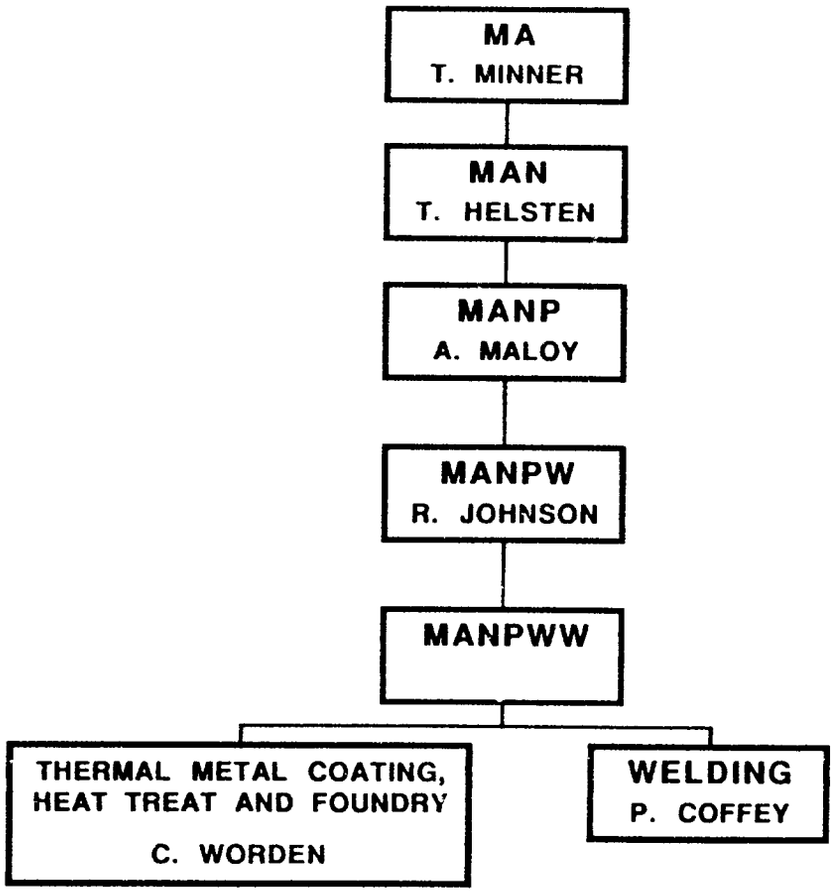


LEGEND:

MA = DIR. OF MAINT.
MAN= INDUSTRIAL PRODUCTS & L. G. DIVISION
MANP = PRODUCTION BRANCH
MANPG = LANDING GEAR SECTION
MANPGA = ASSEMBLY UNIT
MANPGW = DISASSEMBLY UNIT
MANPN = NONDESTRUCTIVE TEST SUPPORT SECTION
MANPNA = NONDESTRUCTIVE TEST UNIT
MANPR = REPAIR SUPPORT SECTION
MANPRA = MACHINING SHOP REPAIR UNIT
MANPRB = GRINDING UNIT
MANPRC = PLATING UNIT
MANPW = MISC. MANUFACTURING/REPAIR SECTION
MANPWW = FLAME SPRAY UNIT

OO-ALC RCC PROCESS CHARACTERIZATION COVERAGE

FIGURE 7.7.1-1



LEGEND:

MA = DIR. OF MAINT.
MAN= INDUSTRIAL PRODUCTS & L. G. DIVISION
MANP = PRODUCTION BRANCH
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MANPWW = FLAME SPRAY UNIT

OO-ALC MANPW ORGANIZATION
FIGURE 7.7.1-2

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- 2.5 WORKLOAD MIX AND VOLUME
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1.0 IDENTIFICATION OF RCC

RCC MANPAN has been identified by the SOW of Contract F33600-88-D-0567 for Process Characterization.

2.0 GENERAL INFORMATION

MANPWW is a Resource Control Center (RCC) under the Production (MANP) branch of the Industrial Products Division (MAN) at OO-ALC. The RCC performs four seperate repair/manufacture operations under the Miscellaneous Manufacturing/Repair Section (MANPW). These are Flame Spraying, Casting, Heat Treating and Welding.

At least 75% of the workload in MANPWW is Management of Items Subject to Repair (MISTR) for all operations except Welding which is only approximately 30%. The remainder of the workload of the RCC is Planned Depot Maintenance (PDM).

The primary function of MANPWW is to support repairs of aircraft landing gear, including brakes, struts and wheels.

2.1 FACILITY LAYOUT DRAWINGS

The enclosed Facility Layout Drawings of the four different repair areas within MANPWW reflect the latest information residing in MANEF's Computer Aided Design (CAD) Library located in Bldg. 507. The work areas shown are the Flame-Spray metallization area in Bldg. 511 plus the Casting, Heat Treating and Welding operations performed in Bldg. 507

2.2 EQUIPMENT

The equipment used in MANPWW is extremely diverse since the RCC performs four very different repair operations.

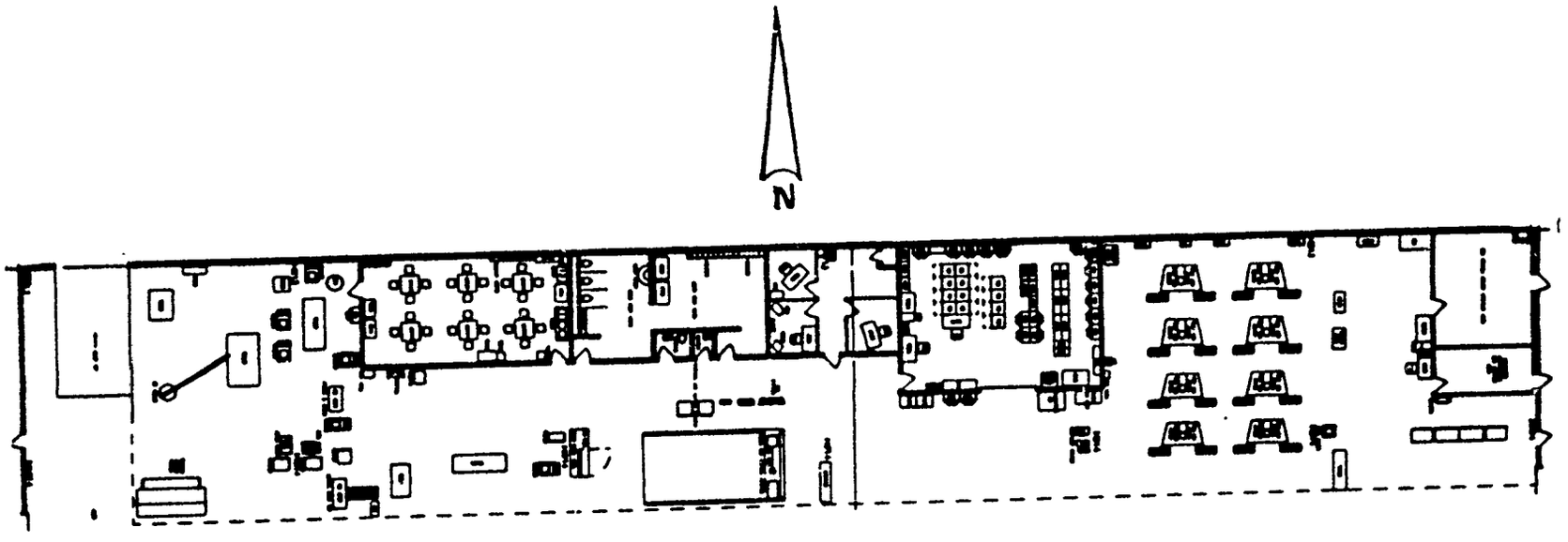
2.2.1 The major equipment, as reported as data in this Section, of the Flame Spray metallization component in Bldg. 511, consists of a large vapor degreaser, two grit-blasting booths with one booth supplied with a pressure-type blasting gun and the other booth equipped with a less-efficient suction-type blasting gun. A series of metallization booths are provided for flame (combustion type), arc-spray and plasma-spray systems.

2.2.2 The major equipment in the Casting (foundry) component consists of furnaces suitable for melting various alloys of aluminum, copper and zinc prior to being cast into on-site prepared sand molds.

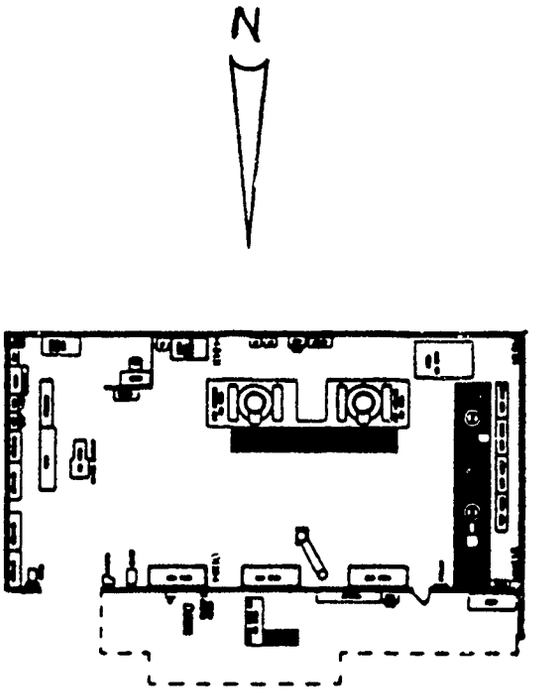
2.2.3 The Heat Treat component in Bldg. 507 is very well-equipped with a variety of high-temperature furnaces capable of performing heat treatments primarily on aluminum, ferrous and magnesium alloys while under an assortment

of atmospheres ranging from ambient, inert (argon or helium gas to an endothermic gas for carburizing ferrous parts. Additionally, some heat treatments are performed under reduced atmosphere. Uniquely-designed electrical induction equipment also exists for heat treating only localized areas of certain parts; ie. 20 mm. Gatling Gun, without affecting the major areas of the parts.

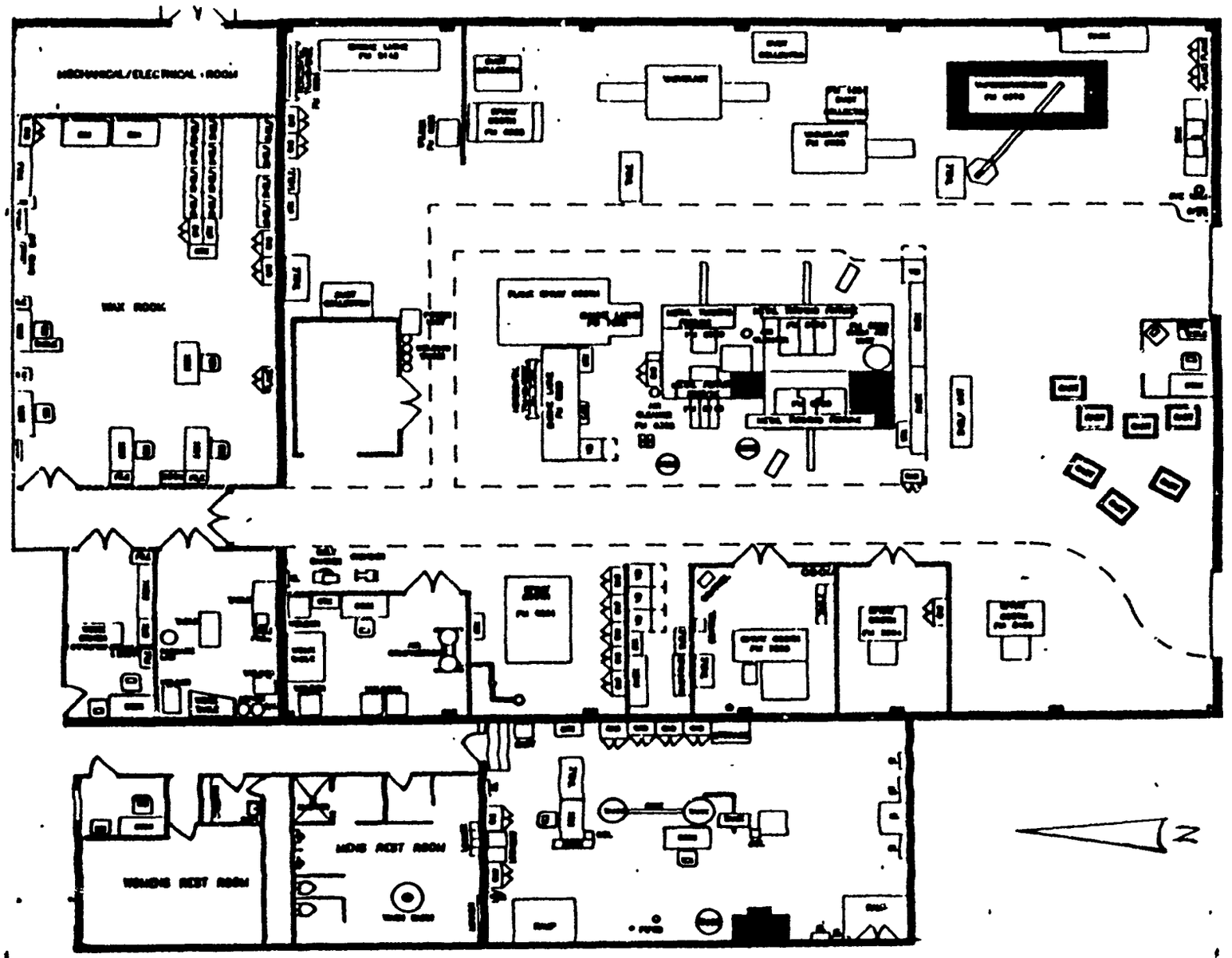
2.2.4 TIC Welding component performs weldments primarily on aluminum and steel parts. The helio-arc (resistance) welding is most commonly used. Capabilities exist for the use of Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding where the resultant weldment must be clean and free of flux residues or oxidation. The RCC also performs metal cutting operations using both plasma-arc and thermal-arc equipment.



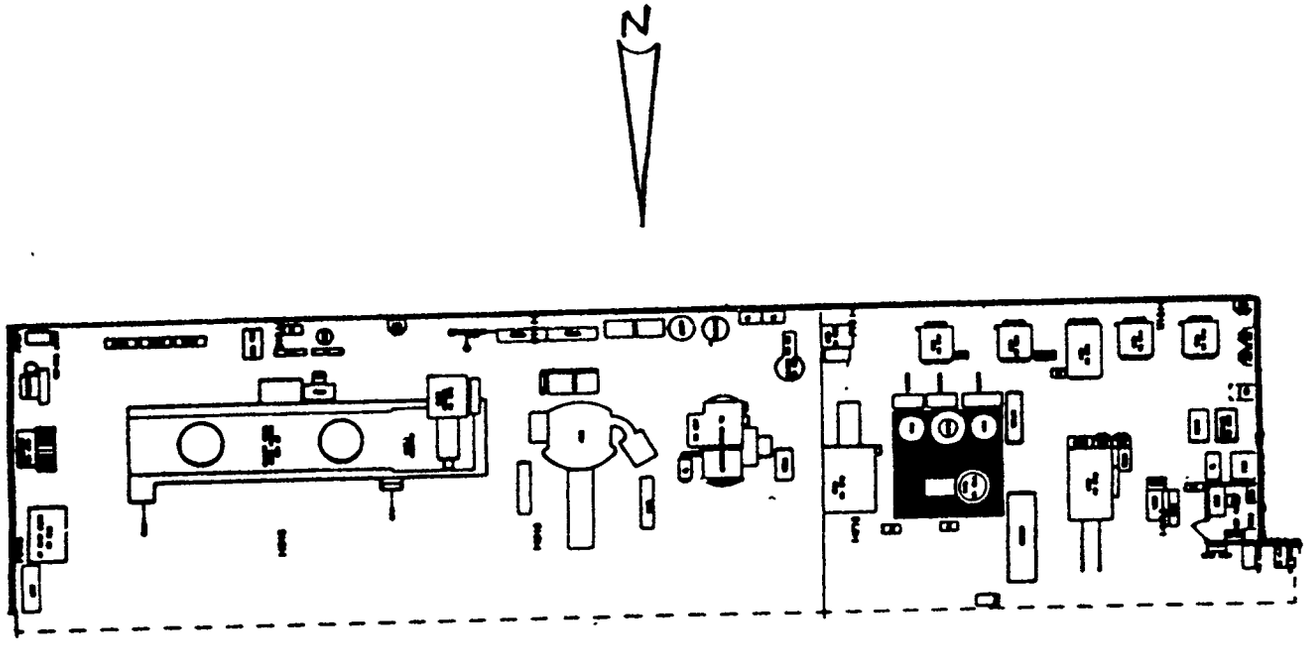
MANPWW WELDING AREA



MANPWW CASTING AREA



MANPWW METAL THERMAL COATING AREA



MANPWW HEAT TREAT AREA

EQUIPMENT PROFILE

511

NAME CHARLES CRAWFORD ALC 00 DATE 6-15-89 RCC MANPWW SHEET 1 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT			DOWNTIME					PERCENT USED FOR OTHER RCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS		ALTERNATE EQUIPMENT CODE	SOURCE
					PREVENTIVE MAINT.			UNSCHEDULED BREAKDOWN REPAIR TIME			MIN	MAX		
		1st	2nd	3rd	FREQ.	SHIFT	DOWN TIME	MTBF	MTTR					
PM 2142	LATHE	1			90	2	1.13	331 DAYS	12.5 HR					
PM 0698	BLASTER	1			180	2	1.25	25	4.40				NONE	
PM 6973	DEGREASER	1			30	2	.54	15 DAYS	3.2 HRS				NONE	
PM 7235	LATHE	1			90	2	1.89	98	10 HR					
PM 5739	METALIZER	1			90	2	1.25	622 DAY	14 HR					
PM 7439	BOOTH	1			90	2	2.19	595	24 HRS				PM 6256 PM 0744	
PM 7440	BOOTH	1			90	2	2.13	—	—				PM 6258 PM 7439	
PM 6258	BOOTH	1			90	2	2.34	173	7.0 HR				PM 7439 PM 0744	
PM 5730	METALIZER	1			90	2	1.5	81	7.3 HRS					
PM 5748	METALIZER	1			90	2	2.09	154	3.7 HRS					
PM 0320	LATH	1			90	2	1.63	94	19 HR		1	1		

EQUIPMENT PROFILE

511

NAME _____ ALC _____ DATE _____ RCC _____ SHEET 2 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT			DOWNTIME					PERCENT USED FOR OTHER HCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS	ALTERNATE EQUIPMENT CODE	SOURCE
					PREVENTIVE MAINT.			UNSCHEDULED BREAKDOWN REPAIR TIME			MIN / MAX		
		1st	2nd	3rd	FREQ.	SHIFT	DOWN TIME	MTBF	MTTR				
PM 6256	HORZ TRANS	1		2	2	2	1.0	803 CMH	5.5 MH				
CE01 -511	HOIST	1			365	1	3 HRS	—	—			CE02, CE03 CE04, CE05 CE06	
CE02 -511	HOIST	1			365	1	3 HRS	—	—				
CE03 -511	HOIST	1			365	1	3 HRS	—	—				
CE04 -511	HOIST	1			365	1	3 HRS	—	—				
CE05 -511	HOIST	1			365	1	3 HRS	—	—				
CE06 -511	HOIST	1			365	1	3 HRS	—	—				

EQUIPME[illegible]OFILE

CUT

NAME CHARLES CRAWFORD ALC 00 DATE 6-23-89 RCC MANPWW SHEET 3 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT 1st	2nd	3rd	DOWNTIME PREVENTIVE MAINT. FREQ.	SHIFT	DOWN TIME	UNSCHEDULED BREAKDOWN REPAIR TIME MTBF	MTTR	PERCENT USED FOR OTHER RCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS MIN / MAX	ALTERNATE EQUIPMENT CODE	SOURCE
CE27 -607	OVERHEAD — OVER HEAD CRANE	1	1		365		3 DAY	—	—				
CE24 -807	OVERHEAD — OVER HEAD CRANE	1	1		365		3 DAYS	—	—				
L89353	LIFTFIX — LIFTING FIXTURE	1	1		—	—	—	—	—				STEEL FIXTURE NO MODULE PARTS NO MAINTANCE
L89361	LIFTFIX — LIFTING FIXTURE	1	1		—	—	—	—	—				STEEL FIXTURE NO MODULE PARTS NO MAINTANCE
PM1 6932	OVEN	1	1		30	2	2.7	25 DAYS	7.3		1 / 20	PM 6999	
PM1 6999	OVEN	1	1		30	2	2.7	21 DAYS	7.3 HR		1 / 20	PM 6932	
PM1 C737	OVEN	1	1		30	2	2.08	24 DAYS	26 HRS		1 / 20	NEED ALT	
RT01	ROCKWELL — ROCKWELL TESTER	1	1		180	1	1.5 HR				1 / 1	RT 02 RT 03	
RT02	ROCKWELL — ROCKWELL TESTER	1	1		180	1	1.5 HR				1 / 1	RT01 RT03	
RT03	ROCKWELL — ROCKWELL TESTER	1	1		180	1	1.5				1 / 1	RT 01 RT 02	
GW21 4191	OVEN	1	1								1 / 6	NONE	
PM1 6276	TIG WELDER	12	12		42 DAYS	1 2	1.5 HR				1 / 1	12 MORE WELDERS	← ?

6 Rotor
8 & 10 Hook Points

LSC-2000-1B

EQUIPMENT PROFILE

507

NAME CHARLES CRAWFORD ALC 00 DATE 6-14-89 RCC MRALPWWW SHEET 4 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT			DOWNTIME					PERCENT USED FOR OTHER HCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS	ALTERNATE EQUIPMENT CODE	SOURCE
					PREVENTIVE MAINT.			UNSCHEDULED BREAKDOWN REPAIR TIME					
		1st	2nd	3rd	FREQ.	SHIFT	DOWN TIME	MTBF	MTTR		MIN / MAX		
RT04	PORTEST ROCKWELL PORTABLE TESTER	1	1		180	1	1.5	—	—		1 / .1	PT 01, 02, 03	
PM 1745	OVEN #8	1	1		90	2	1.36	—	—				

ISC-200948

FORMAN OVER DIFFERENT SHOPS

MADP EA ELECTRICAL ROD UNUSUAL (BUILDING 266 DAYS)

MADPS PLUMBING SHEET FORGEE (NO SOT)

MADPD PLUMBING SOS MAK SHELLABARGER (BUILDING SOS)

MADP SING TERRY STEED BUILDING 511

MAD PM 274 MECH & LUB BOYD WALTERS

JOHNNY SMITH.

REPORT DATE 04/18/89 CRANES REPORT SORTED BY BUILDING NUMBER MBUILD MUXXRPT PGM001 PAGE 4

LIST OF OVERHEAD CRANES

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00505	CE20	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 7
00505	CE21	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE22	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE23	900228	Y	1000	AIR	BUDGET	MONO	L CHAI	BLAST RM
[redacted]									
00505	CE25	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 5
00505	CE26	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
[redacted]									
00505	CE28	900228	Y	1000	ELEC	BUDGET	MONO	L CHIA	LINE 4
00505	CE29	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 4
00505	CE30	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
00505	CE31	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 9
00505	CE32	900228	Y	1000	ELEC	BUDGIT	MONO	L CHAI	LINE 5
00505	CE33	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 6
00505	CE34	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 6
00505	CE35	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE36	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE37	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE38	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE39	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE40	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE41	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 5
00505	CE42	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 9
00505	CE43	900228	Y	1000	ELECT	BUDGET	MONO	L CHAI	
00505	CE44	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE45	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE46	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE47	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE48	900228	Y	1000	ELEC	YALE	BRIDGE	L CHAI	
00505	CE49	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
[redacted]									
00507	CE1	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE10	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE11	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE12	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE13	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP BRAKE RP. 06
00507	CE14	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE15	900331	Y	2000	ELECT	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE16	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE17	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NDI RM N.E. CORNER
00507	CE18	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE19	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE2	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE20	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR PAINT BOOTH
00507	CE21	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE22	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE23	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	
00507	CE24	900331	Y	10 TON	ELECT.	P+H	BRIDGE	WIRERO	WELDING SHOP
00507	CE25	900331	Y	4 TON	ELECT.	P+H	BRIDGE	WIRERO	C-5 LANDING GEAR STAND
00507	CE2	900331	Y	5 TON	ELECT.	P+H	BRIDGE	WIRERO	FOUNDRY ROOM

CE - # 25
has had maintenance Problems in the pass year.

REPORT DA /19/89 CRANES REPORT SORTED BY BUILDING NUMBER MBULD MUXXRPT PGM001 PAGE 5

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00507	CE27	900331	Y	3 TON	ELECT.	P+H	BRIDGE	WIRERO	HEAT TREATED AREA
00507	CE28	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	CRATING AREA
00507	CE3	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE4	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	CHAIN	
00507	CE5	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE6	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE7	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE8	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE9	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00509	CE#1	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#2	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#3	891231	N	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	HOIST IN STORAGE
00509	CE#4	891231	Y	10000	ELECT	DETRIORT	BRIDGE	WIRERO	
00509	CE#5	891231	Y	2000	ELECT	YALE	JIB	LINKCH	UPPER LIMITS NEEDS ADJUST
00509	CE#6	891231	Y	2000	ELECT	YALE	JIB	LINKCH	ADJUST UPPER LIMITS
00510	CE01	890331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE02	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE03	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE04	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE05	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE06	900331	Y	3 TON	ELECT.	COFFING	BRIDGE	LINKCH	MACHINE SHOP
00510	CE1	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00511	CE#2	890531	Y	1000	ELECTR	P&H	ELECTRIC	WIRERO	
00511	CE#3	890531	Y	1 TON	ELECTR	BUDGET	MONORAIL	LINKCH	HAS 500# ON END PLATE
00511	CE#4	890531	Y	1000	ELECTR	P&H	MONRAIL	WIRERO	
00511	CE#5	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#6	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#7	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00515	CE#1	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#3	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#4	891231	Y	1000	ELECT	BUDGIT	MONORAIL	ROLLER	
00534	CE#1	891231	Y	2000	ELECT	YALE	MONORAIL	WIRERO	NEEDS UP LIMITS
00575	CE#1	891231	Y	4000	ELECT	P&H	MONORAIL	WIRERO	NEEDS STOPS EACH END
00576	1	900131	Y	5 TON	ELECT.	DETRIOT	MONORAIL	CABLE	PANDENT WIRE BAD
00577	CE#1	900131	Y	2000	ELECT	YALE	MONORAIL	LINKCH	
00589	1	900131	Y	1 1/2 TON	MANUAL	DETRIORT	MONORAIL	CHAIN	CE#1
00589	2	900131	Y	1 TON	ELECT.	DUFF	MONORAIL	CHAIN	CE#2
00589	3	900131	Y	1 1/2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#3
00589	4	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#4
00589	5	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#5
00589	6	900131	Y	2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#6
00590	CE#1	891130	N	7000	ELECT	P&H	BRIDGE	WIRERO	WIREROPE BAD
00590	CE#2	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	PENDANT WIRE BROKEN AT 30X
00590	CE#3	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	TROL SHAFT BENT, BAD WIRES
00590	CE#4	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	BAD POWER LINES(HANDCONTRO
00590	CE#5	891130	N	2000	ELECT	WRIGHTWAY	MONO GRANTRY	LINKCH	ELECT MECH PROBLEMS
00590	CE#6	891130	Y	6000	MANUAL	D.ROUND	MONO GRANTRY	LINKCH	
00592	CE1	900228	Y	1000	MANUAL	CYCLONE	MONO	L CHAI	
00592	CE2	900228	Y	1000	MANUAL	COFFING	MONO	L CHAI	

MAINTANCE FOR OVER HEAD CRANES.

DEMBM
73209-1346
2849TH CES

BUILDING# _____ CES#_____ DATE_____

MAKE_____ MODEL_____ S/N _____ LOCATION_____

CAPACITY_____ TYPE _____ DRIVE_____ STYLE_____

EQUIPMENT	N/A	OK	FAULTY	
RAIL INTERLOCKS		✓		
RAIL SPLICES				
RAIL SUPPORTS				
RAIL STOPS				
RAIL LIMIT SWITCHES				
TROLLEY TRAIN WHEELS				
TROLLEY TRACK BEARINGS				
TROLLEY WIRES & COLLECTOR				
MAIN HOIST WIRE ROPE				
AUXILIARY HOIST WIRE ROPE				
CONTROL BUTTONS				
[illegible]TIFICATION CONTROL BUTTONS				
[illegible]ING DEVICE				
[illegible]ST HOOK SAFETY DEVICE				
[illegible]XILIARY HOIST HOOK SAFETY DEVICE				
[illegible]ST LIMIT SWITCH-MAIN				
HOIST LIMIT SWITCH-AUXILIARY				
HOIST SHEAVE WHEEL				
AUXILIARY HOIST SHEAVE WHEEL				
HOIST HOOK				
AUXILIARY HOIST HOOK				
CLEANLINESS				
LUBRICATION				
GUARD RAILS				
CAPACITY SIGNS				
HAND SIGNAL SIGNS				
WARNING SIGNS				
FULL OPERATIONAL FUNCTIONS				

COMMENTS: NOTE ANY POTENTIAL HAZARDS OR MALFUNCTIONS TO SUPERVISOR IMMEDIATELY IN WRITING.

_____

_____

_____

_____
SIGNATURE

REPORT DATE 06/02/89 CRANES REPORT SORTED BY RECERTIFICATION DATE MRECERT MUXX0BJ PGM001 PAGE 2

RECERT DATE	R	BLDG NO	DES	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
900531	Y	00265	CE#7	1 TON	MANUAL	WRIGHT	BRIDGE	LINKCH	
900531	Y	00265	CE#8	1000	ELECTR	BUDGET	BRIDGE	ROLLER	
900531	Y	00265	CE#9	1000	MANUAL	YALE	MONARAIL	LINKCH	
900531	Y	00265	CE10	1000	AIR	YALE	MONARAIL	LINKCH	
900531	Y	00265	CE11	1000	ELECTR	ROBIN MYERS	MONARAIL	WIRERO	
900531	Y	00265	CE12	1000	AIR	INGERSOIL RAND	MONARAIL	ROLLER	
890571	N	00265	CE13	1TON 500#BRIDG	ELECT	BUDGET	BRIDGE		NOT IN BLOG MISSING
900531	Y	00265	CE14	2 TON	AIR	THOR	BRIDGE	WIRERO	
900531	Y	00265	CE15	1000	AIR	INGERSOILRAND	BRIDGE	ROLLER	
900531	Y	00265	CE16	1 TON	ELECTR	YALE	BRIDGE	LINKCH	
900531	Y	00265	CE17	1000	ELECTR	BUDGET	BRIDGE	ROLLER	
900531	Y	00265	CE18	1 TON	ELECTR	COFFING	BRIDGE	WIRE R	
900531	N	00265	CE19	2 TON	AIR	THOR		WIRE R	BROKEN,IN DEMBM ON ORDER
[redacted]							MONORAIL	ROLLER	
[redacted]								[illegible]	
[redacted]								[illegible]	
[redacted]								[illegible]	
[redacted]								[illegible]	
[redacted]								[illegible]	
[redacted]								[illegible]	

PM INVENTORY REPORT

EQUIP ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
[illegible]	[illegible]	06	511 CNTR	LATHE
L03076			4/15/89	MANPW1
MADPM			7/14/89	
000320	00340000	180	511 CNTR	LATHE
L01033			2/17/89	MANPW1
MADPM			7/13/89	
000320	02000000	180	511 CNTR	LATHE
L00122			2/17/89	MANPW1
MADP			7/13/89	
000320	00340	365	511 CNTR	LATHE
L19081			2/17/89	MANPW1
MADP			4/30/89	

MORE?

PM INVENTORY REPORT

EQUIP ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
000320	02000	365	511 CNTR	LATHE
L00123			5/ 6/89	MANPW1
MADP			5/ 6/90	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
005748	02000	90	511 CNTR	FIXTURE TURNING
L17099			3/11/89	MANPW1
MADP			6/ 9/89	
005748	02000	90	511 CNTR	FIXTURE TURNING
L01224			5/13/89	MANPW1
MADP			8/11/89	
005748	00300	90	511 CNTR	FIXTURE TURNING
L10849			5/13/89	MANPW1
MADPM			8/11/89	
005748	00005	180	511 CNTR	FIXTURE TURNING
L01228			5/13/89	MANPW1
MADPD			11/ 9/89	

MORE?

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
005748	00340	180	511 CNTR	FIXTURE TURNING
L07924			5/13/89	MANPW1
MADPM			11/ 9/89	
005748	02000	365	511 CNTR	FIXTURE TURNING
L17099			2/17/89	MANPW1
MADP			11/26/89	
005748	00040	365	511 CNTR	FIXTURE TURNING
L10698			2/17/89	MANPW1
MADPM			11/26/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE INSTR	SK	DUE-DATE	CUST-ACCT-CDE
007235 00300	90	511	LATHE HEADSTOCK
L00299		2/17/89	MANPW1
MADPM		6/23/89	
007235 02000	90	511	LATHE HEADSTOCK
L00606		2/17/89	MANPW1
MADP		6/23/89	
007235 00040	180	511	LATHE HEADSTOCK
L00331		2/17/89	MANPW1
MADPM		9/21/89	
007235 02000	365	511	LATHE HEADSTOCK
L00333		4/ 8/89	MANPW1
MADP		4/ 8/90	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
[illegible]		30	511 SE CRNR	DEGREASER
L12003			4/22/89	MANPW1
MADPD			5/22/89	
006973	00005	365	511 SE CRNR	DEGREASER
L12004			2/17/89	MANPW1
MADPD			12/ 3/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
007440	00300	90	511 SW CRNR	FLAME SPRAY BOOTH
LI9000			6/ 3/89	MANPW1
MADP			9/ 1/89	
007440	02340	180	511 SW CRNR	FLAME SPRAY BOOTH
LI9100			2/17/89	MANPW1
MADP			8/30/89	
007440	00005	180	511 SW CRNR	FLAME SPRAY BOOTH
LI9101			3/ 4/89	MANPW1
MADPD			8/31/89	
007440	02000	365	511 SW CRNR	FLAME SPRAY BOOTH
LI9102			2/17/89	MANPW1
MADP			9/ 3/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
007439	00300	90	511 SW CRNR	FLAME SPRAY BOOTH
L19095			2/17/89	MANPW1
MADP			6/ 1/89	
007439	00005	180	511 SW CRNR	FLAME SPRAY BOOTH
L19097			3/ 4/89	MANPW1
MADPD			8/31/89	
007439	00340	180	511 SW CRNR	FLAME SPRAY BOOTH
L19096			2/17/89	MANPW1
MADP			8/30/89	
007439	02000	365	511 SW CRNR	FLAME SPRAY BOOTH
L19098			2/17/89	MANPW1
MADP			9/ 3/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION	NOMENCLATURE
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
000698	02000	180	511 E WALL	VACUBLAST
L01356			2/17/89	MANPW1
MADP			6/29/89	
000698	00300	180	511 E WALL	VACUBLAST
L10693			2/17/89	MANPW1
MADPM			6/22/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION	NOMENCLATURE
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
002142	02000	90	511	LATHE
L00548			4/ 8/89	MANPW1
MADP			7/ 7/89	
002142	00300	90	511	LATHE
L02802			2/17/89	MANPW1
MADPM			6/ 1/89	
002142	00040	365	511	LATHE
L00549			2/17/89	MANPW1
MADPM			7/16/89	
002142	02000	365	511	LATHE
L11619			2/17/89	MANPW1
MADP			7/16/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION	NOMENCLATURE
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
006258	02000	90	511 N CNTR	SPRAY BOOTH
L01175			2/17/89	MANPW1
MADPE4			6/23/89	
006258	00300	90	511 N CNTR	SPRAY BOOTH
L07917			5/13/89	MANPW1
MADPM			8/11/89	
006258	00005	180	511 N CNTR	SPRAY BOOTH
L01262			5/13/89	MANPW1
MADPD			11/ 9/89	
006258	02000	180	511 N CNTR	SPRAY BOOTH
L07919			2/17/89	MANPW1
MADP			5/25/89	

MORE?

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION	NOMENCLATURE
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
006258	00340	180	511 N CNTR	SPRAY BOOTH
L07918			5/13/89	MANPW1
MADPM			11/ 9/89	

**** PRESS RETURN TO CONTINUE ****

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
005730	02000	90	511 CNTR	FLAME SPRAY
L11028			4/15/89	MANPW1
MADPE4			7/14/89	
005730	00040	180	511 CNTR	FLAME SPRAY
L07928			2/17/89	MANPW1
MADPM			7/13/89	
005730	00040	365	511 CNTR	FLAME SPRAY
L19080			2/17/89	MANPW1
MADPM			7/23/89	
005730	02000	365	511 CNTR	FLAME SPRAY
L00792			2/17/89	MANPW1
MADP			7/23/89	

**** PRESS RETURN TO CONTINUE ****

PM # 5730 DESCRIPTION METAL TURNING FIXTURE

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1 AIR CONDITION				
2 ELECTRIAL		15 min		15 min
3 MECHANIC		½ HR		
4 LUBE.		½ HR		45 min
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION. ANALYSIS				
8 LASER LEVEL				

(.25 HR)(4) 1.0
(.5 HR)(4) 2.0
(.5 HR)(4) 2.0
(.25 HR)(1) = .25
(.75 HR)(1) .75

4 | 6.0

1.5

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
005739	**02000**	**90**	**511 CNTR**	**FIXTURE TURNING**
L16100			2/17/89	MANPW1
MADP			6/ 1/89	
005739	00300	90	511 CNTR	FIXTURE TURNING
L10826			2/17/89	MANPW1
MADPM			6/ 1/89	
005739	00040	180	511 CNTR	FIXTURE TURNING
L07929			2/17/89	MANPW1
MADPM			6/ 1/89	
005739	02000	365	511 CNTR	FIXTURE TURNING
L16101			2/17/89	MANPW1
MADP			12/10/89	

MORE?

5/18/89 PAGE 2

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
005739	00040	365	511 CNTR	FIXTURE TURNING
L00794			2/17/89	MANPW1
MADPM			12/10/89	

**** PRESS RETURN TO CONTINUE ****

PM # 5739 DESCRIPTION TURNING FIXTURE

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1- AIR CONDITION				
2 ELECTRICAL		15 min		15 min
3 MECHANIC		½ HR		
4 LUBE.			½ HR	45 mins
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION. ANALYSIS				
8 LASER LEVEL				

(.25 HR)(4) 1.0

(.5 HR)(4) 2.0

(.5 HR)(2) 1.0

(.25 HR)(1) .25

(.75 HR)(1) = .75

5 HRS

1.25 HR

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
RCC-RE	INSTR	SK		
006256	02000	180	511	PORTABLE TRAVERSE UNIT
L01173			2/17/89	MANPW1
MADPE4			6/29/89	
006256	00340	180	511	PORTABLE TRAVERSE UNIT
L07913			5/13/89	MANPW1
MADPM			11/ 9/89	

**** PRESS RETURN TO CONTINUE ****

PM # 6256 - DESCRIPTION PORTABLE TRAVERSE UNIT

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1. AIR CONDITION				
2. ELECTRIAL			15 min	
3 MECHANIC			½ HR	
4 LUBE.			15 min	
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION. ANALYSIS				
8 LASER LEVEL				

(.25HR)(2) = .50

(.5 HR)(2) = 1.0

(.25HR (2) .5

2 | 2.0

1.0

5/17/89

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE		REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	COST
	PROBLEM								
006999	FURNACE ELEC	056	2/25/87	3/13/87	87020737	Ø	43E	48.0	960.
ØØ	WON'T PUMP DOWN								
	FURNACE ELEC	197	7/16/87	7/16/87	87070511	Ø	47	1.0	20.
ØØ	CHANGE OIL								
	FURNACE ELEC	201	7/20/87	7/20/87	87070594	Ø	47	2.0	40.
ØØ	SUMP PUMP NEEDS PRIMED								
	FURNACE ELEC	211	7/30/87	7/31/87	87070933	Ø	43P	9.0	180.
ØØ	PIT BELOW FURNACE / DRAIN PIT / WATER								
	FURNACE ELEC	236	8/24/87	8/24/87	87080766	Ø	47	Ø.5	10.
	ADD OIL								
	FURNACE ELEC	244	9/ 1/87	9/ 1/87	87090009	Ø	43E	1.0	20.
ØØ	EXPOSED ELECTRICAL WIRE								
	SAFETY HAZARD								
	FURNACE ELEC	244	9/ 1/87	9/ 1/87	87090011	Ø	43E	Ø.Ø	Ø.
ØØ	EXPOSED ELECTRICAL WIRE								
	FURNACE ELEC	288	10/15/87	10/19/87	87100461	Ø	43M	6.Ø	120.
ØØ	OIL LEAK ON ROOTS BLOWER								
	FURNACE ELEC	292	10/19/87	10/19/87	87100509	Ø	43M	1.0	20.
ØØ	CHANGE V BELTS ON BLOWER								
	FURNACE ELEC	301	10/28/87	10/28/87	87100862	Ø	47	1.5	30.
ØØ	BLOWER PULLY BROKEN OFF								
	FURNACE ELEC	303	10/30/87	10/30/87	87100963	Ø	43	8.0	160.
ØØ	PUULY COME OFF OF VACUM PUMP								
	FURNACE ELEC	317	11/13/87	11/19/87	87110417	Ø	43P	12.0	240.
ØØ	OIL LEAK								
	FURNACE ELEC	341	12/ 7/87	12/ 7/87	87120214	Ø	43E	8.0	160.
ØØ	INSTALL BOILER MOTOR								

FURNACE ELEC	350	12/16/87	12/17/87	87120541	Ø	43L	30.0	600.
Ø0 ADD ANTIFREEZE								
FURNACE ELEC	351	12/17/87	12/18/87	87120593	Ø	43P	8.0	160.
UMP COOLANT / HAS FLOODED PIT /								
RECHARGE WITH INTIFREEZE								
PIT	358	12/24/87	12/28/87	87120768	Ø	48	8.0	160.
Ø0 DRAIN WATER FROM PIT								
FURNACE ELEC	004	1/ 4/88	1/ 4/88	88010042	Ø	47	5.0	100.
Ø0 CHANGE OIL								
FURNACE ELEC	020	1/20/88	1/20/88	88010588	Ø	47	3.0	60.
Ø0 DRAIN OIL AND REFILL								

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE		REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	COST
006999	FURNACE ELEC	036	2/ 5/88	2/ 9/88	88020233	0	43E	2.0	40.00
PROBLEM	CONTROL LIGHTS OUT								
	FURNACE ELEC	073	3/14/88	3/14/88	88030437	0	43E	4.0	80.00
PROBLEM	NO POWER								
	FURNACE ELEC	116	4/26/88	4/26/88	88040753	0	43E	8.0	160.00
PROBLEM	WATER PUMP INOP								
	S BY BRAEK ROOM	117	4/27/88	5/ 2/88	88040827	0	43E	24.0	480.00
PROBLEM	VALVES WON'T OPEN / TO MECHANICAL PUMP								
	FURNACE ELEC	132	5/12/88	5/16/88	88050388	0	43E	16.0	320.00
PROBLEM	COOLING FAN FOR WATER / #1 IS OUT								
	FURNACE ELEC	169	6/ 8/88	6/ 8/88	88060256	0	43E	4.0	80.00
PROBLEM	ELEC VALVE WILL NOT CLOSE								
	FURNACE ELEC	164	6/13/88	6/13/88	88060413	0	47M	1.0	20.00
PROBLEM	WATERFLOW INDICATOR PULGGED								
	FURNACE ELEC	168	6/17/88	8/ 5/88	88060608	81723	43E	3.0	60.00
PROBLEM	ELECTRIC DIAL NOT OPERATING								
	VALVE INOP								
	FURNACE ELEC	171	6/20/88	6/20/88	88060648	0	43E	6.0	120.00
PROBLEM	ELEMENTS ARE NOT COMING ON								
	FURNACE ELEC	221	8/ 9/88	8/ 9/88	88080368	0	47M	3.5	70.00
PROBLEM	CHANGE ALL OIL'S								
	FURNACE ELEC	224	8/12/88	8/15/88	88080500	0	43E	6.0	120.00
PROBLEM	OVEN WON'T COME UP TO TEMP								
	FURNACE ELEC	250	9/ 7/88	9/ 8/88	88090159	0	43E	15.0	300.00
PROBLEM	ADJUST THERMO COUPLES								
	ALSO PM 6932								
	PUMP VACUUM	308	11/ 4/88	11/ 8/88	88110165	0	43M	0.0	0.00

0 WATER TANK / ADD ANTIFREEZE

CANCEL PER REQUESTER (25)

FURNACE ELEC 333 11/2988 11/29/88 88110873 0 43E 2.0 40.0
0 CONTROLLER NOT OPERATING PROPERLY

(28)

FURNACE ELEC 36 12/27/88 12/27/88 88120797 0 43E 3.0 60.0
0 NO POWER

(2)

FURNACE ELEC 020 1/20/88 1/20/88 8801054 0 43M 0.0 0.0
0 DRAIN AND CHANGE OIL AND CHANGE PUMP

FURNACE ELEC 023 1/23/89 1/25/89 89010620 0 47 2.5 50.0
0 CHANGE OIL IN PUMP AND BLOWER

TRANSFERED FROM 43 (42)

FURNACE ELEC 065 3/ 6/89 3/ 6/89 89030129 0 43M 8.0 160.
00 BLOWER LEAKING OIL

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM UMBERS

PM.NO	NOMENCLATURE	REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	COST	PROBLEM
006999	FURNACE ELEC	121	5/ 1/89	/ /	89050045	91231	43E	0.0	0.00	WON'T PUMP DWN
	FURNACE ELEC	108	4/18/89	5/15/89	89040524	91111	43E	16.0	320.00	FURNACE WON'T PUMPDOWN
006999								276.0	5520.00	
=								276.0	5520.00	

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
006999	00040	30	507 WLD SHP	FURNACE ELEC
L00442			5/13/89	MANPWW
MADPS			6/12/89	
006999	02340	90	507 WLD SHP	FURNACE ELEC
L00177			2/17/89	MANPWW
MADPS			5/18/89	
006999	02300	180	507 WLD SHP	FURNACE ELEC
L00178			2/17/89	MANPWW
MADPS			6/ 1/89	
006999	00340	365	507 WLD SHP	FURNACE ELEC
L00179			2/17/89	MANPWW
MADPS			6/11/89	

**** PRESS RETURN TO CONTINUE ****

6999

PART # 6932 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY	
1 AIR CONDITION					
2 ELECTRIAL		(1) 1.5 HR	(2) 2.0 HR		
3 MECHANIC		(3) 1/2 HR	(4) 1.0 HR	(5) 2.5 HR	
4 LUBE	(6) 1/2 HR	(7) 2 HR			
5 PLUMBING					
6 CERTIFICATION					
7 VIBRATION - ANALYSIS					
8 LASER LEVEL					

(1) (1.5 HR)(4 TIMES) = 6 HRS.

(2) (2.0 HR)(2) = 4 HRS.

(3) (.5 HR)(4) = 2 HRS

(4) (1.0 HR)(2) = 2 HRS

(5) (2.5)(1) = 2.5 HRS

(6) (.5 HRS)(12) = 6 HRS

(7) (2.5 HR)(4) = 10 HRS

32.5 / 12

2.7 HRS EACH.

PM INVENTORY REPORT

EQUIP-ID-NO	SKILL	FREQ	LOCATION COMPL-DATE	NOMENCLATURE OWN-ORGN
RCC-RE	INSTR	SK	DUE-DATE	CUST-ACCT-CDE
006932	00040	30	507 WLD SHP	FURNACE ELEC
L00467			4/29/89	MANPWW
MADPS			5/29/89	
006932	0230000	180	507 WLD SHP	FURNACE ELEC
L00194			2/17/89	MANPWW
MADPS			6/ 1/89	
006932	00340	365	507 WLD SHP	FURNACE ELEC
L00195			2/17/89	MANPWW
MADPS			6/11/89	

**** PRESS RETURN TO CONTINUE ****

6999

PM # 6932 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1. AIR CONDITION				
2 ELECTRIAL		(1) 1.5 HR	(2) 2.0 HR	
3 MECHANIC		(3) 1/2 HR	(4) 1.0 HR	(5) 2.5 HR
4 LUBE.	1/2 HR (6)	2 1/2 (7)		
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION - ANALYSIS				
8 LASER LEVEL				

(1) (1.5 HR)(4 TIMES) = 6 HRS

(2) (2.0 HR)(2) = 4 HRS.

(3) (.5 HR)(4) = 2 HRS

(4) (1.0 HR) (2) = 2 HRS

(5) (2.5) (1) = 2.5 HRS

(6) (.5 HRS)(12) = 6 HRS

(7) (2.5 HR)(4) = 10 HRS

12 | 32.5

2.7 HRS EACH

5/17/89

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE		REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	CO
ST	PROBLEM								
006932	FURNACE ELEC	054	2/23/87	2/23/87	87020629	Ø	43E	4.0	80.
Ø0	NO POWER	(15)							
	FURNACE ELEC	069	3/10/87	3/12/87	87030350	Ø	43M	4.0	80
Ø0	BLOWER BEARING GOING OUT	(20)							
	FURNACE ELEC	089	3/30/87	3/30/87	87030992	Ø	43P	4.0	80
Ø0	WATER BACK UP	(2)							
	FURNACE ELEC	091	4/ 1/87	4/ 2/87	87040017	Ø	43	1.0	20
Ø0	RECHARGE COOLING SYSTEM WITH ANTIFREEZE	(7)							
	FURNACE ELEC	098	4/ 8/87	4/ 9/87	87040244	Ø	43E	8.0	160
Ø0	WIRE SHORT OUT	(63)							
	FURNACE ELEC	161	6/10/87	6/12/87	87060308	Ø	43E	18.0	360
Ø0	VACCUMM LEAK	(13)							
	FURNACE ELEC	174	6/23 87	7/ 2/87	87060696	Ø	43M	1.0	20
Ø0	INSTALL PUMP	(6)							
	FURNACE ELEC	180	6/29/87	6/29/87	87060909	Ø	47	3.0	60
Ø0	BROKEN FAN BELT	(10)							
	FURNACE ELEC	190	7/ 9/87	7/15/87	87070276	Ø	43M	32.0	640
Ø0	REPLACE BEARINGS ROOTS BLOWER	(7)							
	FURNACE ELEC	197	7/16/87	7/16/87	87070510	Ø	47	1.0	20
Ø0	CHANGE OIL	(4)							
	FURNACE ELEC	201	7/20/87	7/21/87	87070569	Ø	43P	9.0	180
Ø0	WATER SYSTEM/PUMP SYSTEM/FULL OF WATER	(35)							
	FURNACE ELEC	236	8/24/87	8/24/87	87080765	Ø	47	0.5	10
Ø0	ADD OIL	(21)							
	[illegible]	[illegible]	9/14/87	9/16/87	87090353	Ø	43E	16.0	320

00 ELECTRICITY TO WATER PUMP WON'T COME ON

(35)

FURNACE ELEC 292 10/19/87 10/19/87 87100508 0 43M 1.0 20
00 V BELTS ON ROOTS BLOWER

(7)

FURNACE ELEC 299 10/26/87 10/26/87 87100706 0 43M 1.0 20
00 TROUBLE SHOOT / NOISE IN MOTOR

(22)

FURNACE ELEC 321 11/17/87 11/17/87 87110520 0 47 1.0 20
00 CHECK MOTOR FOR PROPER ROTATION

(4)

FURNACE ELEC 322 11/18/87 11/18/87 87110522 0 43E 4.0 80
00 WON'T PUMP DOWN

(13)

FURNACE ELEC 335 12/ 1/87 12/ 2/87 87120057 0 47 21.0 420
00 PUMP ANTIFREEZ FROM PIT

(1)

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE	REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	C
ST PROBLEM								
006932	FURNACE ELEC 336	12/ 2/87	12/ 2/87	87120062		Ø 43P	9.0	180
Ø0 MAKE SURE PIT IS PUMPED DRY /								
	(9)							
AND ADD ANAFREEZE TO COOLING TOWER								
	FURNACE ELEC 336	12/ 2/87	12/ 4/87	87120063		Ø 43E	4.0	80
Ø0 CHECK OUT OUTLETS IN PIT / PIT HAS BEEN FLOODED								
ELECTRICAL EQUIPMENT	(9)							
	FURNACE ELEC 336	12/ 2/87	5/ 4/88	87120075	73412	43E	32.0	640
Ø0 HEATING ELEMENT NEEDS TO BE REPLACED								
	(33)							
	FURNACE ELEC 004	1/ 4/88	1/ 4/88	88010041		Ø 47	5.0	100
Ø0 CHANGE OIL								
	(7)							
	FURNACE ELEC 011	1/11/88	1/19/88	88010246		Ø 43E	0.0	Ø
Ø0 PUMP WILL NOT COME ON / MECHANICAL								
	(9)							
	FURNACE ELEC 020	1/20/88	2/ 4/88	88010569		Ø 43M	0.0	Ø
Ø0 REPLACE ELEMENT								
	(9)							
	FURNACE ELEC 020	1/20/88	1/27/88	88010571		Ø 43M	19.0	380
Ø0 REMOVE PPUMP AND VACUUM ASSEMBLER								
	(20)							
	FURNACE ELEC 040	2/ 9/88	2/ 9/88	88020313		Ø 43M	6.0	120
Ø0 MOUNT MOTOR AND FAN ASSY TO BASE PLATE								
	(124)							
	FURNACE ELEC 164	6/13/88	6/13/88	88060414		Ø 47M	1.0	20
Ø0 WATERFLOW INDICATOR PLUGGED								
	(73)							
	FURNACE ELEC 237	8/25/88	8/30/88	88080930		Ø 43P	18.0	360
Ø0 INSTALL VACUUM PUMP IN LINBURT PIT								
ON EAST SIDE	(20)							
	FURNACE ELEC 257	9/14/88	9/14/88	88090394		Ø 43E	3.0	60
Ø0 POWER WON'T CME ON								
	(131)							
	FURNACE ELEC 023	1/23/89	1/25/89	89010619		Ø 47	2.5	50
Ø0 HANGE OIL IN PUMP AND BLOWER								

TANSFERED FROM 43 (3)

FURNACE ELEC	082	3/23/89	3/23/89	89030705	0	47E	2.0	40
00 ON'T BACK FILL								
FURNACE ELEC	109	4/19/89	4/19/89	89040559	0	43M	1.0	20
0 BLOWER NEEDS OIL								
006932							232.0	4640.
0								
							232.0	4640.
0								

6999

DAN # 6932 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1 AIR CONDITION				
2 ELECTRICAL		(1) 1.5 HR	(2) 2.0 HR	
3 MECHANIC		(3) ½ HR	(4) 1.0 HR	(5) 2.5 HR
4 LUBE	½ HR (6)	2 ± (7)		
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION - ANALYSIS				
8 LASER LEVEL				

(1) (1.5 HR)(4 TIMES) = 6 HRS.

(2) (1.0 HR)(2) = 4 HRS.

(3) (.5 HR)(4) = 2 HRS

(4) (1.0 HR)(2) = 2 HRS

(5) (2.5)(1) = 2.5 HRS

(6) (.5 HRS)(12) = 6 HRS

(7) (2.5 HR)(4) = 10 HRS

12 | 32.5

2.7 HRS EACH.

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
001745 00300		90	507 H16 S	FURNACE 8
L02648			6/24/89	MANPWW
MADP			9/22/89	
001745 02000		180	507 H16 S	FURNACE 8
L07933			6/24/89	MANPWW
MADP			12/21/89	
001745 02040		365	507 H16 S	FURNACE 8
L04447			2/17/89	MANPWW
MADP			7/ 9/89	

**** PRESS RETURN TO CONTINUE ****

PM # 1745 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1. AIR CONDITION				
2 ELECTRIAL		(2)	Inspection 60 MIN	15 MIN (3)
3 MECHANIC	(1)	CHAIN SPROCKET 45 MIN		
4 LUBE.			(4)	Pillow 10 MIN
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION. ANALYSIS				
8 LASER LEVEL				

1. (.75 HR)(4 TIMES) = 3.0 HR / YEAR
2. (1 HR)(2 TIMES) = 2 HR / YEAR
3. (.25 HR)(1) = .25 HR / YR
4. (.17 HR)(1) = .17 HR / YR

5.42 HR

4 Times per year = 4 / 5.42

1.36 HR each Time

MAINTANCE FOR OVER HEAD CRANES

DEMBM
73209-1346
2849TH CES

BUILDING# _____ CES# _____ DATE _____

MAKE _____ MODEL _____ S/N _____ LOCATION _____

CAPACITY _____ TYPE _____ DRIVE _____ STYLE _____

EQUIPMENT	N/A	OK	FAULTY	
RAIL IN. FBLOCKS		✓		
RAIL SPLICES				
RAIL SUPPORTS				
RAIL STOPS				
RAIL LIMIT SWITCHES				
TROLLEY TRAIN WHEELS				
TROLLEY TRACK BEARINGS				
TROLLEY WIRES & COLLECTOR				
MAIN HOIST WIRE ROPE				
AUXILIARY HOIST WIRE ROPE				
CONTROL BUTTONS				
IDENTIFICATION CONTROL BUTTONS				
WARNING DEVICE				
HOIST HOOK SAFETY DEVICE				
AUXILIARY HOIST HOOK SAFETY DEVICE				
HOIST LIMIT SWITCH-MAIN				
HOIST LIMIT SWITCH-AUXILIARY				
HOIST SHEAVE WHEEL				
AUXILIARY HOIST SHEAVE WHEEL				
HOIST HOOK				
AUXILIARY HOIST HOOK				
CLEANLINESS				
LUBRICATION				
GUARD RAILS				
CAPACITY SIGNS				
HAND SIGNAL SIGNS				
WARNING SIGNS				
FULL OPERATIONAL FUNCTIONS				

COMMENTS: NOTE ANY POTENTIAL HAZARDS OR MALFUNCTIONS TO SUPERVISOR IMMEDIATELY IN WRITING.

_____

_____

_____

_____
SIGNATURE

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00507	CE27	900331	Y	3 TON	ELECT.	P+H	BRIDGE	WIRERO	MEAT TREATED AREA
00507	CE28	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	CRATING AREA
00507	CE3	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE4	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	CHAIN	
00507	CE5	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE6	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE7	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE8	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE9	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00509	CE#1	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#2	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#3	891231	N	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	HOIST IN STORAGE
00509	CE#4	891231	Y	10000	ELECT	DETRIORT	BRIDGE	WIRERO	
00509	CE#5	891231	Y	2000	ELECT	YALE	JIB	LINKCH	UPPER LIMITS NEEDS ADJUST
00509	CE#6	891231	Y	2000	ELECT	YALE	JIB	LINKCH	ADJUST UPPER LIMITS
00510	CE01	890331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE02	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE03	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE04	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE05	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE06	900331	Y	3 TON	ELECT.	COFFING	BRIDGE	LINKCH	MACHINE SHOP
00510	CE1	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00511	CE#2	890531	Y	1000	ELECTR	P&H	ELECTRIC	WIRERO	
00511	CE#3	890531	Y	1 TON	ELECTR	BUDGET	MONORAIL	LINKCH	HAS 500# ON END PLATE
00511	CE#4	890531	Y	1000	ELECTR	P&H	MONRAIL	WIRERO	
00511	CE#5	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#6	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#7	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00515	CE#1	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#3	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#4	891231	Y	1000	ELECT	BUDGIT	MONORAIL	ROLLER	
00534	CE#1	891231	Y	2000	ELECT	YALE	MONORAIL	WIRERO	NEEDS UP LIMITS
00575	CE#1	891231	Y	6000	ELECT	P&H	MONORAIL	WIRERO	NEEDS STOPS EACH END
00576	1	900131	Y	5 TON	ELECT.	DETRIOT	MONORAIL	CABLE	PANDENT WIRE BAD
00577	CE#1	900131	Y	2000	ELECT	YALE	MONORAIL	LINKCH	
00589	1	900131	Y	1 1/2 TON	MANUAL	DETRIORT	MONORAIL	CHAIN	CE#1
00589	2	900131	Y	1 TON	ELECT.	DUFF	MONORAIL	CHAIN	CE#2
00589	3	900131	Y	1 1/2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#3
00589	4	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#4
00589	5	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#5
00589	6	900131	Y	2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#6
00590	CE#1	891130	N	7000	ELECT	P&H	BRIDGE	WIRERO	WIREROPE BAD
00590	CE#2	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	PENDANT WIRE BROKEN AT BOX
00590	CE#3	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	TROL SHAFT BENT,BAD WIRES
00590	CE#4	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	BAD POWER LINES(HANDCONTRO
00590	CE#5	891130	N	2000	ELECT	WRIGHTWAY	MONO GRANTRY	LINKCH	ELECT MECH PROBLEMS
00590	CE#6	891130	Y	6000	MANUAL	D.ROUND	MONO GRANTRY	LINKCH	
00592	CE1	900228	Y	1000	MANUAL	CYCLONE	MONO	L CHAI	
00592	CE2	900228	Y	1000	MANUAL	COFFING	MONO	L CHAI	

REPORT DATE 04/13/89 CRANES REPORT SORTED BY BUILDING NUMBER MBULD MUXXRPT PGM001 PAGE 4

LIST OF OVERHEAD CRANES

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00505	CE20	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 7
00505	CE21	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE22	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE23	900228	Y	1000	AIR	BUDGET	MONO	L CHAI	BLAST RM
[redacted]									
00505	CE25	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
00505	CE26	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
[redacted]									
00505	CE28	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 4
00505	CE29	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
00505	CE30	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 9
00505	CE31	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 5
00505	CE32	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 4
00505	CE33	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 6
00505	CE34	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE35	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE36	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE37	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE38	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 4
00505	CE39	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE40	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE41	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 5
00505	CE42	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 9
00505	CE43	900228	Y	1000	ELECT	BUDGET	MONO	L CHAI	
00505	CE44	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE45	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE46	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE47	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE48	900228	Y	1000	ELEC	YALE	BRIDGE	L CHAI	
00505	CE49	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
[redacted]									
00507	CE1	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LINKCH	
00507	CE10	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE11	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE12	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE13	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP BRAKE RP. 06
00507	CE14	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE15	900331	Y	2000	ELECT	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE16	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE17	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MDI RM N.E. CORNER
00507	CE18	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE19	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE2	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE20	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR PAINT BOOTH
00507	CE21	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE22	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE23	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	
00507	CE24	900331	Y	10 TON	ELECT.	P+H	BRIDGE	WIRERO	WELDING SHOP
00507	CE25	900331	Y	4 TON	ELECT.	P+H	BRIDGE	WIRERO	C-5 LANDING GEAR STAND
00507	CE26	900331	Y	5 TON	ELECT.	P+H	BRIDGE	WIRERO	FOUNDRY ROOM

CE # 25 has had Maintenance Problems in the Past year.

Case Number 82-3-L

Lifting Brake Motor (LS9361)

(3)

(4) [redacted] PM 4931

[redacted] PM 4999

[redacted] PM 5735

7 Dispa PM 1747

8 Coates PM 1745

9 CEC PM 7518 Cont PM 7556

10 [redacted] PM 5725

11- Sauder PM 7415

12. Dinberg PM 0265

13 HVH DTY PM 1743

14- Lindberg PM 6999 BERYLLium-

15 " PM 6932 Steel

16- LEPEL PM 0360

PM INVENTORY REPORT

EQUIP-ID-NO / RCC-RE	SKILL / INSTR	FREQ / SK	LOCATION / COMPL-DATE / DUE-DATE	NOMENCLATURE / OWN-ORGN / CUST-ACCT-CDE
005737	00040	30	507 WELD	FURNACE
L02423			4/22/89	MANPWW
MADP			5/22/89	
005737	02300	180	507 WELD	FURNACE
L02424			5/20/89	MANPWW
MADP			11/16/89	
005737	02040	365	507 WELD	FURNACE
L02421			2/17/89	MANPWW
MADP			9/ 3/89	

**** PRESS RETURN TO CONTINUE ****

MAINTANCE FOR OVER HEAD CRANES

DEMBM
73209-1346
2849TH CES

L..LDING# _____ CES#____ DATE_____

MAKE_____ MODEL_____ S/N _____ LOCATION_____

CAPACITY_____ TYPE _____ DRIVE_____ STYLE_____

EQUIPMENT	N/A	OK	FAULTY	
RAIL INTERLOCKS				
RAIL SPLICES				
RAIL SUPPORTS				
RAIL STOPS				
RAIL LIMIT SWITCHES				
TROLLEY TRAIN WHEELS				
TROLLEY TRACK BEARINGS				
TROLLEY WIRES & COLLECTOR				
MAIN HOIST WIRE ROPE				
AUXILIARY HOIST WIRE ROPE				
CONTROL BUTTONS				
IDENTIFICATION CONTROL BUTTONS				
ARNING DEVICE				
IST HOOK SAFETY DEVICE				
XILIARY HOIST HOOK SAFETY DEVICE				
IST LIMIT SWITCH-MAIN				
HOIST LIMIT SWITCH-AUXILIARY				
HOIST SHEAVE WHEEL				
AUXILIARY HOIST SHEAVE WHEEL				
HOIST HOOK				
AUXILIARY HOIST HOOK				
CLEANLINESS				
LUBRICATION				
GUARD RAILS				
CAPACITY SIGNS				
HAND SIGNAL SIGNS				
WARNING SIGNS				
FULL OPERATIONAL FUNCTIONS				

COMMENTS: NOTE ANY POTENTIAL HAZARDS OR MALFUNCTIONS TO SUPERVISOR IMMEDIATELY IN WRITING.

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SIGNATURE

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00507	CE27	900331	Y	3 TON	ELECT.	P&H	BRIDGE	WIRERO	HEAT TREATED AREA
00507	CE28	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	CRATING AREA
00507	CE3	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE4	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	CHAIN	
00507	CE5	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE6	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE7	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE8	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE9	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00509	CE#1	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#2	891231	Y	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	
00509	CE#3	891231	N	500	AIR	INGERSOL RAND	MONORAIL	ROLL C	HOIST IN STORAGE
00509	CE#4	891231	Y	10000	ELECT	DETRIORT	BRIDGE	WIRERO	
00509	CE#5	891231	Y	2000	ELECT	YALE	JIB	LINKCH	UPPER LIMITS NEEDS ADJUST
00509	CE#6	891231	Y	2000	ELECT	YALE	JIB	LINKCH	ADJUST UPPER LIMITS
00510	CE01	890331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE02	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE03	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE04	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE05	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP
00510	CE0A	900331	Y	3 TON	ELECT.	COFFING	BRIDGE	LINKCH	MACHINE SHOP
00510	CE1	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00511	CE#2	890531	Y	1000	ELECTR	P&H	ELECTRIC	WIRERO	
00511	CE#3	890531	Y	1 TON	ELECTR	BUDGET	MONORAIL	LINKCH	HAS 500# ON END PLATE
00511	CE#4	890531	Y	1000	ELECTR	P&H	MONRAIL	WIRERO	
00511	CE#5	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#6	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00511	CE#7	890531	Y	1000	ELECTR	P&H	MONORAIL	WIRERO	
00515	CE#1	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#3	891231	Y	1000	MANUAL	YALE	MONORAIL	LINKCH	
00515	CE#4	891231	Y	1000	ELECT	BUDGIT	MONORAIL	ROLLER	
00534	CE#1	891231	Y	2000	ELECT	YALE	MONORAIL	WIRERO	NEEDS UP LIMITS
00575	CE#1	891231	Y	4000	ELECT	P&H	MONORAIL	WIRERO	NEEDS STOPS EACH END
00576	1	900131	Y	5 TON	ELECT.	DETRIOT	MONORAIL	CABLE	PANDENT WIRE BAD
00577	CE#1	900131	Y	2000	ELECT	YALE	MONORAIL	LINKCH	
00589	1	900131	Y	1 1/2 TON	MANUAL	DETRIORT	MONORAIL	CHAIN	CE#1
00589	2	900131	Y	1 TON	ELECT.	DUFF	MONORAIL	CHAIN	CE#2
00589	3	900131	Y	1 1/2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#3
00589	4	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#4
00589	5	900131	Y	3 TON	ELECT.	COFFING	BRIDGE	CABLE	CE#5
00589	6	900131	Y	2 TON	MANUAL	COFFING	MONORAIL	CHAIN	CE#6
00590	CE#1	891130	N	7000	ELECT	PSH	BRIDGE	WIRERO	WIREROPE BAD
00590	CE#2	891130	Y	7000	ELECT	PSH	BRIDGE	WIRERO	PENDANT WIRE BROKEN AT BOX
00590	CE#3	891130	Y	7000	ELECT	PSH	BRIDGE	WIRERO	TROL SHAFT BENT.BAD WIRES
00590	CE#4	891130	Y	7000	ELECT	P&H	BRIDGE	WIRERO	BAD POWER LINES(HANDCONTRO
00590	CE#5	891130	N	2000	ELECT	WRIGHTWAY	MONO GRANTRY	LINKCH	ELECT MECH PROBLEMS
00590	CE#6	891130	Y	4000	MANUAL	D.ROUND	MONO GRANTRY	LINKCH	
00592	CE1	900228	Y	1000	MANUAL	CYCLONE	MONO	L CHAI	
00592	CE2	900228	Y	1000	MANUAL	COFFING	MONO	L CHAI	

REPORT DATE 04/18/89 CRANES REPORT SORTED BY BUILDING NUMBER MBULD MUXXRPT PGM001 PAGE 4

LIST OF OVERHEAD CRANES

BLDG NO	DES	RECERT DATE	R	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
00505	CE20	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 7
00505	CE21	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE22	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	BLAST RM
00505	CE23	900228	Y	1000	AIR	BUDGET	MONO	L CHAI	BLAST RM
[redacted]									
00505	CE25	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
00505	CE26	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
[redacted]									
00505	CE28	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 6
00505	CE29	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 2
00505	CE30	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 9
00503	CE31	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	LINE 5
00505	CE32	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 6
00505	CE33	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 6
00505	CE34	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE35	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE36	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE7
00505	CE37	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE8
00505	CE38	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE39	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE40	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 8
00505	CE41	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 5
00505	CE42	900228	Y	1000	ELECT	BUDGET	MONORAIL	LINKCH	LINE 9
00505	CE43	900228	Y	1000	ELECT	BUDGET	MONO	L CHAI	
00505	CE44	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE45	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE44	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE47	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
00505	CE48	900228	Y	1000	ELEC	YALE	BRIDGE	L CHAI	
00505	CE49	900228	Y	1000	ELEC	BUDGET	MONO	L CHAI	
[redacted]									
00507	CE10	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE11	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE12	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE13	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP BRAKE BP. 06
00507	CE14	900331	Y	1 TON	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE15	900331	Y	2000	ELECT	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE16	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	MACHINE SHOP AREA
00507	CE17	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NDT RM N.E. CORNER
00507	CE18	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE19	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	ACROSS FROM MENS LATRINE
00507	CE2	900331	Y	2000	ELEC	WRIGHT WAY	BRIDGE	LCHAIN	
00507	CE20	900331	Y	2000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR PAINT BOOTH
00507	CE21	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE22	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	NEAR C-5 STANDS
00507	CE23	900331	Y	1000	ELECT.	WRIGHT WAY	BRIDGE	LINKCH	
00507	CE24	900331	Y	10 TON	ELECT.	P+H	BRIDGE	WIRERO	WELDING SHOP
00507	CE25	900331	Y	4 TON	ELECT.	P+H	BRIDGE	WIRERO	C-5 LANDING GEAR STAND
00507	CE26	900331	Y	5 TON	ELECT.	P+H	BRIDGE	WIRERO	FOUNDRY ROOM

CE - # 25 has had Maintance Problems in the Pass Year.

B

CE

Lifting bracket welded (L&T 9351)

PM # 5737 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY
1. AIR CONDITION				
2 ELECTRIAL			.5 (2)	.5 (3)
3 MECHANIC		(4)	1.5 HR	
4 LUBE (1)	OIL LUBE PUMP 1.5 HR		(5)	2.5 HRS
5 PLUMBING				
6 CERTIFICATION				
7 VIBRATION. ANALYSIS				
8 LASER LEVEL				

(1) (1.5 HR)(12) = 18 HR

2) (.5 HR)(2) = 1 HR

3) (.5 HR)(.5) = .5 HR

4) (1.5 HR)(2) = 3.0 HR

5) (2.5 HR)(1) = 2.5 HR

12 | 25 HRS

2.08 Each Time

12 Time at 2.08 ea

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE	REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHO	MANHRS	C(
T	PROBLEM							
005737	FURNACE	2/ 8/89	/ /	89020237	90441	43E	0.0	0.
	LEAK IN TESTER / TESTER INOP							
005737							1410.5	28210
0								
==								
							1410.5	28210
0								

OVEN IN
507

MW-D
1410.5

(4)

FURNACE 094 4/ 4/89 4/ 4/89 89040083 0 47M 1.5 30.
0 PUMP NEEDS OIL

(8)

FURNACE 094 4/ 4/89 4/14/89 89040085 91011 47E 13.0 260.
) CHCK ELEMENTS ON DEFUSION PUMP

(35)

FURNACE 129 5/ 9/89 / / 89050276 91291 43M 00 0.
0 RUFFING PUMP VALVE NEEDS SEAL

(1)

FURNACE 128 5/ 8/89 5/ 9/89 89050259 0 433 20.0 400.
0 ELECTRICAL PROBLEM

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE		REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MNHRS	C
005737	FURNACE	343	12/ 9/87	12/10/87	87120268	0	43M	6.0	12
00 EPLACE HYDRAUL JACKET ON LOADING CART									
		(1)							
	FURNACE	344	12/10/87	12/10/87	87120327	0	3E	4.0	80
0 FLOAT WON'T MAINTAIN PROPER WATER LEVEL									
		(6)							
	FURNACE	350	12/16/87	12/16/87	8710510	0	43E	1.0	20
0 RUFFING PUMP WON'T START									
		(181)							
	FURNACE	1666	6/15/88	6/17/88	88060504	0	43M	2.0	40
0 JACK ASSEMBLY IS INOPERABLE OR BROKEN									
		(34)							
	FURNACE	200	7/19/88	7/20/88	88070499	0	43P	2.0	4
00 RUNNING HOT / NEEDS FILTER CHANGE /									
		(44)							
	FRNACE	244	9/1/88	9/14/88	88090395	0	43E	3.0	60.
LOOSE BRACKET ON THE ELEMENT									
		(15)							
	FURNACE	262	9/19/88	9/27/88	88090567	0	43E	2.0	40
0 CONTROLER PROBLEM									
		(4)							
	FURNACE	266	9/23/88	9/26/88	88090765	0	43E	2.0	4
00 NOISY MOTOR									
		(6)							
	FURACE	266	9/23/88	9/26/88	88090776	0	43E	3.0	60
0 CHECK OUT MOTOR / NOISEY									
		(102)							
	FURNACE	0031	1/ 3/89	1/12/89	89010009	0	43P	8.0	16
00 AIR VALVES ARE LEAKING									
		(17)							
	FURNACE	020	1/20/89	1/27/89	8910584	0	43M	24.0	480
0 VACUUM BRAKE VAVLE IS STUCK									
		(54)							
	FURNACE	074	3/15/89	3/15/89	89030416	0	43E	3.0	6.
PATCH ELEMENT / CHECK OUT FIRST									
		(20)							
	FURNACE	054	2/23/89	3/30/89	8920755	90612	43E	4.0	80
0 INSTURMENTS NOT READING CORRECTLY....									
		(36)							
	FURNACE	090	3/31/89	3/31/89	89030946	0	43E	12.0	240
0 BURNED OUT ELMENT									

FURNACE [illegible] [illegible]
0 FIX COOLING FAN FOR WATER

(13)

FURNACE 138 5/18/87 5/21/87 87050513 0 44 16.0 320.
0 HIGH HEAD PRESSURE ON COMPRESSOR IS DOWN

(137)

FURNACE 275 10/ 2/87 10/ 2/87 87090937 0 43 0.0 0.
0 CRACKED ELEMENT/NEEDS REPLCE

(1)

TRANSFERED FROM SOP 23 AS REQUESTED BY MIKE JON

FURNACE 274 10/ 1/87 10/ 6/87 87100002 0 43E 16.0 320
00 BROKEN ELEMENT

(9)

FURNACE 303 10/30/87 11/23/87 87100944 73202 43E 160.0 320.
0 WON'T VACUUM DOWN

(10)

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE	REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	ST
005737	FURNACE	310 11/ 6/86	11/ 7/86	86110137	Ø	43E	4.0	8(
ØØ INOP								
	FURNACE	311 11/ 7/86	11/24/86	86110192	Ø	43E	40.0	80(
ØØ FURNACE WON'T PUMP DOWN AND TIMER IS INOP								
	FURNACE	321 11/18/86	11/19/86	86110458	Ø	43	4.0	8(
ØØ OIL CHANGE ON THE RUFFING PUMP								
	FURNACE	323 11/19/86	11/24/86	86110510	Ø	43P	24.0	48(
ØØ DRAIN AND REFILL DEFUSION PUMP								
	FURNACE	339 12/ 5/86	12/ 8/86	86120219	Ø	43E	2.0	4(
ØØ CONTROL PROBLEMS								
	FURNACE	007 1/ 7/87	1/ 8/87	87010108	Ø	43E	12.0	24(
ØØ NEED TO HAVE SYSTEM LEEK CHECKED								
	FURNACE	013 1/13/87	1/14/87	87010287	Ø	43E	14.0	28(
ØØ GAGE READING INCORRECT/BAD THERMO CUPPLER								
	FURNACE	021 1/21/87	1/22/87	87010522	Ø	43E	6.0	12(
ØØ CONTROL INST. INOP								
	FURNACE	034 2/ 3/87	2/ 4/87	87020077	Ø	43E	8.0	16(
ØØ PARTIAL PRES. CONTROL PROBLEM								
REFER TO 87010780								
	FURNACE	050 2/19/87	2/20/87	87020559	Ø	43E	4.0	8(
ØØ PUMP INOP								
ALSO MECHANIC								
	FURNACE	051 2/20/87	2/25/87	8702055	Ø	43P	2.0	40
Ø CHANGE OILE IN DIFUSSION PUMP								
	FURNACE	057 2/26/87	3/ 2/87	7020770	Ø	43E	4.0	80.(
ADJUST BACK FILL PRESSURE CONTROL								
	FURNACE	058 2/27/87	3/ 2/87	8700826	Ø	43P	6.0	120
Ø CHECK FOR AIR LEAK ON ARGON AND NITROGEN SUPPLY								

FURNACE	301	10/28/86	10/28/86	86100742	0	47	1.0	20.
00 BLOWER MOTOR WON'T KICK ON								
FURNACE	302	10/29/86	11/ 6/86	86100755	0	43E	40.0	800.
00 FAN MOTOR ON FURNACE AND FUSE HAVE BLOWN								
ON ANOTHER PORTION OF FURNIC								
FURNACE	303	10/30/86	11/ 5/86	86100819	0	44	35.0	700
00 REWIND THE MOTOR								
FURNACE	310	11/ 6/86	11/ 7/86	86110129	0	23	6.0	120
00 REPLACE BURNT ELEMENT ON ABAR HEAT TREAT								
FURNACE								

ANALYSIS REPORT OF
TROUBLE CALLS FOR SPECIFIC PM NUMBERS

PM.NO	NOMENCLATURE	REQ.DATE	COMP.DATE	PROD.NO	MP.NO	SHOP	MANHRS	ST
								PROBLEM
005737	HEAT TREAT FURNACE	2/11/86	2/13/86	86020327	Ø	43M	2.0	4
00	ACID WASH COOLING SYSTEM							
	FURNACE NO 1	3/20/86	3/20/86	86030596	Ø	43M	1.0	2
00	OIL FROM PUMPS NEEDS TO BE DISPOSED							
	LINDBERG FURNACE	4/11/86	4/14/86	86040333	Ø	43E	4.0	8
00	NEEDS HELIUM LEAK TEST							
	A BAR FURNACE	4/14/86	4/15/86	86040396	Ø	43	2.0	4
00	NEEDS HELIUM TEST							
	A BAR FURNACE	4/14/86	4/18/86	86040398	Ø	23	2.0	4
00	NEEDS 1 INCH COVER MADE							
	FURNACE # 1	7/ 9/86	7/10/86	86070191	Ø	43	12.0	24
00	DIF. PUMP INOP							
	FURNACE	7/16/86	7/16/86	86070414	Ø	43	8.0	16
00	CONTROL PBLM							
	CONTROL PBLM							
	OVEN #1	7/16/86	7/16/86	86070427	Ø	43	800.0	1600
00	WATER PRES. SW ON DIF PUMP INOP							
	FURN # 1	7/24/86	7/28/86	86070645	Ø	43	2.0	4
00	CHECK BLOWER ROTATION							
	OVEN	8/ 5/86	8/ 8/86	86080084	Ø	43E	28.0	56
00	INST. WON'T CONTROL							
	FURNACE	8/19/86	8/21/86	86080515	Ø	43E	8.0	16
00	LOOK AT ELECTRIC CONTROL DOES NOT HOLD TEMPERATU							
	FURNACE	8/28/86	9/ 4/86	86080806	Ø	43P	8.0	16
00	THREE LEAKS IN THE ARGON LINE GOINT TO FURNACE							
	FURNACE	9/ 3/86	9/ 4/86	86090068	Ø	43E	16.0	32
00	ELEMENT SHORT							
	FURNACE	9/12/86	9/12/86	86090402	Ø	47	1.0	2

PM # 5737 DESCRIPTION OVEN

OPERATION	30 DAY	90 DAY	180 DAY	365 DAY	
1. AIR CONDITION					
2 ELECTRICAL			.5 (2)	.5 (3)	
3 MECHANIC		(4)	1.5 HR		
4 LUBE. (1)	OIL LUBS PUMP 1.5 HR		(5)	2.5 HRS.	
5 PLUMBING					
6 CERTIFICATION					
7 VIBRATION - ANALYSIS					
8 LASER LEVEL					

(1) (1.5 HR)(12) = 18 HR

2) (.5 HR)(2) = 1 HR

3) (.5 HR)(.5) = .5 HR

4) (1.5 HR)(2) = 3.0 HR

5) (2.5 HR)(1) = 2.5 HR

12 | 25 HRS

2.08 Each Time.

12 Time at 2.08 %

EQUIPMENT PROFILE

CU7

NAME CHARLES CRAWFORD ALC 00 DATE 6-23-69 RCC MANPWW SHEET 3 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT 1st	2nd	3rd	DOWNTIME PREVENTIVE MAINT. FREQ.	SHIFT	DOWN TIME	UNSCHEDULED BREAKDOWN REPAIR TIME MTBF	MTTR	PERCENT USED FOR OTHER RCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS MIN / MAX	ALTERNATE EQUIPMENT CODE	SOURCE
CE27	OVERHEAD OVER HEAD CRANE	1	1		365		3 DAY	—	—				
CE24	OVERHEAD OVER HEAD CRANE	1	1		365		3 DAYS	—	—				
L89353	LIFTFIX LIFTING FIXTURE	1	1		—	—	—	—	—				STEEL FIXTURE NO MOVING PARTS NO MAINTANCE
L89351	LIFTFIX LIFTING FIXTURE	1	1		—	—	—	—	—				STEEL FIXTURE NO MOVING PARTS NO MAINTANCE
PM 6932	OVEN	1	1		30	2	2.7	25 DAYS	7.3		1 / 20	PM 6999	
PM 6999	OVEN	1	1		30	2	2.7	21 DAYS	7.3 HR		1 / 20	PM 6932	
PM 5737	OVEN	1	1		30	2	2.08	24 DAYS	26 HRS		1 / 20	NEED ALT	
RT01	ROCKWELL ROCKWELL TESTER	1	1		180	1	1.5 HR				1 / 1	RT 02 RT 03	
RT02	ROCKWELL ROCKWELL TESTER	1	1		180	1	1.5 HR				1 / 1	RT 01 RT 03	
RT03	ROCKWELL ROCKWELL TESTER	1	1		180	1	1.5				1 / 1	RT 01 RT 02	
EW21 4191	OVEN	1	1								1 / 6	NONE	
PM 6276	TIG WELDER	12	12		42 DAYS	1 2	1.5 HR				1 / 1	12 MORE WELDERS	← ?

6 Rotor
Ftn (6) Hook Points

LSC-2009-B

EQUIPMENT PROFILE

507

NAME CHARLES CRAWFORD ALC 00 DATE 6-14-89 RCC MAN PWW SHEET 4 OF 4

EQUIPMENT CODE	EQUIPMENT TYPE/DESCRIPTION	QUANTITY PER SHIFT			DOWNTIME					PERCENT USED FOR OTHER HCCs (e.g. TIME NOT AVAILABLE)	ENVELOP UNITS	ALTERNATE EQUIPMENT CODE	SOURCE
					PREVENTIVE MAINT.			UNSCHEDULED BREAKDOWN REPAIR TIME					
		1st	2nd	3rd	FREQ.	SHIFT	DOWN TIME	MTBF	MTTR		MIN / MAX		
RT04	PORT TEST ROCKWELL PORTABLE TESTER	1	1		180	1	45	—	—		1 / 1	PT 01, 02, 03	
PM 1745	OVEN #8	1	1		90	2	1.36	—	—				

FORMAN OVER DIFFERENT SHOPS

MADP EA ELECTRICAL RON UKNAUSDAL (BUILDING 266 DAYS)

MADPS PLUMBING CHEET FORGEE (110 SOT)

MADPD PLOMRING SOS MAK SHELLABARGER (BUILDING SOS)

MADP SIDG TERRY STEED BUILDING 511

MAD PM 274 MECH & LUB. BOYD WALTERS

JOHNNY SMITH.

REPORT DATE 06/02/89 CRANES REPORT SORTED BY RECERTIFICATION DATE MRECERT MUXX08J PGM001 PAGE 2

RECERT DATE	R	BLDG NO	DES	CAPICITY	DRIVE	MAKE	TYPE	STYLE	REMARKS
900531	Y	00265	CE#7	1 TON	MANUAL	WRIGHT	BRIDGE	LINKCH	
900531	Y	00265	CE#8	1000	ELECTR	BUDGET	BRIDGE	ROLLER	
900531	Y	00265	CE#9	1000	MANUAL	YALE	MONARAIL	LINKCH	
900531	Y	00265	CE10	1000	AIR	YALE	MONARAIL	LINKCH	
900531	Y	00265	CE11	1000	ELECTR	ROBIN MYERS	MONARAIL	WIRERO	
900531	Y	00265	CE12	1000	AIR	INGERSOIL RAND	MONARAIL	ROLLER	
890531	N	00265	CE13	1TON 500#BRIDG	ELECT	BUDGET	BRIDGE		NOT IN BLDG MISSING
900531	Y	00265	CE14	2 TON	AIR	THOR	BRIDGE	WIRERO	
900531	Y	00265	CE15	1000	AIR	INGERSOILRAND	BRIDGE	ROLLER	
900531	Y	00265	CE16	1 TON	ELECTR	YALE	BRIDGE	LINKCH	
900531	Y	00265	CE17	1000	ELECTR	BUDGET	BRIDGE	ROLLER	
900531	Y	00265	CE18	1 TON	ELECTR	COFFING	BRIDGE	WIRE R	
900531	N	00265	CE19	2 TON	AIR	THOR		WIRE R	BROKEN,IN DEMBM ON ORDER
900531	Y	00511	CE#1	500	ELEC	BUDG	MONORAIL	ROLLER	
[redacted]							ELECTRIC	WIRERO	
900531		00511		1 TON			MONRAIL	LINKCH	
900531	Y	00511	CE#5	1000	ELECTR	[illegible]	MONRAIL	WIRERO	
900531	Y	00511	CE#6	1000	ELECTR	[illegible]	MONORAIL	WIRERO	
900531	Y	00511	CE#8	1000	ELECTR	[illegible]	MONORAIL	WIRERO	
900531	Y	00511	CE#7	1000	ELECTR	[illegible]	MONORAIL	WIRERO	

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056-5149

THIS IS THE FORM USED TO START PREVENTIVE MAINTENANCE

REPLY TO ATTN OF MADP

SUBJECT G011 Input Policy

TO MA

1. The Analysis Section (MADP), was established to determine the preventive maintenance actions to be complied with and the frequency to be accomplished on all industrial plant equipment within the Directorate of Maintenance.

2. Please list the following information on the item your letter addressed as well as providing MADP with technical data, operator or maintenance manuals, electrical & hydraulic schematics, etc. For the equipment considered.

DATE:

PM NO.: If applicable

LOCATION:

PHONE NO.:

TECH DATA:

SERIAL NO.:

MODEL NO.:

EQUIPMENT MANUFACTURE:

PROD SEC/RCC:

STOCK NO.:

NOUN:

EQUIPMENT PRICE:

CUSTOMER ACCOUNT NO.:

SUPERVISORS NAME:

IN TALKING TO PAT COFFEY HE INFORMED ME THAT THE PLASMA TORCH I WELDING HAS THE ABILITY TO CUT UNDER WATER WITH THE CORRECT CUTTING HEAD. THE ADVANTAGE OF THIS IS THAT THE METAL WILL NOT WARP AND THEY CAN CUT TO TIGHTER TOLERANCES. THIS IN TURN MEANS LOWER MACHINING COST.

TALKING TO PATRICK BEESKEY I FOUND OUT THAT WHEN THEY WENT TO THE GENIC TYPE OF TORCH. THEY COULD ONLY USE 50% OF WHAT CAME IN. THE REST WAS GARBAGE. IT TAKES THEM 1½ HRS TO REPLACE THE UNIT. THE PEOPLE ON THE FLOOR MAINTAIN THEIR OWN TORCHES. NOTE THE PARTS ARE KEPT IN THE MIC. THERE IS A TAG ON ALL THE WELDER STATING THAT PREVENTIVE MAINTANCE IS NO LONGER REQUIRED. IT IS SIGNED BY JIM OBRIAN.
THEY ALSO FELT THAT THE MACHINES NEED TO HAVE THE BACK PANELS REMOVED AND HAVE THE DUST BLOWN OUT. THIS WOULD PROBABLY EXTEND THE LIFE OF THE MACHINE.

ON THE WELDERS THERE IS A TAG THAT SAYS NO PM REQUIRED IT IS DATED 13 OF NOV 1984 AND SIGNED BY JIM OBRIN. I GOT THE FORMS AND PAT IS GOING TO GET PM. PUT BACK ON THEM.

COST OF GENERIC TORCH VERSUS NAME BRAND TORCH

THE TORCHS ARE CHANGED EVERY 6 WEEKS 52 ÷ 6 = 8.7 TIMES/YEAR

THERE ARE 12 WELDING MACHINES (12 MACH) (8.7 TIMES/YR) = 104.4 YR

THE GENERIC TORCH COST 33.62 PER TORCH

NAME BRAND TORCH COST $4.67 PER TORCH

THE NAME BRAND LAST TWICE AS LONG AS THE GENERIC

(33.62)(2 TORCHES) = 67.24 COST OF 2 GENERIC TORCHES

WITH 1 NAME BRAND TORCH

67.27 FOR THE TORCHES + INSULATION COST

(1.5 HRS X 44.05) = 66.08

67.27 GENERIC TORCH

66.08 INSULATION (FOR JUST 1 TORCH

$132.16

$4.67 NAME BRAND TORCH (ITS JUST CANCELS TO OTHER TORCH INST.

$77.49 DIFFERENCE

(77.49)(12 MACH)(8.7) = $8089.43

WITH THE NAME BRAND YOU WOULD ONLY HAVE TO CHANGE THEM ½ AS MUCH AS GENGRIC

(8089.43) ÷ (2) = $4044.72

ONE THIRD OF THE GENERIC TORCHS ON NO GOOD.

(33.62)(66.08) = 100.42. THEY MUST BE INSTALLED TO SEE IF THE ARE GOOD OR NOT

(8.6 TIMES)(12 MACHINES) = 103 TORCHES USED / YEAR

(103) ÷ 3 = 34 BAD TORCHES PER YEAR

(34)(100.42) = $3414.28

4044.72

3414.28

745.00 TOTAL DOLLARS SAVED

FORK LIFTS

THEY ARE ABOUT TO START ROTATING THE FORK LIFTS FROM AREA TO AREA.

NOTE I COULD SEE THIS AS A PROBLEM. THE REASON IS THAT IF YOU HAVE ONE PIECE OF EQUIPMENT TO USE AND YOU ARE THE ONLY ONE RUNNING IT YOU WILL PROBABLY TAKE BETTER CARE OF IT BECAUSE YOU HAVE TO OPERATE IT DAY AFTER DAY.

ON THE OTHER HAND IF THEY ARE ROTATED YOU WILL NOT BE AS CAREFULL WITH IT BECAUSE WHEN IT BREAKS. THERE IS NOT ONE PERSON RESPONSIBLE FOR THE UNIT.

FURANCES

WHEN WE GET A MICAP OR A SURGE WE HAVE TO RUN THE LARGE FURANCE. THERE IS AN ESTIMATE THAT IT COST($500./HR.)! WE HAVE TO RUN THE LARGE ONE BECAUSE WE DO NOT HAVE A GOOD SMALL OVEN. A SMALL OVEN IS A LOT LESS EXPENSIVE TO RUN. AND WOULD BE IDEAL FOR SMALL PARTS.
WE HAVE BEEN WAITING FOR OVER 3 YEARS FOR THE REPACEMENT FOR OUR SMALL BOX OVEN.

RICH SAID THAT THEY ARE UPGRADING THERE INSTRUMENTATION TO DIGTIAL UNITS AND IT IS WORKING OUT VERY WELL.

WELDING

EQUIPMENT

EQUIPMENT AND HAND TOOLS.

TALKING TO PAT - THE FOREMAN.

& THE HAND TOOLS ARE IN VERY POOR SHAPE.

AT ONE TIME THEY HAD 2 SLAG HAMMERS FOR THE COMPLETE SHOP. FOR A TIME THEY TOOK THE GRINDING DISC OUT OF THE LOCAL MIC AND PLACED THEM IN THE TOOL CRIB. THIS MEANT THAT THE WELDER HAD TO LEAVE THE AREA AND WALK UP TO THE TOOL CRIB WHICH IS IN THE CENTER OF THE BUILDING TO GET THE DISC. THIS TURNS IN A 5 TO 10 MINUTE TRIP EACH TIME THEY GO.

AT THE FIRST OF THE YEAR THEY DECIDED TO CHANGE I BACK TO THE OLD SYSTEM. HOW EVER NO ONE BOTHERED TO TELL PAT ABOUT THE CHANGE

NOTE

I THINK THE COMMUNICATION NEED TO BE IMPROVED. THEY DID NOT KNOW THAT IT WENT BACK TO THE OLD SYSTEM UNTILL THEY WENT UP TO THE TOOL CRIB AND WAS TOLD AT THAT TIME THEY WOULD HAVE TO GO TO THE MIC IN THEIR AREA.

THEY ARE NOW IN THE PROCESS OF GETTING UPDATED TOOL KITS.

PORTA POWER

IN WELDING YOU USE A PORTAPOWER TO ALIGN THE PROJET AS YOU ARE WORKING ON IT. TO STRAIGHTEN ECT. AT PRESENT THEY HAVE TO MAKE A TRIP TO THE TOOL CRIB TO BORROW ONE. THEY REALLY NEED ONE IN THE AREA. PAT IS WORKING ON GETTING THE CTK AND ITK UP DATED.

CTK: CENTRAL TOOL KIT

ITK INDIVIDUAL TOOL KIT.

PAT GOT THE SHOP TOGETHER AND ASKED THEM WHAT TOOL THEY NEEDED TO DO A BETTER JOB. PAT HAS THE LIST AND IS WORKING ON GETTING THE CTK & ITKS UP DATED WITH THE EQUIPMENT THEY NEED TO PREFORM THE JOB CORRECTLY

SOME OF THE EQUIPMENT THAT NEEDS TO BE UP DATED

1- 30 TON PRESS.

A. THEY HAVE NO DIE'S TIE DOWN BOLTS OR ANY THING TO DO WITH THE PRESS

2. AIR PRESS

3 METAL IRON WORKER THE PRESENT ONE IS JUST ABOUT SHOT. THEY MAY WANT TO CONSIDER REBUILDING IT.

4. NEED WROUGHT IRON BENDER (FOR BENDING LOOPS RINGS ECT.)

5 METAL ROLLER SUGGESTION HAVE DIPEC LOOK FOR A GOOD USED PEICE OF EQUIPMENT

A WHEN WE NEED A PIECE ROLLED WE HAVE TO TAKE IT OVER TO SHEET METAL TO GET IT ROLLED FOR US. THIS TAKES AN EXCESSIVE AMOUNT OF TIME

6 WE NEED A BETTER PIPE COPING (PIPE NOTCHER) MACHINE.

IF WE HAD THIS EQUIPMENT WE COULD DO THE JOB FASTER, BETTER AND MEET THE COMPLETION DATES.

WE HAVE A SMALL ROD OVEN ON ORDER AND A HAND HELD PLASMA TORCH ORDER.

HOWEVER THEY HAVE NO IDEA WHEN THEY WILL COME IN.

PURCHASE OF EQUIPMENT

TALKING TO RICK SANDALL LEAD HEAT TREATER. THE HAD A LUCFER BOX FURANCE WHICH WENT OUT. THE PUT IN AN ORDER FOR A NEW FURANCE. THE SPEC'S WERE WRITTEN AND IT WENT OUT FOR BID. THE BIDS CAME BACK AND LOW BIDDER GOT THE CONTRACT THE FURANCE CAME IN THEY RAN IT UP TO TEMPERATURE AND IT BUCKLED. THE OVEN ONLY LASTED ONE WEEK. IT WENT BACK TO THE MANUFACTURE. THE CONTRACT THEN WENT TO THE SECOND LOWEST BIDDER. WHEN THE NEXT FURANCE CAME IN THEY LOOKED IT OVER AND IT LOOKED GOOD, BUT WHEN IT WAS RAN UP TO TEMERATURE THEY FOUND OUT THAT IT WAS NOT BUILT TO THE SPECIFICATIONS OF THE CONTRACT EITHER.

NOTE

I THINK THAT THE SPECIFICATIONS SHOULD BE TIGHTEN UP SO THAT THE MANUFACTURE KNOW EXACTLY WHAT THE AIR FORCE WANTS. I ALSO THINK ON LARGE ITEMS SUCH AS THIS THEY NEED TO SPECIFY A TURN KEY SYSTEM. (THE AIR FORCE DOES NOT EXECPT THE ITEM UNTILL IT IS RUNNING.

MANPOWER PROFILE

FLAME SPRAY

NAME CHARLES CRAWFORD ALC 00 DATE 6-10-89 RCC MRNPWW SHEET 1 OF 3

SKILL CODE/LEVEL	JOB DESCRIPTION	QUARTER	QUANTITY AVAILABLE									MANPOWER AVAILABLE (HOURS)									ALTERNATE SKILL CODE/LEVEL
			WORK WEEK			WEEKEND			HOLIDAYS			WORK WEEK			WEEKEND			HOLIDAYS			
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
WF 11F	FLAMESPRAY FLAME SPRAY	1	3									5.6									WF11F
		2	3									5.6									
		3	3									5.6									
		4	3									5.6									
WF10F	FLAMESPRAY FLAME SPRAY	1	2									5.6									WF11F
		2	2									5.6									
		3	2									5.6									
		4	2									5.6									
WF08F	FLAMESPRAY FLAME SPRAY	1	3									5.6									WF10F
		2	3									5.6									
		3	3									5.6									
		4	3									5.6									
WF05F	FLAMESPRAY FLAME SPRAY	1	0									5.6									WF08F
		2	0									5.6									
		3	0									5.6									
		4	1									5.6									
		1																			
		2																			
		3																			
		4																			

ESC-2(XPJ)

MANPOWER PROFILE

HEAT TREAT

NAME CHARLES CRAWFORD ALC OC DATE 6-10-89 RCC MAN PWW SHEET 2 OF 3

SKILL CODE/LEVEL	JOB DESCRIPTION	QUARTER	QUANTITY AVAILABLE									MANPOWER AVAILABLE (HOURS)									ALTERNATE SKILL CODE/LEVEL
			WORK WEEK			WEEKEND			HOLIDAYS			WORK WEEK			WEEKEND			HOLIDAYS			
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
WF&OH	HEAT TREAT	1	2	1								5.6	5.6								WF 08 H
		2	2	1								5.6	5.6								
		3	2	1								5.6	5.6								
		4	2	1								5.6	5.6								
WF08H	HEAT TREAT	1		1									5.6								
		2		1									5.6								
		3		1									5.6								
		4		1									5.6								
		1																			
		2																			
		3																			
		4																			
		1																			
		2																			
		3																			
		4																			
		1																			
		2																			
		3																			
		4																			

LSC-2(RP)1

MANPOWER TABLE

WELDERS

NAME CHARLES CRAWFORD ALC OO DATE 6-12-89 RCC MANPWW SHEET 5 OF 5

SKILL CODE/LEVEL	JOB DESCRIPTION	QUARTER	QUANTITY AVAILABLE									MANPOWER AVAILABLE (HOURS)									ALTERNATE SKILL CODE/LEVEL
			WORK WEEK			WEEKEND			HOLIDAYS			WORK WEEK			WEEKEND			HOLIDAYS			
			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
WL 11	WELDER	1	2	2								5.6	5.6								
		2	2	2								5.6	5.6								
		3	1	2								5.6	5.6								
		4	1	2								5.6	5.6								
WL 10	WELDER	1	12	2								5.6	5.6								WL 11
		2	9	2								5.6	5.6								
		3	7	2								5.6	5.6								
		4	7	2								5.6	5.6								
WL 08	WELDER	1	3									5.6									WL 10
		2	2									5.6									
		3	2									5.6									
		4	2									5.6									
WL 05	WELDER	1	3									5.6									
		2	3									5.6									
		3	3									5.6									
		4	2									5.6									
WL 05	WELDER	1	8									5.6									CONNECT IN
		2	9									5.6									
		3	6									5.6									
		4	8									5.6									

LSC-2(XP)

STAFFING

PAT STATED THAT THEY WERE UNDER STAFFED WITH THE WORK LOAD WHICH IS COMMING IN HE NEEDS BETWEEN 8 TO 10 MORE WELDERS. TO KEEP UP WITH IT. ALSO TWO (2) EQUAL FOREMAN WS-10's TO MANAGE THE CREW'S.

TRAINING

THE GOVERMENT HAS A DEAL WORKED OUT WITH DAVIS COUNTY VOCATIONAL CENTER WHERE THEY WILL TEACH PATS NEW PEOPLE ARC, TIG AND MIG WELDING. THIS IS ADEQUATE FOR NEW WELDERS. WHEN THEY HAVE COMPLETED THIS WE TRAIN THEM TO OUR SYSTEM.

I WOULD LIKE TO BE ABLE TO SEND MY JOURNEYMEN WELDERS (GRADE 10 AND ABOVE) BACK TO LINCOLN FOR ADVANCE TRAINING AND TO KEEP UP WITH THE NEW PROCESSES.

WE NEED MORE TRAINING ON DIMENSIONING TOLERANCING AND BLUE PRINT READING. WE ALSO NEED MORE AND BETTER TRAINING ON THE CNC PLASMA CUTTING MACHINE.

NOTE

PAT IS ONE OF THE TWO PEOPLE WHO IS QUALIFIED TO OPERATE THIS PIECE OF EQUIPMENT. AS SOPHISTICATED AS THIS PIECE OF EQUIPMENT IS YOU REALLY NEED QUALIFIED PEOPE TO OPERATE IT.

PAT FEEL THE REASON WHY EFFECTIVENESS IN DOWN IS.

1 MORAL

2 POOR ATTITUDE

(THE WORKED FOR A DICTATOR FOR THE LAST FOUR OR FIVE YEARS) NOTE DEE SAID THAT IT WAS MORE LIKE 2 YEARS. THEY BROUGHT THE OLD SUPERVISOR UP TO THEIR OFFICE 2 YEARS AGO.

MORAL IS A VERY BIG PROBLEM.
PAT HELD A MEETING WITH HIS PEOPE TO SEE WHAT COULD BE DONE TO CHANGE THIS SITUATION.

1 THEY DISCUSSED MORAL
2 QUALITY
3 ATTITUDE
4 SELF MOTIVATION

HOPEFULLY NEW MANAGEMENT CAN TURN THIS SHOP AROUND.

NOTE

I FEEL AS A PAST WELDER, THAT IF PAT IS GIVEN THE OPPORTUNITY HE CAN TURN THIS GROUP AROUND. ALL THE OPERATORS I MET SEEM TO TO LIKE AND RESPECT HIM. HE KNOWS THEIR PROBLEMS, HE HAS BEEN WORKING IN THIS AREA AS A WELDER FOR MANY YEARS. HE HAS ALL READY ADDRESSED PART OF THEIR PROBLEMS IN THE SPECIAL MEETING HE CALLED. I WOULD STRONGLY SUGGEST THAT HE IS GIVEN THE CHANCE TO TRY AND TURN THIS UNIT AROUND. IF HE CAN YOU WILL HAVE A VERY GOOD WELDING SHOP!

MANPOWER

AFTER TALKING TO GENE WE DECIDED TO ADD THE EXTRA MAN HOURS INTO WELDING. THE REASON IS THAT THEY HAD BY FAR THE LARGEST WORK LOAD.

THE WORK LOAD IS AS FOLLOWS

HEAT TREAT	75% MISTER
	25% MFG.
WELDING	70% MFG
	30% MISTER
FLAME SPRAY	100% MISTER

SHIFT CHANGE

MANPWW FLAME SPRAY UNIT CURTIS WORDEN EXT. 7-3485

DAY SHIFT--0700 - 1530 HRS

KILBURN, ROBERT O		WG-11	SKILL CODE FOR
PHINNEY, CHARLES J.		WG-11	FLAME SPRAY
RAMOS, AMADO R.	(ALT)	WG-11	HEAT TREAT
FONTENOT, LARRY		WG-10	FOUNDARY . WF
PETERSON, BLAKE		WG-10	
WRIGHT, RAYMOND		WG-08	
HENDRICKS, DOLORES		WG-05	

HEAT TREAT

WHITESIDES, LEWIS	WG-10	
SIGMON, GARY W.	WG-08	

FOUNDRY

STEWART, TOM A	WG-10	
POULSEN, RICHARD B	WG-08	NOT IN MODEL

SWING SHIFT--1530 - 2400 HRS

HEAT TREAT

GAMMON, GEORGE D.	WG-10
SANDALL, VERN S.	WG-10

DAYS	12
SWING	02
TOTAL	14

SHIFT CHANGE

MANPWW WELDING UNIT PAT COFFEE EXT. 7-3485

DAY SHIFT 0700 - 1530

AARDEMA, ROBERT B	WL	WG-11
BRADLEY, GLEN S	WL	WG-10
BOULWARE, GARY	WL	WG-10
HARTMANN, DOUGLAS R	WL	WG-10
JOHNSON, REX L.	WL	WG-10
MOORE, STEWART J.	WL	WG-10
PETERSEN, ARNOLD L	WL	WG-10
SILVA, PATRICIO J	WL	WG-10
SITTERUD, PHILLIP	WL	WG-10
SHAUM, MICHAEL W	WL	WG-08
DEMOREST, CRAIG E	WL	WG-~~05~~ 08
LAVINE, TYRONE G	WL	WG-05
MOULTRIE, RANDY	WL	WG-05

DAYS 13
TOTAL 13

SHIFT CHANGE

MANPWW WELDING UNIT PAT BLESKEY EXT. 7-3485

****

SWING SHIFT 1530 - 2400

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BRADLEY, JESSE E.		WL	WG-11
SIMPSON, LAMONT A.	(ALT)	WL	WG-11
JENSEN, BRUCE		WL	WG-10
YOUNG, STEPHEN M	(UNION STEW)	WL	WG-10

SWING	4
TOTAL	4

TOTAL MANPOWER ALLOCATED TO MANPWW

GRADE	FIRST	SECOND	THIRD	FOURTH QUARTERS
WF11	3	3	3	3
WF10	2	2	2	2
WF08	3	3	3	3
WF05	0	0	0	1
WF10H	3	3	3	3
WF08H	1	1	1	1
WL11	4	4	3	3
WL10	14	11	9	9
WL08	3	2	2	2
WL05	3	3	3	2
TOTAL	36	32	29	29

TOTALS FROM DS CLARK MANPW SECTARY

	44	41	35	37
DIFFERENCE	8	9	6	8

ASSIGNED AS WL06'S

BECAUSE OF WORK LOAD WE HAVE DECIDED TO ADD THEM TO WELDING. SEE SOMMARY AT FIRST OF SECTION.

88
APRIL – JUNE

43
38
36
43
36
43
57
43
57
43
10 | 439
43.9

44 People

88
JULY-SEPT

57
43
36
43
36
43
36
43
36
43
36
43
12 | 495
41.25

= 41 PEOPLE

88
OCT-DEC

36
34
34
36
34
36
34
36
34
36
34
13 | 454
34.9

= 35 people

88
JAN-MAR

36
37
36
37
36
37
36
36
36
43
36
39
12 | 445
37.08

= 37 Peop

1	2	3	4
44	41	35	37

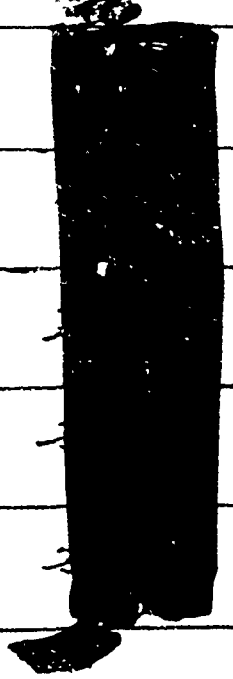
~~TOTALS ARRIVED FROM INFO~~ TOTALS ARRIVED FROM INFO Recived from.

DJ. CLARK.

	MANPOA	MANPWR	WC MANPWE	MANPWW	PU
Oct 8 88	19	4	56	[redacted]	5
	20	4	57		3
Sep 10 88	33 20	6 4	56	35 43	4
	20	4	57	36	3
Aug 27 88	33 20	6 4	56	35 43	4
	20	4	57	36	3
Aug 13 88	33 20	6 4	56	38 43	4
	20	4	57	36	3
Jul 23 88	25	6 4	56	43	4
	20	4	57	36	3
Jul 16 88	25	6 4	57	43	4
	20	4	57	36	3
Jul 2 88	23	6 4	57	35 43	4
	20	4	57	57	3
Jun 18 88	23	6 4	58	35	4
	18	4	57		3
Jun 4 88	25 20	4	58 50	35	4
	18	5	57		
May 21 88	25 20	6 0	58	38	4
	18		57		3
May 7 88	33 20	6 0	60 50	36	4
	24		60		
Apr 23 88	25 20	1	62	34	3
	21		60		2
Apr 9 88	25 20	1	62	38	3
	21		60		2
Feb 1 89		20	49	43	4
		21	56	38	3

1.1 st line - Authorized
2 nd line - Assigned

	MANPWA	MANPWB	MANPWF	MANPWW	PH
MAY 20 89	20	6	58	34	4
	20	4	68	36	3
MAY 5 89	20	4	57	38	4
	20	4	68	36	3
April 22 89	20 19	4 6	64 57	36 39	4
	20	4	66	36	3
April 8 89	20 19	6	63	39	4
	20	4		36	
MAR 25 89	20 19	4 6	58 57	38 39	8
	20	4	122	36	
MAR 11 89	22 22	4 6	56 62	43	7
	21	4	57	36	
B 25 89	22	6	62	36	4
	16	4	54	36	3
FEB 11 89	22	6	62	33	4
	16	4	54	36	3
JAN 28 89	22	6	62	33	4
	20	4	53	36	3
JAN 14 89	22	6	62	33	4
	20	4	53		3
DEC 21 88	20	4	52		
	20	4			
DEC 17 88	20	4	52		
	20	4			
DEC 3 88	20	4	52		
	20	4			
4 19 88	20	4	52		
	20	4			
NOV 5 88	19	4	54		
	16	4			



PERSONAL DATA - PRIVACY ACT OF 1974 (PL93-579) FOR OFFICIAL USE ONLY

ACFCM (2) MANPWW (2) RCC TOTAL LABOR ASSIGNMENT REPORT DATE 08-14-89 A-G0379-G01-D2-M06 PG 524

RCC: MANPWW FOREMAN CODE: W3

<----------CURRENT ASSIGNMENT----------> <----------LOAN STATUS INFORMATION----------

EMPLOYEE NAME	IDENT	MC	DC	SK	DO	SH	SP	STATUS	RCC	DC	SK	DO	FC	SH	SP	EFF DATE	TERM DATE	J-O-H
WHITESIDES LEWIS	529683226	C	11	WF	1	2												
BRADLEY GLEN S	388308348	C	11	WL	1	2												
BRADLEY JESSE E	535366323	C	11	WL	1	2												
SIMPSON A LAMONT	529403008	C	11	WL	1	2												

DUTY CODE TOTALS:
PERSONNEL ASSIGNED 4
PERSONNEL BORROWED 0
PERSONNEL LOANED 0
NET STRENGTH 4

F/C TOTAL: NET STRENGTH 4

RCC TOTAL: NET STRENGTH 32

PERSONAL DATA - PRIVACY ACT OF 1974 (PL93-579) FOR OFFICIAL USE ONLY

ACFCM (2) MANPWW (2) RCC TOTAL LABOR ASSIGNMENT REPORT DATE 05-14-89 A-G037G-G81-D2-MG6 PG 523

RCC: MANPWW FOREMAN CODE: W2

<----------CURRENT ASSIGNMENT----------> <----------LOAN STATUS INFORMATION----------->

EMPLOYEE NAME	IDENT	MC	DC	SK	DO	SH	SP	STATUS	RCC	DC	SK	DO	FC	SH	SP	EFF DATE	TERM DATE	J-O-N
FONTENOT LARRY	529748685	C	11	WF	1	1												
GAMMON GEORGE D	430846678	C	11	WF	1	2												
HENDRICKS DOLORES	528179991	C	11	WF	1	1												
KILBURN ROBERT O	528229687	C	11	WF	1	1												
PETERSON BLAKE	528867427	C	11	WF	1	1												
PHINNEY CHARLES J	529360031	C	11	WF	1	1												
PCULSEN RICHARD B	529845923	C	11	WF	1	1												
RAMOS AMADO R	507547473	C	11	WF	1	1												
SANDALL VERN S	529788851	C	11	WF	1	1												
SIGMON GARY W	518902426	C	11	WF	1	1												
STEWART TOM A	529669437	C	11	WF	1	1												
WRIGHT RAYMOND	528923676	C	11	WF	1	1												

DUTY CODE TOTALS:
PERSONNEL ASSIGNED 12
PERSONNEL BORROWED 0
PERSONNEL LOANED 0
NET STRENGTH 12

F/C TOTAL:
NET STRENGTH 12

RCC: MANPWW FOREMAN CODE: W1

<----------CURRENT ASSIGNMENT----------> <----------LOAN STATUS INFORMATION---------->

EMPLOYEE NAME	IDENT	MC	DC	SK	DO	SH	SP	STATUS	RCC	DC	SK	DO	FC	SH	SP	EFF DATE	TERM DATE	J-O-N
AARDEMA ROBERT B	529708892	C	11	WL	1	1												
COFFEY PATRICK J	528768641	C	11	WL	1	1												
DEMOREST CRAIG E	528963640	C	11	WL	1	1												
HARTMAN DOUGLAS R	528766814	C	11	WL	1	1												
JENSEN BRUCE	529807938	C	11	WL	1	1												
JOHNSON REX L	528561288	C	11	WL	1	1												
LAVINE TYRONE G	529788273	C	11	WL	1	1												
MOORE STEWART J	528960816	C	11	WL	1	1												
MOULTRIE RANDY	529829508	C	11	WL	1	1												
PETERSON ARNOLD L	528600883	C	11	WL	1	1												
SHAUM MICHAEL W	528920784	C	11	WL	1	1												
SILVA PATRICIO JR	528507047	C	11	WL	1	1												
SITTERUD PHILLIP	529788148	C	11	WL	1	1												

DUTY CODE TOTALS:

PERSONNEL ASSIGNED	13
PERSONNEL BORROWED	0
PERSONNEL LOANED	0
NET STRENGTH	13

F/C TOTAL: NET STRENGTH 13

ACFCM (2) MANPWW (2) RCC TOTAL LABOR ASSIGNMENT REPORT DATE 05-14-89 A-G037G-G81-D2-MG8 PG 521

RCC: MANPWW FOREMAN CODE:

EMPLOYEE NAME	IDENT	MC	DC	SK	DO	SH	SP	STATUS	RCC	DC	SK	DO	FC	SH	SP	EFF DATE	TERM DATE	J-O-N
BLESKEY PATRICK M	585113357	C	21		1	2												
HARBERTSON MICHAE	529702300	C	21		1	1												
WORDEN CURTIS L	529524980	C	21		1	1												

DUTY CODE TOTALS:
PERSONNEL ASSIGNED 3
PERSONNEL BORROWED 0
PERSONNEL LOANED 0
NET STRENGTH 3

F/C TOTAL: NET STRENGTH 3

THIS IS A COPY OF THE IN-HOUSE TRAINING
THAT CURTIS WOODEN PUTS HIS PEOPLE THROUGH

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

SECTION III

NAME: STAMP NUMBER:

JOB QUALIFICATIONS STANDARD

NOTE: Use Section IV, Job Qualification Standard Training Summary for comments.

TASK NMBR	TASK SPECIFIC AND STUDY REFERENCES	PR CD	DATE START	DATE COMPLT	CERT DATE	DECERT DATE
000100	RAM UP MOLDS FOR CASTINGS	3c			091188	
000200	POUR CASTINGS OF ALLUMINUM	3c			091188	
000300	POUR CASTINGS OF BRONZE	3c			091188	
000400	POUR CASTINGS OF KIRKSITE	3c			091188	
000500	POUR LEAD ON COPPER ANNODES	3c			091188	
000600	POUR LEAD	3c			091188	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
SECTION III
NAME: STAMP NUMBER:

SECTION IV A. JOB QUALIFICATION STANDARD TRAINING SUMMARY
TRAINING SUMMARY DATA

Supervisor Signature _____ Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
SECTION III
NAME: STAMP NUMBER:

SECTION IV B. JOB QUALIFICATION STANDARD TRAINING SUMMARY

DISQUALIFICATION DATA

Supervisor Signature _____

Employee Signature _____

COMPUTER GENERATED AFLC FORM 797, JUN 87

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

JOB QUALIFICATION STANDARD	OCCUPATIONAL SERIES 3707-11 Flame Spray

SECTION I EMPLOYEE IDENTIFICATION AND SUPERVISOR CERTIFICATION

A. EMPLOYEE IDENTIFICATION

PRINTED NAME (LAST. FIRST, MI)	OFFICE SYMBOL	STAMP NUMBER/ EMPLOYEE NUMBER
	MANPWW	

B. SUPERVISOR CERTIFICATION

PRINTED NAME (LAST, FIRST, MI)	STAMP NUMBER	WRITTEN INITIALS	OFFICE SYMBOL	DATE DDMMYY
			MANPWW	071188

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

A. GENERAL CORE TRAINING (Required of all employees in MA who produce a certified product or service. May include additional courses required by Division.

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-664	PAC ORIENTATION	290788
MA-107	MAINTENANCE ORIENTATION CORE 5	
MA-479	ELECTROSTATIC DISCHARGE AWARENESS (ESD)	230987
MA-737	QP4 ORIENTATION	141288
MA-700	HAZARDOUS COMMUNICATION	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

a. SKILL CORE TRAINING (Required of all employees in the occupational series identified in Section I.)

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-045	BLUEPRINT READING	
MA-116	GENERAL MATH	
MA-226	T.O. FAMILIARIZATION	
MA-132	HAZARDOUS CHEMICAL HANDLING SAFETY	
MA-135	COMMON HAND TOOLS	
MA-137	MECHANICAL MEASURING TOOLS II	
MA-160	GRINDING TECHNOLOGY	
MA-171	MAINTENANCE SHOP SAFETY	
MA-521	CORROSION CONTROL FAMILIARIZATION	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

J. TASK KNOWLEDGE TRAINING (Required to perform tasks assigned to an individual employee. Courses which apply to employee will be checked unless all tasks listed in section III apply)

COURSE NUMBER	COURSE TITLE	APPLIES	DATE COMPLTD
JQT	SELECTION/USE OF TECHNICAL MANUALS	Y	
JQT	READ & INTERPRET BLUEPRINT/DRAWINGS	Y	
JQT	PRACTICE SUPPLY DISCIPLINE	Y	081188
JQT	PRACTICE TOOL CONTROL	Y	081188
JQT	USE OF PRECISION MEASURING EQUIPMENT	Y	081188
JQT	USE & SAFETY OF MONO-RAIL HOIST	Y	081188
JQT	USE & SAFETY OF LIFTING DEVICES	Y	081188
JQT	USE & SAFETY OF VAPOR DEGREASER	Y	081188
JQT	USE & SAFETY OF GRIT BLASTER	Y	081188
JQT	USE & SAFETY OF BELT/DISC SANDER	Y	081188
JQT	USE & SAFETY OF PEDISTAL GRINDER	Y	081188
JQT	USE & SAFETY OF DRILL PRESS	Y	081188
JQT	USE & SAFETY OF ROTATING EQUIPMENT	Y	081188
JQT	USE & SAFETY ARC SPRAY EQUIPMENT	Y	081188
JQT	USE & SAFETY OF OXY-ACETLYNE EQUIPMEN	Y	081188
JQT	USE & SAFETY OF PLASMA SPRAY EQUIPMEN	Y	081188
JQT	USE & SAFETY OF LATHES	Y	081188
JQT	USE & SAFETY OF ARC WELDER	Y	
JQT	KNOWLEDGE OF WORK CONTROL DOCUMENTS	Y	081188
JQT	MATERIAL HANDLING & PROCEDURES	Y	081188
JQT	USE OF PERSONAL SAFETY EQUIPMENT	Y	081188
JQT	THEORY & PRICIPLES OF METALLING	Y	081188
JQT	USE & SAFETY OF PIN SPOT WELDING EQUI		
JQT	USE & SAFETY OF HAND HELD GRINDERS		

Supervisor Signature _____

Employee Signature _____

COMPUTER GENERATED AFLC FORM 797, JUN 87

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

SECTION III

NAME: STAMP NUMBER:

JOB QUALIFICATIONS STANDARD

NOTE: Use Section IV, Job Qualification Standard Training Summary for comments.

TASK NMBR	TASK SPECIFIC AND STUDY REFERENCES	PR CD	DATE START	DATE COMPLT	CERT DATE	DECERT DATE
000010	DEGREASE PARTS	3c			081188	
000020	GRIT BLAST PARTS	3c			081188	
000030	FLAME SPRAY ALUMINUM ALLOYS	3c			081188	
000040	FLAME SPRAY BRONZE ALLOYS	3c			081188	
000050	FLAME SPRAY STAINLESS STEEL ALLOYS	3c			081188	
000060	FLAME SPRAY POWDERED ALLOYS	3c			081188	
000070	FLAME SPRAY COPPER ALLOYS	3c			081188	
000080	FLAME SPRAY TUNGSTON CARBIDE ALLOYS	3c				
000090	FLAME SPRAY CERAMIC MATERIALS	3c				
000100	FLAME SPRAY MOLIBINIUM ALLOYS	3c			081188	
000130	SPOT WELD INSULATION BLANKETS	3c			091188	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
SECTION III
NAME: STAMP NUMBER:

SECTION IV A. JOB QUALIFICATION STANDARD TRAINING SUMMARY

TRAINING SUMMARY DATA

Supervisor Signature _____

Employee Signature _____

COMPUTER GENERATED AFLC FORM 797, JUN 87

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
SECTION III
NAME: STAMP NUMBER:

SECTION IV B. JOB QUALIFICATION STANDARD TRAINING SUMMARY

DISQUALIFICATION DATA

Supervisor Signature _____

Employee Signature _____

COMPUTER GENERATED AFLC FORM 797, JUN 87

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

JOB QUALIFICATION STANDARD	OCCUPATIONAL SERIES 3712-10 Heat Treat

SECTION I EMPLOYEE IDENTIFICATION AND SUPERVISOR CERTIFICATION

A. EMPLOYEE IDENTIFICATION

PRINTED NAME (LAST, FIRST, MI)	OFFICE SYMBOL	STAMP NUMBER/ EMPLOYEE NUMBER
	MANPWW	

B. SUPERVISOR CERTIFICATION

PRINTED NAME (LAST, FIRST, MI)	STAMP NUMBER	WRITTEN INITIALS	OFFICE SYMBOL	DATE DDMMYY
			MANPWW	071188

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

. GENERAL CORE TRAINING (Required of all employees in MA who produce a certified product or service. May include additional courses required by Division.

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-664	PAC ORIENTATION	280788
MA-107	MAINTENANCE ORIENTATION CORE 5	
MA-479	ELECTROSTATIC DISCHARGE AWARENESS (ESD)	141287
MA-737	QP4 ORIENTATION	141288
MA-700	HAZARDOUS COMMUNICATION	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

B. SKILL CORE TRAINING (Required of all employees in the occupational series identified in Section I.)

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-045	BASIC BLUEPRINT READING	
MA-116	GENERAL MATHMATICS	
MA-132	HAZARDOUS CHEMICAL HANDLING SAFETY	
MA-135	COMMON HAND TOOLS	
MA-171	MAINTENANCE SHOP SAFETY PRACTICE	
MA-226	AIR FORCE TECHNICAL ORDERS	
MA-275	WELDING SAFETY REFRESHER TRAINING	060386
MA-520	HARDNESS TESTING	181285

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

a. TASK KNOWLEDGE TRAINING (Required to perform tasks assigned to an individual employee. Courses which apply to employee will be checked unless all tasks listed in section III apply)

COURSE NUMBER	COURSE TITLE	APPLIES	DATE COMPLTD
JQT	SELECTION & USE OF TECH MANUALS	Y	081188
JQT	READ & INTERPRET BLUEPRINTS	Y	081188
JQT	PRACTICE TOOL CONTROL	Y	081188
JQT	MATERIAL HANDLING PROCEDURES	Y	081188
JQT	PRACTICE SHOP SAFETY	Y	081188
JQT	PRACTICE CHEMICAL SAFETY	Y	081188
JQT	KNOWLEDGE OF WORK CONTROL DOCUMENTS	Y	081188
JQT	BRIDGE CRANE USE&SAFETY	Y	081188
JQT	USE & SAFETY OF BAND SAW	Y	081188
JQT	USE & SAFETY OF DRILL PRESS	Y	081188
JQT	USE & SAFETY OF PEDESTAL GRINDER	Y	081188
JQT	USE & SAFETY OF CHEMICAL DEGREASER	Y	081188
JQT	USE & SAFETY OF BELT DISK SANDER	Y	081188
JQT	USE OF ROCKWELL HARDNESS TESTERS	Y	081188
JQT	USE & SAFETY OF LINDBERG VACUUM FURNA	Y	081188
JQT	USE & SAFETY ABAR VACUUM FURNACE	Y	081188
JQT	USE & SAFETY OF CONVECTION FURNACES	Y	081188
JQT	USE & SAFETY OF INDUCTION FURNACES	Y	081188
JQT	USE&SAFETY OF INDOTHERMIC GAS GENERAT	Y	081188
JQT	USE & SAFETY OF MONO-RAIL CRANE	Y	081188
JQT	USE & SAFETY OF PIT FURNACES	Y	081188
JQT	USE OF PERSONAL SAFETY EQUIPMENT	Y	081188
JQT	LIFTING DEVICES USE & SAFETY	Y	081188

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TC THE PRIVACY ACT OF 1974)

SECTION III

NAME: STAMP NUMBER:

JOB QUALIFICATIONS STANDARD
NOTE: Use Section IV, Job Qualification Standard Training Summary for comments.

TASK NMBR	TASK SPECIFIC AND STUDY REFERENCES	PR CD	DATE START	DATE COMPLT	CERT DATE	DECERT DATE
000010	HEAT TREAT STAINLESS STEEL ALLOYS	3c			091188	
000020	HEAT TREAT NICKLE ALLOYS	3c			091188	
000030	HEAT TREAT CARBON STEEL ALLOYS	3c			091188	
000040	HEAT TREAT TOOL STEEL ALLOYS	3c			091188	
000050	HEAT TREAT ALUMINUM ALLOYS	3c			091188	
000060	HEAT TREAT MAGNIZIUM ALLOYS	3c			091188	
000070	HEAT TREAT TITANIUM ALLOYS	3c			091188	
000080	PERFORM ROCKWELL HARDNESS TESTING	3c			091188	

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
SECTION I.
NAME: STAMP NUMBER:

SECTION IV A. JOB QUALIFICATION STANDARD TRAINING SUMMARY

TRAINING SUMMARY DATA

Supervisor
Signature _____

Employee
Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

SECTION III

NAME: STAMP NUMBER:

ECTION IV B. JOB QUALIFICATION STANDARD TRAINING SUMMARY

DISQUALIFICATION DATA

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Supervisor Signature _____

Employee Signature _____

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

REPLY TO ATTN OF MAW

AUG 2 1988

SUBJECT FY89 Approved Resource Control Center (RCC) Rates

TO MAB MAK MAN MAQ MAR MAS

1. The attached list of FY89 RCC rates has been approved by Headquarters AFLC/MAJ and will be used in the G004L system for pricing all temporary work orders.

2. These rates may be used in estimating the cost of new requirements. An actual bill of material (BOM) may be used for direct expense material instead of the rate; this will provide more equitable pricing. Other direct costs for temporary travel duty (TDY) will have to be added to obtain the total cost.

3. Any questions relating to these rates should be directed to Mrs Daphne Gale, MAWFB, extension 72452/3.

THOMAS H. BROWNING
Dep Ch, Resources Management Division
Directorate of Maintenance

1 Atch
FY89 RCC Rates

UNITED STATES AIR FORCE
SEPTEMBER 18, 1947

FY89 APPROVED RATES

RCC	DIRECT LABOR	OPER OVHD	GEN & ADMIN	TOTAL BASE RT	DIR MATRL	TOTAL RATE
MBPAA	$18.93	$12.69	$8.32	$39.94	$10.88	$50.82
MBPAB	$18.78	$13.05	$8.32	$40.15	$11.18	$51.33
MBPAC	$18.97	$12.88	$8.32	$40.17	$11.79	$51.96
MBPAE	$19.51	$12.46	$8.32	$40.29	$0.00	$40.29
MBPAH	$18.93	$13.03	$8.32	$40.28	$14.81	$55.09
MBPAS	$19.11	$13.12	$8.32	$40.55	$0.00	$40.55
MBPBC	$18.05	$13.50	$8.32	$39.87	$3.80	$43.67
MBPDA	$20.75	$14.96	$8.30	$44.01	$1.79	$45.80
MBPDB	$21.40	$16.90	$8.30	$46.60	$1.39	$47.99
MBPDC	$20.82	$10.99	$8.00	$39.81	$1.33	$41.14
MBPMA	$0.00	$5.07	$5.29	$10.36	$5.31	$15.67
MBPMB	$0.00	$8.28	$8.32	$16.60	$5.92	$22.52
MBPMC	$0.00	$22.97	$9.94	$32.91	$0.00	$32.91
MBPSA	$17.43	$10.48	$7.86	$35.77	$0.00	$35.77
MBPSB	$16.64	$11.16	$8.14	$35.94	$0.00	$35.94
MBPSC	$18.47	$10.70	$8.14	$37.31	$0.00	$37.31
MBPSD	$19.97	$14.60	$7.86	$42.43	$0.00	$42.43
MBPSE	$18.18	$18.00	$7.93	$44.11	$0.00	$44.11
MBPSK	$17.16	$10.64	$7.93	$35.73	$0.00	$35.73
MBPSM	$16.99	$10.50	$7.93	$35.42	$0.00	$35.42
MBPSP	$20.43	$10.96	$7.93	$39.32	$0.00	$39.32
MBPSS	$17.99	$11.21	$7.93	$37.13	$0.00	$37.13
MKLAA	$19.73	$11.17	$8.24	$39.14	$2.91	$42.05
MKLBB	$19.26	$27.71	$8.24	$55.21	$0.00	$55.21
MKLCC	$20.65	$9.65	$8.24	$38.54	$3.63	$42.17
MKLDD	$19.38	$47.26	$8.23	$74.87	$0.00	$74.87
MKLEE	$19.59	$12.42	$8.24	$40.25	$6.06	$46.31
MKLFF	$18.90	$15.18	$8.24	$42.32	$8.25	$50.57
MKLGG	$20.49	$26.70	$8.24	$55.43	$0.00	$55.43
MKPAA	$19.20	$20.28	$8.23	$47.71	$2.11	$49.82
MKPAC	$19.30	$21.03	$8.32	$48.65	$8.05	$56.70
MKPCA	$18.85	$28.60	$8.30	$55.75	$13.51	$69.26
MKPCD	$20.40	$48.25	$8.28	$76.93	$10.51	$87.44
MKPCF	$18.81	$26.05	$8.27	$53.13	$18.91	$72.04
MKPDA	$2.16	$7.10	$8.22	$17.48	$3.00	$20.48
MKPDB	$19.44	$5.50	$8.15	$33.09	$0.00	$33.09
MKPEA	$19.00	$12.84	$8.24	$40.08	$10.81	$50.89
MKPEB	$18.60	$12.40	$8.24	$39.24	$3.86	$43.10
MKPGB	$20.91	$6.98	$8.08	$35.97	$0.09	$36.06
MKPIA	$19.63	$26.12	$8.31	$54.06	$9.08	$63.14
MKPIB	$18.84	$13.76	$8.31	$40.91	$26.82	$67.73
MKPIC	$19.79	$10.91	$8.23	$38.93	$6.87	$45.80
MKPKA	$19.40	$43.39	$8.31	$71.10	$17.36	$88.46
MKPKB	$19.79	$10.91	$8.23	$38.93	$6.87	$45.80
MKPKE	$21.01	$38.43	$8.29	$67.73	$19.18	$86.91

MKP[illegible]	$19.40	$43.39	$8.31	$71.10	$17.36	$88.46
MKPND	$20.06	$13.03	$8.32	$41.41	$9.83	$51.24
MKPN[illegible]	$19.49	$12.06	$8.31	$39.86	$25.70	$65.56
MKPNM	$20.23	$16.82	$8.23	$45.28	$27.77	$73.05
MKPPP	$20.06	$30.41	$13.24	$63.71	$0.00	$63.71
MKPRA	$19.49	$12.06	$11.57	$43.12	$31.50	$74.62
MKPRF	$17.30	$11.74	$8.32	$37.36	$9.49	$46.85
MKPRS	$20.23	$16.82	$8.24	$45.29	$8.50	$53.79
MKPRW	$19.24	$15.10	$7.88	$42.22	$21.00	$63.22
MKPWA	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWB	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWC	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWD	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWE	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWF	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MNPBA	$19.25	$17.07	$8.43	$44.75	$15.99	$60.74
MNPBB	$18.58	$14.52	$8.43	$41.53	$19.84	$61.37
MNPCB	$17.59	$17.13	$8.22	$42.94	$29.74	$72.68
MNPCD	$18.38	$14.36	$8.31	$41.05	$9.40	$50.45
MNPCK	$17.76	$16.14	$8.29	$42.19	$13.82	$56.01
MNPCL	$17.76	$15.44	$8.25	$41.45	$38.25	$79.70
MNPCR	$18.01	$18.71	$8.33	$45.05	$3.22	$48.27
MNPCT	$18.23	$15.84	$8.39	$42.46	$14.35	$56.81
MNPGN	$18.51	$16.09	$8.37	$42.97	$0.00	$42.97
MNPGP	$18.53	$16.04	$8.35	$42.92	$0.37	$43.29
MNPGW	$16.90	$22.07	$8.36	$47.33	$0.00	$47.33
MNPME	$19.69	$18.11	$8.29	$46.09	$2.29	$48.38
MNPMG	$21.50	$25.48	$8.19	$55.17	$3.53	$58.70
MNPMK	$19.55	$16.31	$8.36	$44.22	$0.00	$44.22
MNPMN	$18.74	$21.05	$8.41	$48.20	$5.56	$53.76
MNPNA	$18.51	$16.09	$8.37	$42.97	$0.00	$42.97
MNPRA	$17.82	$16.67	$8.28	$42.77	$0.00	$42.77
MNPRB	$18.50	$22.46	$8.26	$49.22	$0.00	$49.22
MNPRC	$17.97	$22.43	$8.24	$48.64	$0.35	$48.99
MNPSA	$17.79	$21.23	$8.42	$47.44	$10.54	$57.98
MNPSE	$17.90	$16.46	$8.43	$42.79	$20.16	$62.95
MNPSQ	$17.65	$15.23	$8.34	$41.22	$10.35	$51.57
MNPWA	$19.59	$14.51	$8.39	$42.49	$0.17	$42.66
MNPWB	$23.11	$19.26	$9.63	$52.00	$0.00	$52.00
MNPWE	$18.43	$15.75	$8.07	$42.25	$8.09	$50.34
MNPWW	$19.13	$16.69	$8.23	$44.05	$3.41	$47.46
MQCCC	$22.36	$14.62	$8.14	$45.12	$0.00	$45.12
MQCMM	$22.31	$21.57	$8.14	$52.02	$0.00	$52.02
MQQVC	$20.72	$11.91	$7.95	$40.58	$0.00	$40.58
MRAEC	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEE	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEH	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEN	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23

MSAAA		$22.41	$11.12	$8.20	$41.73	$0.52	$42.25
MSABB		$23.89	$10.60	$8.20	$42.69	$1.38	$44.07
MSACC		$23.06	$9.96	$8.20	$41.22	$0.00	$41.22
MSADD		$22.44	$10.79	$8.20	$41.43	$1.60	$43.03
MSFAA		$21.36	$12.29	$8.44	$42.09	$0.00	$42.09
MSFBB		$17.95	$11.34	$8.44	$37.73	$0.00	$37.73
MSFCC		$23.03	$11.06	$8.19	$42.28	$0.00	$42.28
MSFDD		$23.03	$11.06	$8.19	$42.28	$0.00	$42.28
MSFEE		$21.36	$12.29	$8.44	$42.09	$0.00	$42.09
MSMAA		$21.69	$12.29	$8.20	$42.18	$1.29	$43.47
MSMBB		$22.44	$10.79	$8.20	$41.43	$1.60	$43.03
MSMCC		$23.03	$11.06	$8.19	$42.28	$0.00	$42.28

REPAIR PROCESS

IN THE WELDING AREA 35 TO 40% OF NEW MANUFACTURING JOBS IS COMPLETED IN THIS SHOP. THEY REQUIRE 3/4 TO 1/2 PLATE. THE SHEAR WILL ONLY GO UP TO 5/16" MATERIAL. TO CUT 3/4 AND 1/2" STOCK WE THEY HAVE TO USE THE CUTTING TORCH. THIS TAKES LONGER TO MAKE THE CUT AND LONGER FOR SET UP & CLEAN UP.

PAT STUDY

THE GOVERMENT PURCHASED SOME BLC DUCTS FOR THE F-4. IT WAS A SOLE SORCE THE NEW ITEMS WERE $300 EACH WE HAD TO CUT THEM APART AND REPAIR THEM BEFORE THEY COULD GO TO SUPPLY, 50% OR BETTER HAD TO BE REPAIRED. BEFORE THEY COULD GO INTO SUPPLY.

PAT STATED THAT: WE HAVE SAVED THE GOVERNMENT LARGE AMOUNTS OF MONEY. BY TAKING REPAIR JOBS AWAY FROM MAJOR COMPANIES. LIKE REPAIR OF THE Z AM CAST CATCHING GUN PARTS ALSO BY SUPPORTING THE RIVET MILL PROJECT. WE MANUFACTURED PARTS AND EQUIPMENT AT A FRACTION OF THE COST BOEING WAS CHARGING THE GOVERNMENT.

IN SUMMARY WE DO A BETTER JOB WITH LESS EQUIPMENT AND AND LESS MONEY THAN THE PRIVET SECTOR. WITH THE RIGHT EQUIPMENT AND OR UP DATED. OR REMANUFACTURED EQUIPMENT WITH A BETTER FLOW OF MATERIALS AND PARTS. WITH LARGER STORAGE AREAS WE CAN DO THE JOB WITH HIGHER QUALITY, QUICKER TURN AROUND AND DO ALL THIS SAFELY

INFORMATION FOR PAT COFFEY WELDING FOREMAN

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

JOB QUALIFICATION STANDARD	OCCUPATIONAL SERIES 4373-10 Foundry

SECTION I EMPLOYEE IDENTIFICATION AND SUPERVISOR CERTIFICATION

A. EMPLOYEE IDENTIFICATION

PRINTED NAME (LAST, FIRST, MI)	OFFICE SYMBOL	STAMP NUMBER/ EMPLOYEE NUMBER
	MANFWW	

B. SUPERVISOR CERTIFICATION

PRINTED NAME (LAST, FIRST, MI)	STAMP NUMBER	WRITTEN INITIALS	OFFICE SYMBOL	DATE DDMMYY
			MANFWW	071188

O. 06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
N E: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

A. GENERAL CORE TRAINING (Required of all employees in MA who produce a certified product or service. May include additional courses required by Division.

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-737	QF4 ORIENTATION	141288
MA-700	HAZARDOUS COMMUNICATION	
MA-664	FAC ORIENTATION	290788
MA-107	MAINTENANCE ORIENTATION CORE 5	
MA-479	ELECTROSTATIC DISCHARGE (ESD) AWARENESS	151288

Supervisor Signature _____

Employee Signature _____

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)

NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

3. SKILL CORE TRAINING (Required of all employees in the occupational series identified in Section I.)

COURSE NUMBER	COURSE TITLE	DATE COMPLETED
MA-045	BLUEPRINT READING	
MA-226	T.O. FAMILIARIZATION	
MA-132	HAZARDOUS CHEMICAL HANDLING SAFETY	
MA-135	COMMON HAND TOOLS	
MA-171	MAINTENANCE SHOP SAFETY	
MA-116	GENERAL MATH	
MA-275	WELDING SAFETY REFRESHER	210886

Supervisor Signature _____

Employee Signature _____

COMPUTER GENERATED AFLC FORM 797, JUN 87

06/06/89 (THIS FORM IS SUBJECT TO THE PRIVACY ACT OF 1974)
NAME: STAMP NUMBER:

SECTION II JOB KNOWLEDGE TRAINING

J. TASK KNOWLEDGE TRAINING (Required to perform tasks assigned to an individual employee. Courses which apply to employee will be checked unless all tasks listed in section III apply)

COURSE NUMBER	COURSE TITLE	APPLIES	DATE COMPLTD
	EQUIPMENT	Y	091188
JQT	DOUALL SAW USE & SAFETY	Y	091188
JQT	PHEUMATIC RAMMERS USE & SAFETY	Y	091188
JQT	SAND MULLER USE & SAFETY	Y	091188
JQT	CHEMICAL DEGREASER USE & SAFETY	Y	091188
JQT	BELT/DISC SANDER USE & SAFETY	Y	091188
JQT	ELECTRIC ANGLE GRINDER USE & SAFETY	Y	091188
JQT	BEADBLAST CABINET USE & SAFETY	Y	091188
JQT	PEDESTAL GRINDER USE & SAFETY	Y	091188
JQT	DRILL PRESS USE & SAFETY	Y	091188
JQT	METAL SHEAR USE & SAFETY	Y	091188
JQT	IRON WORKER USE & SAFETY	Y	091188
JQT	PREHEAT OVEN USE & SAFETY	Y	091188
JQT	FLOOR FURNACE USE & SAFETY	Y	091188
JQT	TILTING FURNACE USE & SAFETY	Y	091188
JQT	PYROMETER USE & SAFETY	Y	091188
JQT	ROLLOVER FIXTURE USE & SAFETY	Y	091188
JQT	BRIDGE CRANE USE & SAFETY	Y	091188
JQT	TECH MANUAL USE & UNDERSTANDING	Y	091188
JQT	READ & INTERPRET BLUEPRINTS	Y	091188
JQT	PRACTICE TOOL CONTROL	Y	091188
JQT	KNOWLEDGE OF WORK CONTROL DOCUMENTS	Y	091188
JQT	LIFTING DEVICES USE & SAFETY	Y	091188
JQT	CHARGING FURNACES WITH METAL	Y	091188
JQT	DEGASING METALS	Y	091188
JQT	SAND PREPARATION	Y	091188
JQT	ADDING ALLOYS TO METALS	Y	091188

Supervisor Signature _____

Employee Signature _____

HEAT TREAT REPAIR PROCESS

I DO NOT KNOW OF ANY ONE WHO DOES HEAT TREAT COMMERCIALLY. FROM WHAT I DO KNOW ABOUT IT THE HEAT TREAT AREA SEEMS TO HAVE A GOOD PROCESS RELATING TO THE SCIENCE OF HEAT TREAT.

NANCY HARTMAN SCHEDULER FOR MANPWW

OUR WORKLOAD FOR THE PAST 4 QUARTERS WAS

1 QUARTER 12,147 HRS

2 QUARTER 17,227 HRS

3 QUARTER 18,423 HRS

4 QUARTER 14,561 HRS

THE WORKLOAD IS DECREASING BECAUSE THERE IS NOT AS MUCH MISTER OR TEMPORY WORK LOAD

THE HRS FOR LAST ~~OVER~~ YEAR WERE

1 QUARTER. I DONT HAVE THAT FIGURE

2 QUARTER 14,234 HRS

3 QUARTER 14,315 HRS

4 QUARTER 15,171 HRS.

THE WORK LOAD FLUCTUATES BECAUSE WE DID A LOT OF C130 FIXTURE WORK. A LOT OF THIS WORK LOAD IS FOR WELDING. THE WORK LOAD FOR HEAT TREAT (BRAKES) WILL BE EVEN HIGHER NEXT QUARTER THIS IS BECAUSE OF NEGOTIATIONS. THEY WILL ALWAYS HAVE PARTS TO DO. HOWEVER FLAME SPRAY AND HEAT TREAT NEED TO HAVE MORE BUBLICITY.

NOTE

YOU MAY WANT TO SET UP TOURS FOR PMK AND MMI THIS WAY THEY COULD SEE WHAT MANPWW COULD DO. DO FIRST HAND. THIS WILL GIVE THEM ANOTHER OPTION ON WHERE THE MAY SEND WORK LOADS.

GREG KAUFFMAN IS THE PLANNER FOR MAOPWW PHONE 3698
HOW IS THE WORK LOAD? THEY NEED MORE WORK
THEY ARE SENDING A LOT OF WORK OUT TO DIFFERENT
BASES. I THINK WE NEED TO LET THEM KNOW
WHAT WE CAN DO.

1. Aluminum items qty 1-6 sent for [illegible] time of .05 hrs will be used.

2. Steel items qyt 1-11 sent for [illegible] time of .05 hrs will be usad.

3. For qtys over six on alum time will be .05 [illegible]

4. For qtys over 12 on steel time will be .12 hr [illegible]

PERCENT OF OTHER WORKLOAD FOR RCC

(80/20 LISTING)
RCCs

JOB TYPES	MANPGP	MANPGW	MANPNA	MANPRA	MANPRB	MANPRC	MANPWW
TEMPORARY	13.72	2.35	15.11	1.40	1.05	1.35	1.05
MANUFACTURE	0.00	0.00	0.92	0.00	4.51	2.74	12.50
PDM	1.00	0.00	22.79	0.04	0.07	4.39	22.44
ARMAMENT	0.00	0.23	1.26	0.04	0.03	4.18	2.38
HYDRAULICS	0.00	0.05	7.00	1.11	2.67	3.88	13.99
MISTER	*85.28*	*11.37*	*52.92*	*97.41*	*91.69*	*85.46*	*47.69*

NANCY HARTMAN SCHEDULER FOR MANPOWER

OUR WORKLOAD FOR THE PAST 4 QUARTERS WAS

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THE WORKLOAD IS DECREASING BECAUSE THERE IS NOT AS MUCH MISTER OR TEMPORY WORK LOAD

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NOTE

YOU MAY WANT TO SET UP TOURS FOR PMK AND MMI THIS WAY THEY COULD SEE WHAT MANPOWER COULD DO OF FIRST HAND. THIS WILL GIVE THEM ANOTHER OPTION ON WHERE THE MAY SEND WORK LOADS. OR HAVE MANE PROCESS ENGINEERS GO THROUGH FLAME SPRAY HEAT TREAT ECT TO ~~DO~~ SHOW THEM WHAT THEY CAN DO. THIS WOULD HELP THE PROCESS ENGINEER ~~AS~~ AS HE WOULD ~~A~~ HAVE AN OPTION TO CHOOSE FROM FOR THE REPAIR PROCESS. THEY CAN THEN APPROACH THE MMI PERSONAL FOR SPECIFIC APPLICATIONS.

GREG KAUFFMAN IS THE PLANNER FOR MAOFWW PHONE 3698
HOW IS THE WORK LOAD? THEY NEED MORE WORK
THEY ARE SENDING A LOT OF WORK OUT TO DIFFERENT
BASES. I THINK WE NEED TO LET THEM KNOW
WHAT WE CAN DO.
THERE IS A LACK OF COMMINUTION. WHEN PEOPLE
MOVE ON TO A NEW POSITION THE DO NOT EXPAIN ALL
THE DETAILS OF THE JOB TO THEIR PREDECESSOR.
THERE WAS BEEN A LOT OF SUGGESTIONS TO HAVE
FLAME SPRAY A PART THEN HAVE THE MACHINE
SHOP REMACHINE IT. THERE IS A LOT OF PARTS
THAT ARE PROBABLY BEING SCRAPED BECAUSE
PEOPLE DO NOT UNDERSTAND THE CAPABILITIES OF
FLAME SPRAY OR EVEN KNOW THAT IT EXIST.
IF THE DID UNDERSTAND THE WOULD ROUTE A LOT
MORE OF THEIR PARTS THAT FLAME SPRAY REPAIRABLE
TO FLAME SPRAY AND NOT TO SALVAGE. AT PRESENT
ALL OF THAT TYPE OF MATERIAL (PARTS) ARE BEING
SENT TO SALVAGE. PERHAPS THE SHOULD FORM
A TEAM OF PEOPLE. TAKE 1 PERSON FROM EACH
SHOP AND SENT THEM DOWN TO LOOK OVER THE
CONDEMNED PARTS. AND READ THE TAGS THAT SAYS
WHY THEY ARE CONDEMNED TO SEE IF THEY
CAN COME UP WITH A REPAIR PROCESS. ESPECIALLY
ON HIGH VOLUME ITEMS
I WOULD SUGGEST A PAT TEAM TO LOOK INTO
THIS.

MATERIAL FLOW

PAT STATED THAT IT COULD BE IMPROVED. WE DON'T ALWAYS GET A COMPLETE SHIPMENT OF MATERIALS. WHEN IT IS SHIPPED SOMETIMES IT IS SENT TO THE WRONG LOCATION. THE SAME THING WITH REPAIR WORK THAT WE DO. THE FLOW DAYS CAN BE EXCESSIVE. IN THIS # SHOP 65 TO 70% OF THE WORK LOAD IS MANUFACTURING AND THE REST IS REPAIR.

MATERIAL HANDLING

CURTIS SAYS THAT HE HAS A PROBLEM GETTING ITEMS MOVED IN A TIMELY MANNER. PERHAPS TRANSPORTATION SHOULD HAVE A SPECIFIC ROUTE AND TIME SCHEDULE TO FOLLOW. THIS WOULD ALLOW THE PARTS TO BE MOVED IN A TIMELY MANNER. AT PRESENT THEY HAVE TO CALL TRANSPORTATION TO GET THESE PARTS PICKED UP AND MOVED. THEY ARE NOT ALWAYS PUNCTUAL. SOME TIMES THEY SET PARTS OUT FOR THEM AND AT THE END OF THE SHIFT THEY ARE STILL THERE.

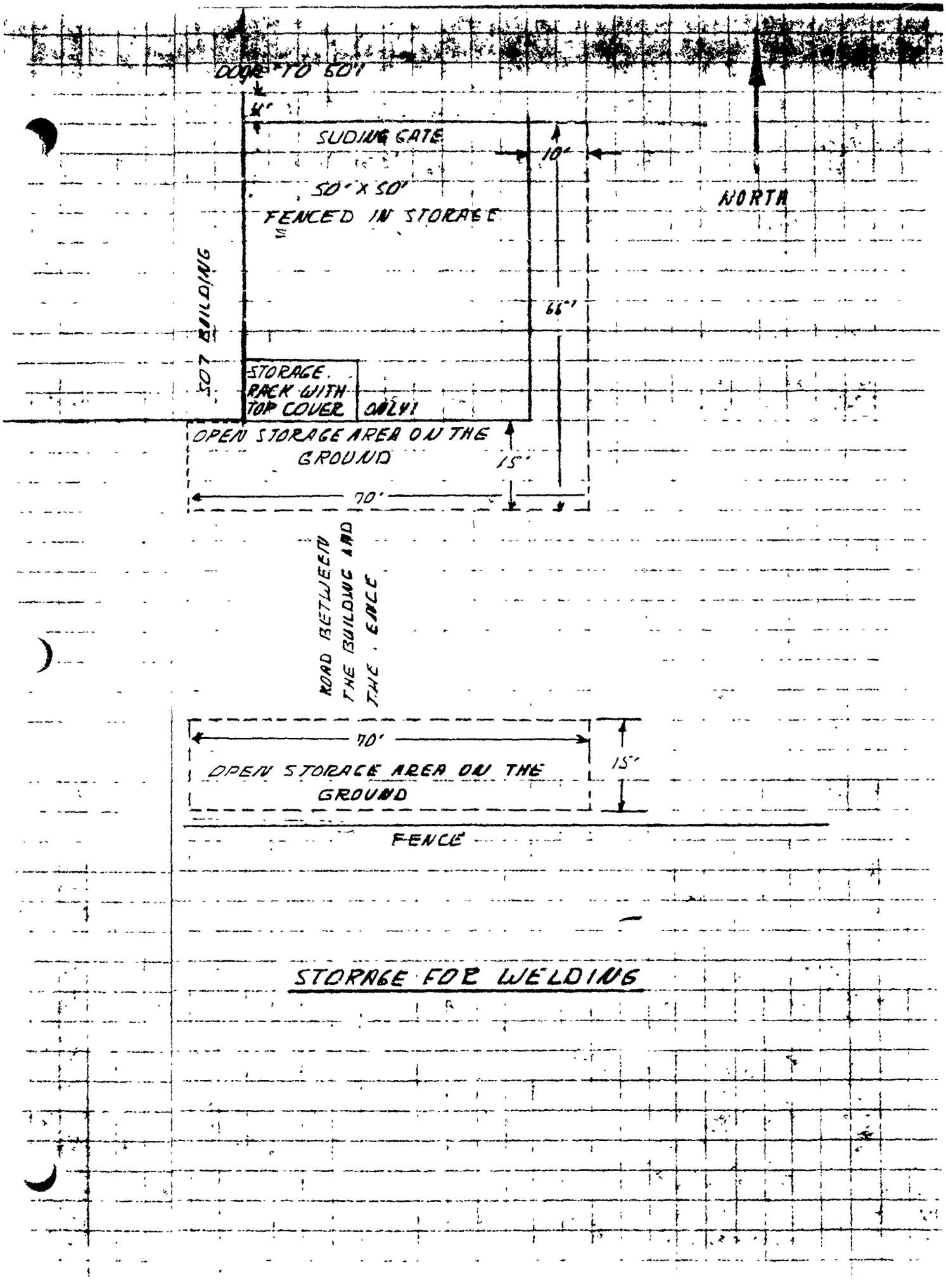
NOTE

I FEEL THAT THIS ITEM IS SOMETHING THAT SHOULD BE LOOKED INTO.

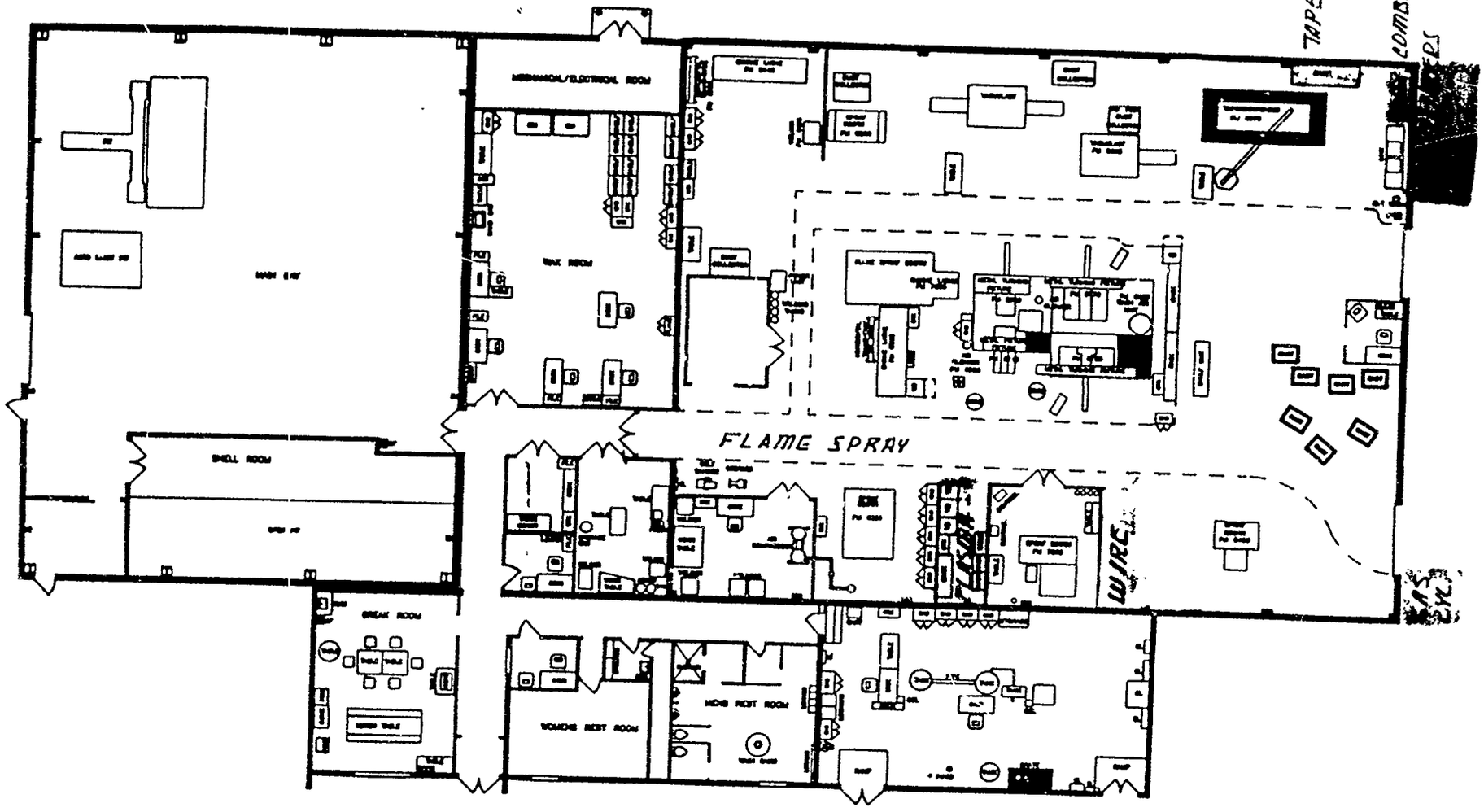
CURTIS SAID MADT WAS OVER TRASPORTATION.

33% OF THE TIME IT IS THE NEXT DAY

66% OF THE TIME ITS WITH IN A FEW HOURS

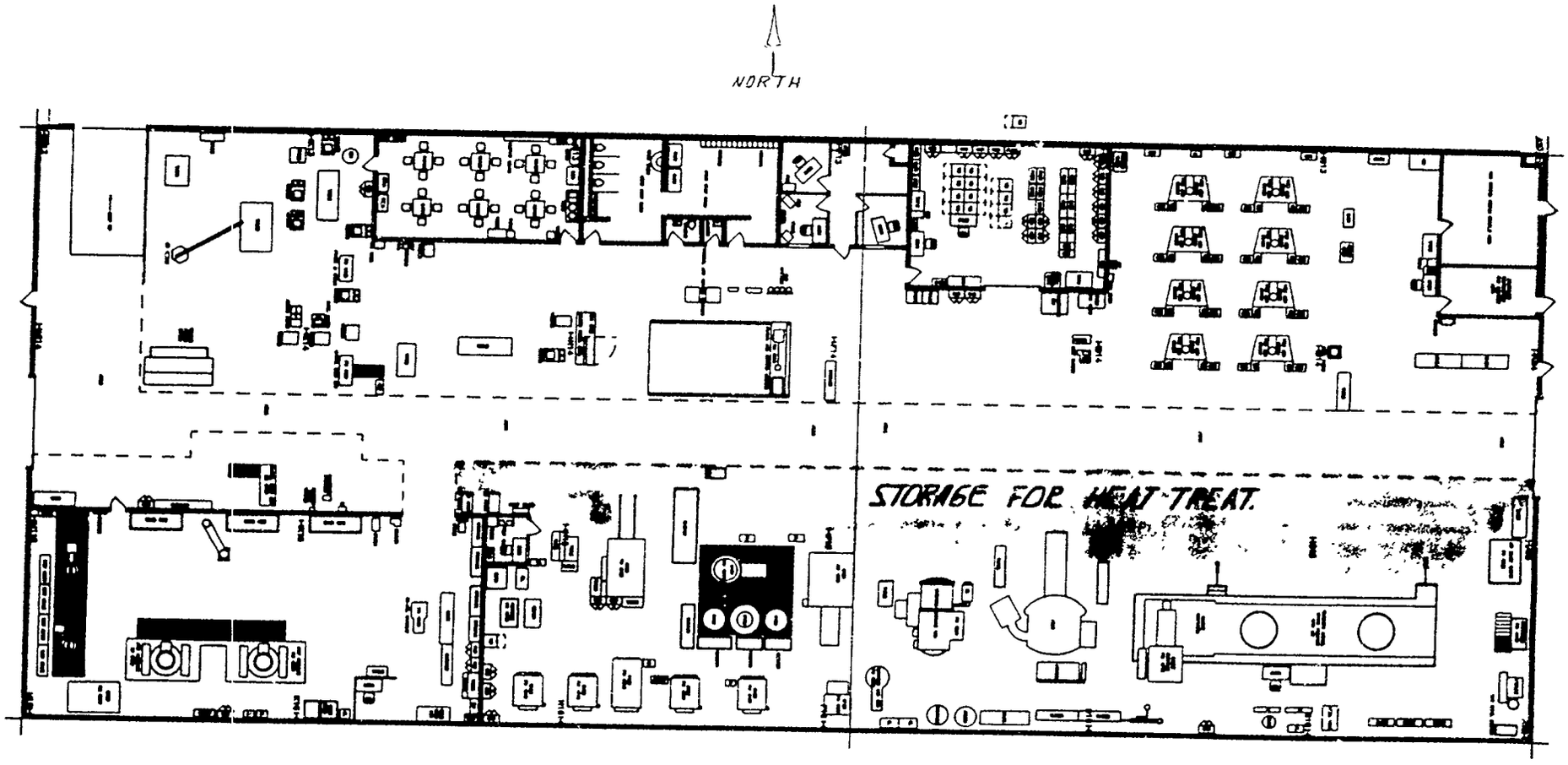


STORAGE FOR WELDING



N

BUILDING 511


NORTH
STORAGE FOR HEAT TREAT.

STORAGE FOR WELDING

IN TALKING TO PAT COFFEY HE INFORMED ME THAT A BIGGER ENCLOSED STORAGE AREA HAS BEEN REQUESTED. THE REQUEST WAS PUT IN A YEAR AGO AND THEY STILL DONT KNOW IF OR WHEN THEY ~~FA~~ MIGHT GET IT.

NOTE

WHY DOES IT TAKE SO LONG TO GET AN ANSWER ON A PURCHASE. I THINK THAT THERE SHOULD BE A TIME LIMIT ON THE LENGTH OF TIME TO RESEARCH OUT A PURCHASE. PROBLEM. ECT AND THEN TO GIVE A RESPONSE TO THE ORIGINATOR.

THE STORAGE PROBLEM GOES ~~HAND~~ IN HAND WITH THE MATERIAL FLOW. WHEN THE ~~W~~ MATERIAL IS NOT AVAILABLE TO COMPLETE THE JOBS THEY HAVE DIFFERENT JOBS IN DIFFERENT STAGES OF COMPLETION SETTING ALL OVER THE SHOP WAITING FOR THE MATERIAL TO COMPLETE THE JOB.

IF WE HAD THIS LARGE COVERED STORAGE AREA IT WOULD SOLVE A MAJOR PROBLEM.

THE RAW MATERIAL STORED OUTSIDE OF THE BUILDING GETS A VERY HEAVY COAT OF RUST AND OXIDES ON THEM. TAIS INTURN REDUCES THE THE QUALITY OF THE MANUFACTURED PRODUCT AND ALSO INCRESS THE TIME TO MAKE THE ~~W~~ PRODUCT.

NOTE

I AGREE WITH PAT FOR NEED A COVERED STORAGE AREA TO PUT RAW MATERIAL IN AND WORK IN PROCESS PROJECTS THAT ARE ON HOLD BECAUSE OF MATERIAL SORTAGE. THIS WOULD FREE UP EXPENSIVE FLOOR SPACE.

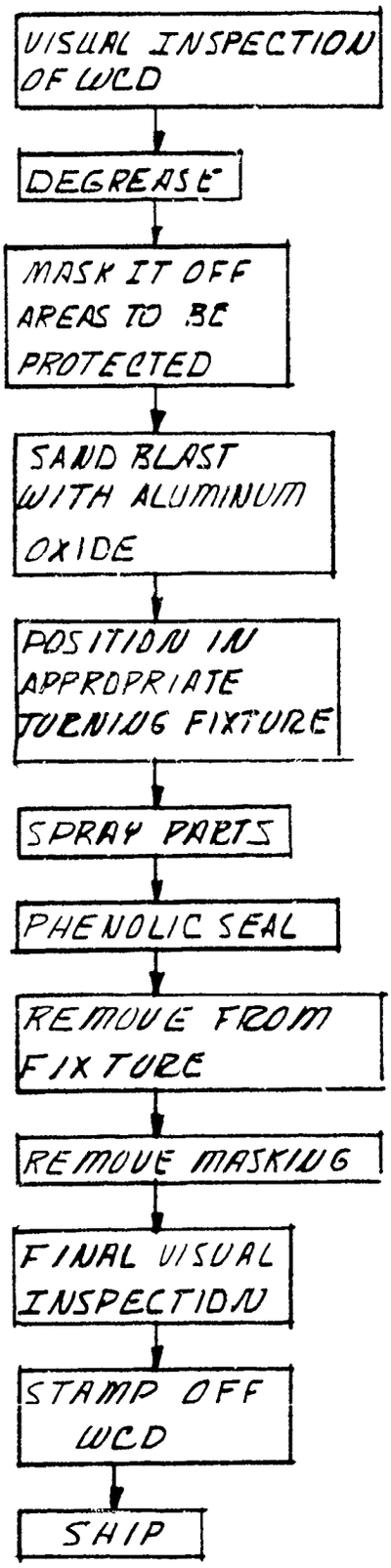
THIS MEANS THAT EVERY THING THAT IS MADE FORM THE RAW STOCK STORED OUT SIDE MUST BE COMPLETLY SANDBLASTED BEFORE PAINTING.

THIS MUST BE A COSTLY OPERATION.

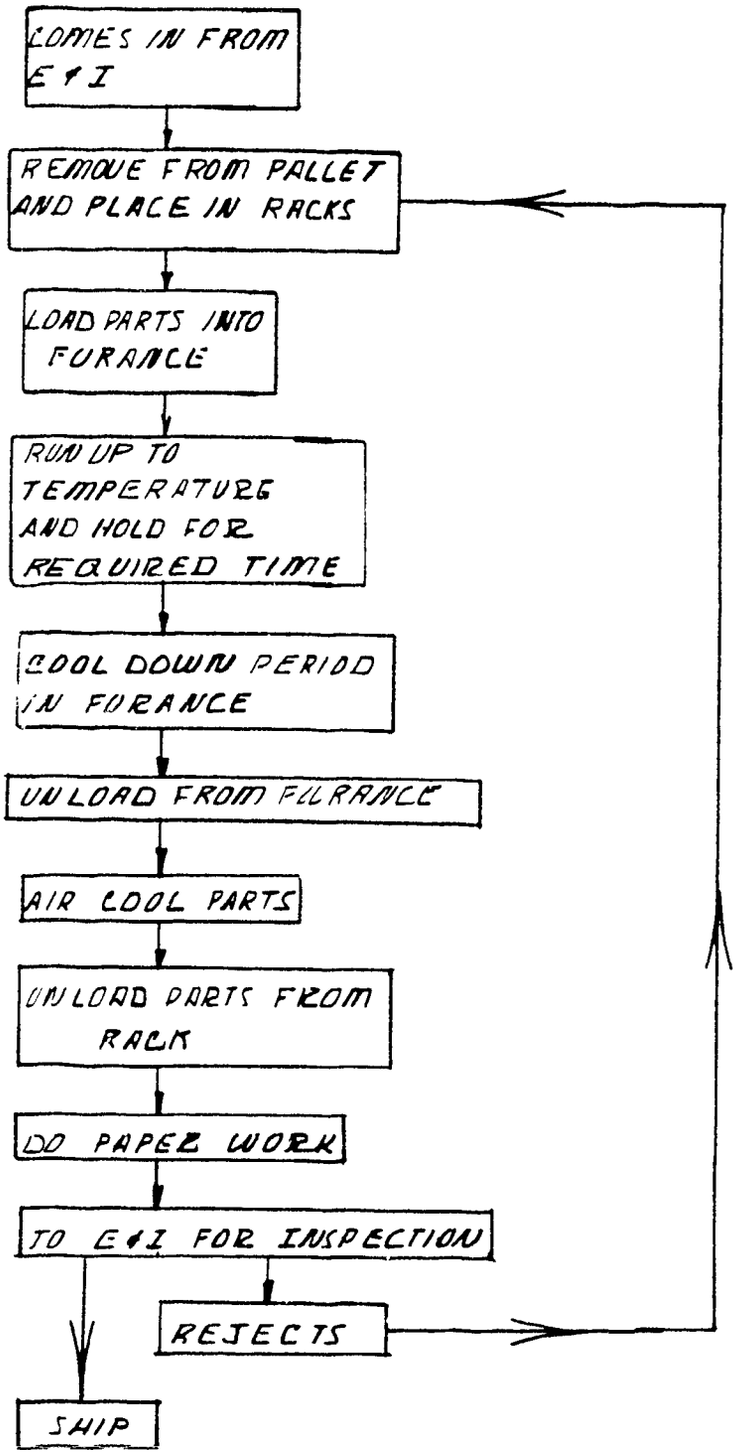
THE STORAGE AREA FOR HEAT TREAT WOULD BE ADEQUATE IF WELDING HAD SOME PLACE ELSE TO PUT THERE RAW MATERIALS.

CURTIS SAYS THAT THE STORAGE FOR FLAME SPRAY IS ADEQUATE.

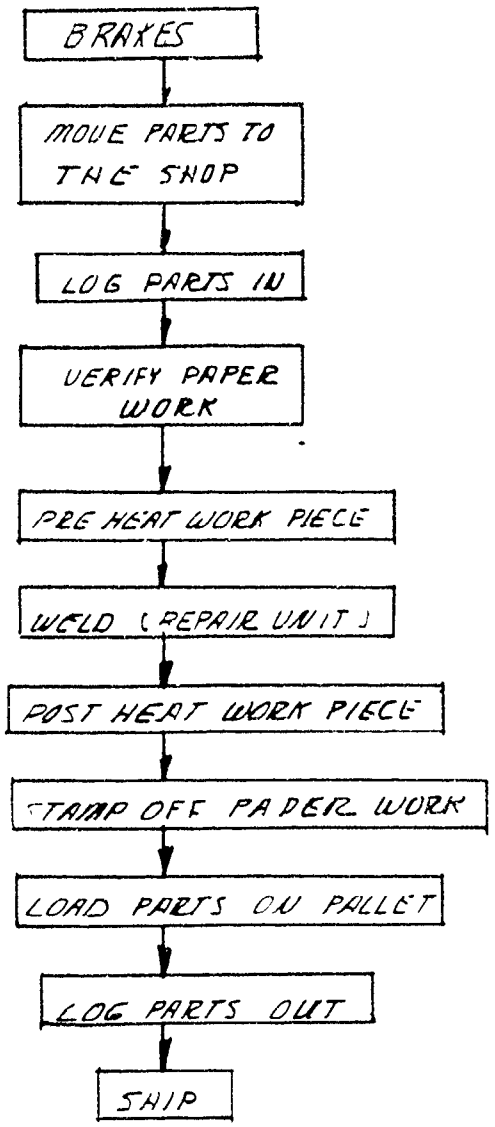
FLAME SPRAY STRUTS



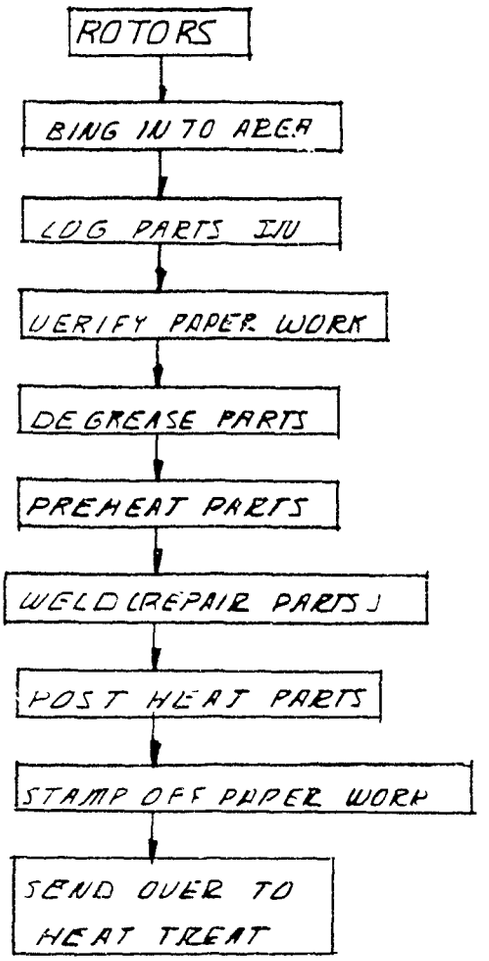
HEAT TREAT
BRAKES



WELDING


BRAKES
MOVE PARTS TO THE SHOP
LOG PARTS IN
VERIFY PAPER WORK
PRE HEAT WORK PIECE
WELD (REPAIR UNIT)
POST HEAT WORK PIECE
STAMP OFF PAPER WORK
LOAD PARTS ON PALLET
LOG PARTS OUT
SHIP

WELDING


ROTORS
BING IN TO AREA
LOG PARTS IN
VERIFY PAPER WORK
DEGREASE PARTS
PREHEAT PARTS
WELD (REPAIR PARTS)
POST HEAT PARTS
STAMP OFF PAPER WORK
SEND OVER TO HEAT TREAT

MANPWW

RCC EARNED HOURS FOR MNPRC...OCT 88 THRU JAN 89

	PROD NO.	NOUN		RCC DPEH	RCC DPEH %	CUMM % EARNED HR
613	M7900K	1560P109415F		0.24	0.0000	0.9971
614	M7921K	1560P1606530-73		0.24	0.0000	0.9971
615	M8251K	5315005214827		0.24	0.0000	0.9971
616	M9593K	5340ND0303956BF		0.24	0.0000	0.9971
617	M9694K	4710010500192BF		0.24	0.0000	0.9971
618	M9894K	4710001538109		0.24	0.0000	0.9971
619	M9899K	4710001538102BF		0.24	0.0000	0.9971
620	M4177K	1560P880505F		0.21	0.0000	0.9971
621	M4184K	1560P880503F		0.21	0.0000	0.9971
622	M4205K	1560P881559F		0.21	0.0000	0.9971
623	M5804K	4710001443560		0.21	0.0000	0.9971
624	M6264K			0.21	0.0000	0.9971
625	M6281K	1560004319668BF		0.21	0.0000	0.9971
626	M6922K	4710002233951BF		0.21	0.0000	0.9971
627	M7199K	1560P111330F		0.21	0.0000	0.9971
628	M7216K	4710001085576		0.21	0.0000	0.9971
629	M7828K	1560P1177CPF		0.21	0.0000	0.9971
630	M7847K	1560P111570F		0.21	0.0000	0.9971
631	M7859K	1560P103001F		0.21	0.0000	0.9971
632	M7893K	4710ND030441GBF		0.21	0.0000	0.9971
633	M8677K	1560001636161BF		0.21	0.0000	0.9971
634	M9333K	1560010297256BF		0.21	0.0000	0.9971
635	M9750K	1560ND029906GBF		0.21	0.0000	0.9971
636	T49200	3120P0000000000		0.21	0.0000	0.9971
637	M0013K	1560P112163F		0.20	0.0000	0.9971
638	M6649K	1560ND026768GBF		0.20	0.0000	0.9971
639	M6915K			0.20	0.0000	0.9971
640	15749A	1630002272000	F5 BRK	0.19	0.0000	0.9971
641	M5387K	1560001371370BF		0.18	0.0000	0.9971
642	M5798K			0.18	0.0000	0.9971
643	M5910K	5325ND029878GAH		0.18	0.0000	0.9971
644	M4752K	5315005214839		0.16	0.0000	0.9971
645	M7931K	1560ND029692GBF		0.16	0.0000	0.9971
646	M8576K	5365P433R207H01		0.15	0.0000	0.9971
647	M5635K	1560P16B6530-43		0.14	0.0000	0.9971
648	M5186K	1560ND026920GBF		0.10	0.0000	0.9971
649	M6647K	1560ND026768GBF		0.10	0.0000	0.9971
650	M6757K	1560ND026767GBF		0.10	0.0000	0.9971
651	M4069K	1430P879220F		0.08	0.0000	0.9971
652	M3748K			0.06	0.0000	0.9971
653	T7664Q	1620010667227		0.05	0.0000	0.9971
				30,723.65		

OGDEN 80/20 SORTED BY MANPRC

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620001398474	17143A		15	38	10	0.0197	8	0.0204	21	0.0085	5	0.0341	5	0.0414	1	0.0400	54	0.0043	5134.89	0.025334
1620001099287	16837A		30	87	17	0.0129	15	0.0124	6	0.0176	8	0.0308	1	0.0722	2	0.0356	29	0.0100	5200.35	0.050992
1620001399473	17142A		15	28	12	0.0161	9	0.0162	23	0.0084	9	0.0290	6	0.0321	3	0.0326	55	0.0043	4241.5	0.071918
1620001099288	16836A		.	11	15	0.0131	13	0.0137	9	0.0161	10	0.0279	2	0.0695	4	0.0296	24	0.0107	4870.74	0.095948
1005000566753	74805A		.	2	.	.	.	.	71	0.0033	.	.	88	0.0017	5	0.0278	14	0.0173	1230.31	0.102018
1630004927144	15468A	S	5	.	2	0.0415	1	0.0557	4	0.0288	4	0.0391	.	.	6	0.0242	.	.	6348.32	0.133339
1630011826287	90101A		5	16	3	0.0403	4	0.0400	37	0.0058	1	0.0532	.	.	7	0.0215	.	.	5902.71	0.162461
1620010204873	17565A		10	.	23	0.0099	10	0.0161	24	0.0083	6	0.0338	3	0.0551	8	0.0197	27	0.0102	4318.94	0.183769
1620009485068	16915A		.	.	116	0.0019	20	0.0106	15	0.0108	45	0.0059	7	0.0302	9	0.0190	12	0.0190	2315.59	0.195194
1620004427877	74527A		.	2	39	0.0062	14	0.0134	47	0.0049	2	0.0494	26	0.0108	10	0.0189	51	0.0047	3785.10	0.213868
000F0004E	00124B		.	.	70	0.0039	.	.	2	0.0775	227	0.0001	.	.	11	0.0188	1	0.0858	3744.75	0.232344
1005011003892	69324A		.	.	.	.	147	0.0013	76	0.0028	172	0.0004	.	.	12	0.0172	.	.	645.20	0.235527
1620010597842	69354A		12	54	25	0.0088	12	0.0140	33	0.0069	21	0.0124	34	0.0078	13	0.0164	19	0.0137	2313.41	0.246941
1620002468005	74524A		.	9	37	0.0063	22	0.0097	17	0.0095	12	0.0230	.	.	14	0.0157	.	.	2234.99	0.257967
1630012286043	69595A	S	.	71	16	0.0130	7	0.0207	73	0.0030	23	0.0113	.	.	15	0.0146	.	.	2127.89	0.268466
00RF0004C	00126B		.	.	74	0.0035	.	.	1	0.0782	.	.	.	.	16	0.0146	2	0.0836	3575.29	0.286105
1620010054191	17575A		.	37	5	0.0393	48	0.0058	26	0.0081	14	0.0197	8	0.0285	17	0.0132	87	0.0017	3744.30	0.304578
1620010248844	16019A		.	20	51	0.0052	46	0.0064	39	0.0055	40	0.0063	10	0.0237	18	0.0130	191	0.0003	1633.71	0.312638
1620007419178	17357A		.	.	71	0.0036	26	0.0095	27	0.0076	.	.	44	0.0051	19	0.0128	.	.	1066.71	0.317901
1620010054192	17576A		21	3	.	.	29	0.0088	41	0.0054	17	0.0190	15	0.0191	20	0.1220	.	.	5315.04	0.344124
1620011951141	25737A		.	.	33	0.0069	126	0.0017	80	0.0027	71	0.0028	9	0.0253	21	0.0119	.	.	1342.79	0.350749
1620008961203	19844A		.	.	87	0.0028	49	0.0058	51	0.0046	37	0.0066	22	0.0131	22	0.0118	.	.	1275.75	0.357043
1630011326400	62927A	S	5	241	9	0.0238	3	0.0400	13	0.0123	11	0.0233	.	.	23	0.0115	.	.	3748.80	0.375539
1620001791425	74692A		.	.	18	0.0121	56	0.0049	49	0.0047	44	0.0059	38	0.0065	24	0.0106	69	0.0027	1474.91	0.382815
1620006052768	69855A	S	41	63	237	0.0003	177	0.0008	89	0.0024	52	0.0048	.	.	25	0.0100	.	.	606.15	0.385806
1620002990278	17478A		.	9	55	0.0049	17	0.0115	55	0.0045	29	0.0079	19	0.0152	26	0.0099	.	.	1559.86	0.393502
1620006793440	17239A		.	2	106	0.0021	53	0.0051	50	0.0046	41	0.0062	23	0.0125	27	0.0096	.	.	1131.17	0.399083
1620006518221	17451A		.	1	139	0.0014	66	0.0040	68	0.0036	62	0.0037	37	0.0067	28	0.0095	.	.	828.29	0.403169
1005008566885	26176A		.	.	.	.	.	.	.	.	.	.	.	.	29	0.0092	.	.	282.66	0.404564
1620009118301	17327A		76	99	122	0.0017	51	0.0055	61	0.0042	33	0.0073	27	0.0104	30	0.0087	.	.	1100.24	0.409992
1630009009739	15139A	S	39	104	47	0.0057	32	0.0083	147	0.0011	53	0.0048	.	.	31	0.0087	.	.	969.85	0.414777
1620005459439	17354A		.	.	94	0.0024	58	0.0048	100	0.0022	101	0.0013	24	0.0113	32	0.0084	.	.	806.91	0.418758
1630004463778	15485A		.	25	63	0.0042	33	0.0083	59	0.0042	100	0.0014	.	.	33	0.0080	.	.	803.51	0.422722
1620001877445	74521A		.	7	44	0.0060	21	0.0104	34	0.0066	13	0.0200	.	.	34	0.0079	46	0.0054	1894.49	0.432069
1620011671000	26338A		.	.	59	0.0043	36	0.0074	83	0.0026	.	.	48	0.0041	35	0.0075	.	.	746.54	0.435752
1620007117771	17348A		.	.	78	0.0033	57	0.0049	118	0.0016	.	.	59	0.0032	36	0.0075	.	.	596.69	0.438696
1620010159859	17631A		.	.	.	.	.	.	53	0.0046	.	.	52	0.0038	37	0.0073	.	.	392.79	0.440634
1620010054193	17577A		21	5	.	.	47	0.0058	42	0.0054	26	0.0100	16	0.0184	38	0.0073	72	0.0024	1330.45	0.447198
1620010627002	17402A		.	17	69	0.0040	30	0.0086	90	0.0024	25	0.0105	11	0.0230	39	0.0072	44	0.0056	1662.46	0.455400
1005008953726	63822A		.	.	.	.	.	.	158	0.0009	.	.	.	.	40	0.0071	47	0.0054	322.91	0.456993
1620007099371	17347A		.	.	115	0.0019	87	0.0029	123	0.0015	114	0.0011	89	0.0017	41	0.0065	.	.	471.29	0.459318
1620010054194	17578A		21	5	8	0.0264	65	0.0041	83	0.0041	47	0.0054	18	0.0170	42	0.0064	103	0.0010	2027.08	0.469319
1620012026349	22642A		.	.	.	.	.	.	.	.	.	.	.	.	43	0.0063	.	.	193.56	0.470274
1620010816339	19937A		.	2	58	0.0045	74	0.0033	101	0.0021	38	0.0066	21	0.0145	44	0.0061	.	.	1069.49	0.475551
1450010618477AB	M3009K		.	.	.	.	.	.	.	.	.	.	.	.	45	0.0057	35	0.0082	305.20	0.477057
3120012697856LE	M7202K		.	.	.	.	.	.	.	.	.	.	.	.	46	0.0056	.	.	172.05	0.477905
1620010856009	19938A		.	.	174	0.0007	.	.	120	0.0016	98	0.0016	56	0.0034	47	0.0053	152	0.0005	367.01	0.479716
1630011375742	26183A		5	26	19	0.0119	11	0.0151	35	0.0063	24	0.0107	.	.	48	0.0053	.	.	1680.61	0.488008
1620012352270	M6276K		.	.	.	.	.	.	43	0.0054	.	.	.	.	49	0.0051	.	.	271.39	0.489347

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NSN	PCN	S	OPERS	OSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620000271193	72573A		.	.	.	.	.	.	115	0.0017	.	.	35	0.0074	50	0.0050	.	.	327.61	0.490963
3120P855926-03	M9662K		.	.	.	.	.	.	.	.	.	.	4	0.0451	51	0.0049	.	.	990.91	0.495852
1620011670999	26337A		.	.	370	0.0000	59	0.0048	117	0.0017	42	0.0062	54	0.0036	52	0.0049	.	.	666.92	0.499142
1620006525472	17245A		.	.	81	0.0031	97	0.0026	69	0.0034	56	0.0046	.	.	53	0.0049	.	.	625.33	0.502227
1620011252217	16214A		.	.	.	.	.	.	175	0.0008	277	0.0000	182	0.0000	54	0.0047	.	.	161.39	0.503024
1620007158562	42626A		.	.	103	0.0021	131	0.0017	153	0.0010	130	0.0008	41	0.0058	55	0.0047	211	0.0002	445.07	0.505220
1620000071783	17568A		15	14	113	0.0020	92	0.0028	209	0.0006	229	0.0001	.	.	56	0.0046	.	.	318.87	0.506793
1620012007131	26111A		.	.	181	0.0005	153	0.0011	284	0.0003	112	0.0011	28	0.0103	57	0.0044	.	.	433.88	0.508933
1620006518222	17313A		.	22	162	0.0009	94	0.0027	95	0.0023	49	0.0053	39	0.0061	58	0.0044	246	0.0001	648.02	0.512131
1630010585912	19588A		5	166	21	0.0110	42	0.0070	31	0.0071	16	0.0191	12	0.0224	59	0.0043	.	.	2187.93	0.522925
1005010595785	63819A		34	.	.	.	.	.	218	0.0006	.	.	152	0.0003	60	0.0042	66	0.0029	193.37	0.523879
1620006706602	16264A		.	.	83	0.0030	76	0.0032	136	0.0011	58	0.0040	.	.	61	0.0041	.	.	538.55	0.526536
1620001791083	74516A		67	.	141	0.0013	95	0.0026	104	0.0020	19	0.0156	82	0.0020	62	0.0040	85	0.0018	1049.96	0.531716
1620010374639	16297A		.	1	129	0.0015	91	0.0028	198	0.0006	97	0.0016	74	0.0023	63	0.0040	75	0.0023	426.38	0.533820
1630000139129	15359A		5	.	26	0.0084	16	0.0116	36	0.0059	18	0.0175	.	.	64	0.0039	.	.	1690.43	0.542160
1630002692622	15162A		28	136	11	0.0166	23	0.0097	48	0.0047	15	0.0195	176	0.0001	65	0.0038	30	0.0097	2178.78	0.552910
1095010617748	63393A		.	.	.	.	.	.	.	.	.	.	.	.	66	0.0037	56	0.0042	180.30	0.553799
1620005676803	89828A		.	.	.	.	.	.	97	0.0022	.	.	86	0.0018	67	0.0037	.	.	193.95	0.554756
1650002193602LE	98929A		.	.	.	.	.	.	215	0.0006	221	0.0001	68	0.0026	68	0.0036	.	.	176.23	0.555625
5315007575890LE	M8055K		.	.	.	.	.	.	226	0.0005	.	.	.	.	69	0.0034	.	.	115.08	0.556193
1680004051042LS	62963A		.	.	.	.	265	0.0003	274	0.0003	.	.	.	.	70	0.0033	247	0.0001	117.98	0.556775
1680004182785LS	62964A		.	.	.	.	272	0.0002	275	0.0003	.	.	.	.	71	0.0033	248	0.0001	115.10	0.557343
000F0004G	00129B		.	.	190	0.0005	.	.	10	0.0145	.	.	.	.	72	0.0033	11	0.0205	754.50	0.561066
1620010381912	17567A		12	17	232	0.0003	415	-0.0021	550	-0.0001	113	0.0011	51	0.0039	73	0.0033	358	0.0027	215.10	0.562127
1620011037747	15866A		.	.	142	0.0012	212	0.0005	191	0.0007	119	0.0010	38	0.0070	74	0.0033	.	.	353.31	0.563870
9999POV10A	T1302A		.	.	86	0.0028	114	0.0019	77	0.0028	72	0.0027	.	.	75	0.0033	.	.	447.02	0.566075
1620001386373	89549A		.	.	75	0.0034	69	0.0035	62	0.0041	.	.	.	.	76	0.0032	.	.	421.76	0.568156
1620006133512	T6912A		.	.	271	0.0002	201	0.0006	455	0.0000	78	0.0024	40	0.0060	77	0.0032	.	.	341.83	0.569843
1620002640744	17474A		8	26	95	0.0024	68	0.0035	149	0.0011	69	0.0029	49	0.0041	78	0.0032	.	.	523.20	0.572424
1630005969637	15686A		.	.	73	0.0035	44	0.0066	213	0.0006	106	0.0012	.	.	79	0.0031	.	.	490.78	0.574845
1620008624060	T6254A		.	.	283	0.0001	182	0.0008	222	0.0005	105	0.0012	65	0.0026	80	0.0031	.	.	234.56	0.576003
1680010520816LS	83079A		.	.	.	.	218	0.0005	.	.	.	.	.	.	81	0.0030	.	.	106.56	0.576528
1620001486466	74652A		.	.	107	0.0021	154	0.0011	148	0.0011	116	0.0010	57	0.0033	82	0.0030	143	0.0006	346.34	0.578237
1620002671046	17396A		.	.	.	.	.	.	84	0.0026	120	0.0009	107	0.0010	83	0.0030	.	.	205.96	0.579253
1620009921498	17407A		.	.	147	0.0012	109	0.0020	134	0.0011	165	0.0004	30	0.0092	84	0.0029	.	.	407.06	0.581262
1620004325851	72877A	S	12	19	91	0.0025	133	0.0016	88	0.0025	134	0.0008	31	0.0090	85	0.0027	125	0.0007	496.13	0.583709
1630005022994	M8586K		.	.	.	.	.	.	.	.	.	.	.	.	86	0.0026	.	.	79.88	0.584103
1620006776681	16123A		.	.	28	0.0070	93	0.0028	58	0.0043	133	0.0008	.	.	87	0.0026	.	.	566.53	0.586898
1560007833941BF	13822A		.	.	.	.	.	.	.	.	.	.	.	.	88	0.0026	6	0.0307	586.86	0.589695
1630002420942	15526A		.	8	84	0.0029	38	0.0073	182	0.0008	75	0.0026	.	.	89	0.0026	.	.	537.98	0.592349
1620009825059	15988A		.	.	.	.	.	.	103	0.0020	.	.	14	0.0194	90	0.0025	.	.	480.78	0.594721
1630010385126	68521A		.	.	32	0.0069	5	0.0260	79	0.0027	34	0.0069	.	.	91	0.0025	.	.	1463.73	0.601943
1620004821247	16296A		.	.	186	0.0005	112	0.0019	246	0.0004	178	0.0003	90	0.0017	92	0.0023	.	.	198.77	0.602924
1560007908739F	13829A		.	.	.	.	.	.	.	.	.	.	.	.	93	0.0023	.	.	70.66	0.603272
1095009960098	74955A		.	.	.	.	123	0.0018	98	0.0023	.	.	.	.	94	0.0023	136	0.0006	180.83	0.604164
1630002861879	72898A		.	15	85	0.0028	28	0.0088	152	0.0010	39	0.0064	.	.	95	0.0023	.	.	740.77	0.607819
1620007856073	16283A		.	.	195	0.0005	135	0.0016	261	0.0004	.	.	.	.	96	0.0023	.	.	145.15	0.608535
1620000222923	94332A		.	.	.	.	.	.	91	0.0024	74	0.0027	137	0.0004	97	0.0022	.	.	245.81	0.609748
1620009322368	74506A		.	.	121	0.0017	148	0.0013	122	0.0015	84	0.0022	.	.	98	0.0022	.	.	302.28	0.611239

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620004463778	72879A	S	108	51	200	0.0004	248	0.0003	174	0.0008	81	0.0023	46	0.0045	99	0.0022	226	0.0001	296.85	0.612703
1630011253957	62923A	S	5	9	66	0.0041	37	0.0074	87	0.0025	28	0.0079			100	0.0022			847.68	0.616885
1620010389102	69657A				41	0.0061	34	0.0080	56	0.0045	230	0.0001			101	0.0021			638.10	0.620033
1620002223887	72868A								169	0.0009	234	0.0001	66	0.0026	102	0.0021			136.52	0.620707
1620003353404	35571A								279	0.0003	124	0.0009	161	0.0002	103	0.0021			114.55	0.621272
1620002421514	T6295I		76	56	143	0.0012	150	0.0013	200	0.0006	35	0.0068	105	0.0012	104	0.0021	34	0.0083	618.24	0.624322
1620010710535	16315A				347	0.0000	233	0.0004	442	0.0001	255	0.0000	53	0.0037	105	0.0020			144.03	0.625033
1620010135910	17418A				135	0.0014	110	0.0020	157	0.0010	90	0.0018	71	0.0024	106	0.0020			320.67	0.626615
1620010185924	17479A								150	0.0010	238	0.0001	87	0.0017	107	0.0020			118.80	0.627201
00RF0004C	00109B				182	0.0005			14	0.0109					108	0.0020	39	0.0061	409.67	0.629222
000F0004G	00119B				254	0.0002			18	0.0090					109	0.0020	25	0.0106	428.73	0.631338
1630011158736	25425A				46	0.0058	31	0.0084	106	0.0020	60	0.0038			110	0.0020			745.62	0.635016
1620005251156	69554A				189	0.0005	81	0.0030			94	0.0017			111	0.0020			243.14	0.636216
1620011627542	83317A				110	0.0020	78	0.0031	126	0.0014	111	0.0011			112	0.0020	76	0.0022	343.88	0.637912
3120010595944LE	M4292K								92	0.0024					113	0.0020			112.42	0.638467
1620010700632	17664A				104	0.0021			171	0.0008	131	0.0008	81	0.0020	114	0.0019			231.90	0.639611
1620011680338	69803A				114	0.0020	136	0.0015	176	0.0008	150	0.0006	77	0.0021	115	0.0019	94	0.0014	286.27	0.641024
3120012828006LE	M7139K														116	0.0018			55.30	0.641296
1620006238911	69651A						142	0.0014	491	0.0000					117	0.0018			95.59	0.641768
1620011031950	69833A				146	0.0012	152	0.0012	168	0.0009	168	0.0004			118	0.0018			174.57	0.642629
1005010086283	25638A			1					105	0.0020					119	0.0018			97.78	0.643112
1620003977413	17574A				240	0.0003	163	0.0010	259	0.0004	117	0.0010	50	0.0040	120	0.0018			223.44	0.644214
1620009272601	15885A				111	0.0020	113	0.0019	235	0.0005	63	0.0036			121	0.0018			360.10	0.645991
1620009746793	74553A				124	0.0016	84	0.0029	132	0.0012	76	0.0026			122	0.0017			340.35	0.647670
1620002795839	17476A			10	127	0.0015	82	0.0030	203	0.0006	139	0.0007	94	0.0015	123	0.0017			270.15	0.649003
4730012107834AY	M3416K														124	0.0015			49.16	0.649245
1620005459395	17353A				252	0.0002	197	0.0006	270	0.0003	281	0.0000	61	0.0028	125	0.0015			132.95	0.649901
1620006509335	17467A				132	0.0014	107	0.0021	269	0.0003	96	0.0016			126	0.0015			239.72	0.651084
1630008521432	16267A				68	0.0040	64	0.0042	236	0.0005	65	0.0032			127	0.0015			479.11	0.653448
1630009141329	15757A				56	0.0048	18	0.0114	188	0.0007	66	0.0031			128	0.0015	107	0.0009	732.30	0.657061
1620009270298	74552A				185	0.0005	279	0.0002	301	0.0003	247	0.0001	70	0.0025	129	0.0015			129.18	0.657698
1560008568138GBF	T5046J														130	0.0014			43.01	0.657910
1630001576723	15523A		5		137	0.0014	43	0.0069	172	0.0008	20	0.0147			131	0.0014	250	0.0001	968.16	0.662687
6720010447789	61427A														132	0.0014			43.01	0.662899
1680001598730YQ	14907A														133	0.0014			43.01	0.663111
1620001157419	T6850A	S	40	14	119	0.0017	186	0.0008	258	0.0004	137	0.0007	102	0.0012	134	0.0014	106	0.0010	211.63	0.664155
1620010668946	17663A				126	0.0016	138	0.0015	210	0.0006	153	0.0005	83	0.0019	135	0.0014			220.34	0.665242
1630000816827	15746A														136	0.0014			43.01	0.665455
1620001405241	17546A			18	208	0.0004	187	0.0009	350	0.0002	179	0.0003			137	0.0014			102.43	0.665960
162000204T208	16743A												145	0.0003	138	0.0013			45.53	0.666184
000F0004E	00118B				235	0.0003									139	0.0013	42	0.0058	143.91	0.666894
1620010141984	25918A			2	161	0.0009	157	0.0011	251	0.0004	107	0.0012	69	0.0025	140	0.0013			215.82	0.667959
16300T0389239	15828A														141	0.0013			39.94	0.668156
1620010063237	17527A				109	0.0020	121	0.0018	128	0.0014	128	0.0008	33	0.0083	142	0.0013			391.41	0.670087
1620010710537	16334A				336	0.0000	260	0.0003	474	0.0000	279	0.0000	150	0.0003	143	0.0013			54.16	0.670355
3040001614085LE	18076A				199	0.0004	238	0.0004			108	0.0012			144	0.0012			117.57	0.670935
1630007300126	16266A				42	0.0061	39	0.0072	165	0.0009	73	0.0027			145	0.0012			626.31	0.674025
1630000585242	15054A		28	82	27	0.0082	25	0.0095	98	0.0022	30	0.0077	84	0.0019	146	0.0012			1061.11	0.679260
000V0010A	00141B						376	0.0000	30	0.0072	189	0.0003	123	0.0007	147	0.0012	119	0.0009	230.43	0.680397

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1560009118682BF	14539A														148	0.0012			36.87	0.680579
1620008372427	17595A				212	0.0004	143	0.0013	352	0.0002	103	0.0012			149	0.0012			147.72	0.681307
1620009272600	69136A				90	0.0026	77	0.0031			68	0.0030			150	0.0012			362.89	0.683098
3120005101857LE	M5514K														151	0.0011			33.80	0.683265
1630009658700	62905A				20	0.0112	6	0.0218	102	0.0021	64	0.0033			152	0.0011			1298.94	0.689673
1620001790438	72863A								163	0.0009	199	0.0002	73	0.0024	153	0.0011			106.51	0.690199
1620004853752	T4798A				194	0.0005	286	0.0002	273	0.0003	169	0.0004	91	0.0016	154	0.0011			113.43	0.690758
1630004534893	15481A	S	5	89	134	0.0014	132	0.0016	245	0 0004	99	0.0015			155	0.0011			210.73	0.691798
1620003238292	72858A								167	0.0009	282	0.0000	82	0.0028	156	0.0010	290	0.0000	102.01	0.692301
9999P000V0010A	T1434A						83	0.0030					148	0.0003	157	0.0010			122.64	0.692906
1620002810622	17686A				202	0.0004	127	0.0017	253	0.0004	59	0.0039			158	0.0010			277.12	0.694274
1620003069942	17314A				234	0.0003	209	0.0005	290	0.0003	166	0.0004	126	0.0006	159	0.0010			92.38	0.694729
1620003069943	17315A				218	0.0004	246	0.0003	291	0.0003	167	0.0004	127	0.0006	160	0.0010			90.61	0.695176
1620009101898	72571A								289	0.0003			93	0.0016	161	0.0010			66.91	0.695506
1620001157413	72845A								237	0.0005			121	0.0007	162	0.0010			54.39	0.695775
1620001357877	74561A				184	0.0005	181	0.0010	302	0.0003	118	0.0010	72	0.0024	163	0.0009			171.83	0.696623
1630008810815	15161A				36	0.0063	67	0.0037	94	0.0023	27	0.0090	110	0.0010	164	0.0009	90	0.0015	876.01	0.700945
1560005182799BF	M6927K														165	0.0009			27.65	0.701081
1620003002261	17324A				317	0.0001	188	0.0007	440	0.0001	171	0.0004	55	0.0035	166	0.0009			136.87	0.701756
1095001419328	74909A						374	0.0000	306	0.0002					167	0.0009	99	0.0013	52.52	0.702015
1620012348655	26109A				165	0.0008	108	0.0020	130	0.0013	86	0.0020			168	0.0009			233.46	0.703167
1620001239478	19841A								231	0.0005	272	0.0000	75	0.0023	169	0.0009			81.13	0.703567
1620001405242	17547A		12		173	0.0007	198	0.0006	327	0.0002	136	0.0007			170	0.0009			108.15	0.704101
5975P878960F	M7527K														171	0.0008			24.58	0.704222
	M4250K		1										45	0.0049	172	0.0008			115.88	0.704794
1630006210657	98722A														173	0.0008			24.58	0.704915
8760010932628	15941A														174	0.0008			24.58	0.705037
6720010480672	29244A														175	0 0008			24.58	0.705158
1440010738446JB	T8674L						175	0.0008	139	0.0011					176	0.0008			70.96	0.705508
1620010805925	17687A				228	0.0003	250	0.0003	303	0.0002	156	0.0005	103	0.0012	177	0.0008			93.97	0.705972
1620000071783	T7601I		15	14	117	0.0019	75	0.0032			121	0.0009			178	0.0008			232.39	0.707118
1620005051184	69626A						189	0.0007	283	0.0003	194	0.0003	106	0.0011	179	0.0008			84.90	0.707537
4730007586711LE	17757A				187	0.0005	215	0.0005	315	0.0002	271	0.0000	101	0.0013	180	0.0008			87.39	0.707968
1620002307141	72864A								170	0.0009	252	0.0000	67	0.0026	181	0.0007			89.07	0.708408
1630010830445	68735A				93	0.0024	90	0.0028	155	0.0010	141	0.0007	147	0.0003	182	0.0007	167	0.0004	262.06	0.709700
1560002462632BF	M1290K														183	0.0007			21.51	0.709807
1620007391746	19839A								113	0.0018	267	0.0000	63	0.0028	184	0.0007			111.91	0.710359
1095004538407	74958A						207	0.0006	227	0.0005					185	0.0007	236	0.0001	50.98	0.710610
1620003129664	69551A				229	0.0003	174	0.0008	264	0.0003	110	0.0011			186	0.0007			111.67	0.711161
1620010688945	17662A				180	0.0006	205	0.0006	310	0.0002	176	0.0003	109	0.0010	187	0.0007			98.90	0.711649
1620000254773	63711A				156	0.0011	164	0.0010	185	0.0007	259	0.0000			188	0.0007			109.03	0.712187
1620001791087	74518A		2		208	0.0003	386	0.0000	257	0.0004	57	0.0045	128	0.0006	189	0.0007	133	0.0006	262.31	0.713481
1620001058930	93236A								197	0.0007	224	0.0001	95	0.0014	190	0.0007			66.90	0.713811
1630011392892	45578A				89	0.0026	98	0.0026	116	0 0017	155	0.0005			191	0.0007			258.34	0.715086
1620008242889	24372A				225	0.0003	361	0.0001	445	0 0000					192	0.0007			36.35	0.715265
1630002769849	15641A		32	141	34	0.0068	35	0.0078	45	0.0053	22	0.0123			193	0 0007	7	0 0302	1654.54	0.723428
000F0004D	00121B				236	0.0003			57	0.0043					194	0 0007	59	0.0037	183.50	0.724333
1560ND028885GBF	M2544K														195	0 0007			21.51	0.724440
5365012790018WF	M7490K														196	0.0007			21.51	0.724546

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
5365012790017WF	M7492K		.	.	.	.	.	.	.	.	.	.	.	.	197	0.0007	.	.	21.51	0.724652
5365012790023WF	M7493K		.	.	.	.	.	.	.	.	.	.	.	.	198	0.0007	.	.	21.51	0.724758
5365012790022WF	M7495K		.	.	.	.	.	.	.	.	.	.	.	.	199	0.0007	.	.	21.51	0.724864
	M7496K		.	1	.	.	.	.	.	.	.	.	.	.	200	0.0007	231	0.0001	23.09	0.724978
	M7498K		.	1	.	.	.	.	.	.	.	.	.	.	201	0.0007	.	.	21.51	0.725084
5365012797204WF	M7499K		.	.	.	.	.	.	.	.	.	.	.	.	202	0.0007	.	.	21.51	0.725190
5365012793475WF	M7502K		.	.	.	.	.	.	.	.	.	.	.	.	203	0.0007	.	.	21.51	0.725296
	M7503K		.	1	.	.	.	.	.	.	.	.	.	.	204	0.0007	.	.	21.51	0.725402
5365012793474WF	M7504K		.	.	.	.	.	.	.	.	.	.	.	.	205	0.0007	.	.	21.51	0.725508
2560ND029644GAH	M7871K		.	.	.	.	.	.	.	.	.	.	.	.	206	0.0007	.	.	21.51	0.725615
1005006743915	26526A		.	.	.	.	.	.	.	.	.	.	.	.	207	0.0006	.	.	18.43	0.725706
1620010888102	T5305A		.	.	298	0.0001	.	.	503	0.0000	162	0.0005	104	0.0012	208	0.0006	.	.	66.97	0.726036
2+3000++9+026	97709A		.	.	.	.	.	.	.	.	.	.	.	.	209	0.0006	.	.	18.43	0.726127
1095004760051	M6486K		.	.	.	.	.	.	.	.	.	.	.	.	210	0.0006	.	.	18.43	0.726218
1095004760037	M6488K		.	.	.	.	.	.	234	0.0005	.	.	.	.	211	0.0006	.	.	29.05	0.726361
1650003017883	M6604K		.	.	.	.	.	.	.	.	.	.	.	.	212	0.0006	155	0.0005	26.37	0 726491
	M8168K		.	1	.	.	.	.	.	.	.	.	64	0.0027	213	0.0006	.	.	68.74	0.726830
1560ND028868GBF	M5224K		.	.	.	.	.	.	.	.	.	.	135	0.0004	214	0.0006	105	0.0010	41.75	0.727036
1427011043012AB	62956A		.	.	.	.	.	.	.	.	.	.	.	.	215	0.0006	109	0.0009	32.71	0.727198
1620004719659	74528A		.	.	193	0.0005	180	0.0008	223	0.0005	48	0.0054	.	.	216	0.0006	.	.	311.59	0.728735
1620011627518	28108A		.	.	.	.	176	0.0008	229	0.0005	132	0.0008	.	.	217	0.0006	.	.	87.57	0.729167
1005009988912	74895A		.	.	.	.	.	.	.	.	.	.	.	.	218	0.0006	134	0.0006	27.95	0.729305
1620001177326	19838A		.	.	.	.	.	.	112	0.0018	269	0.0000	80	0.0020	219	0.0006	.	.	93.93	0.729768
1630011996430	25874A		27	98	7	0.0270	27	0.0092	192	0.0007	91	0.0018	.	.	220	0.0005	97	0.0013	1472.57	0.737034
1620008302609	24373A		.	.	222	0.0003	281	0.0002	249	0.0004	217	0.0001	.	.	221	0.0005	.	.	46.02	0.737261
1430ND026070GAH	T4404N		.	.	.	.	.	.	.	.	.	.	155	0.0002	222	0.0005	.	.	19.09	0.737355
1630010506139	62922A	S	5	1	99	0.0023	78	0.0030	160	0.0009	54	0.0048	.	.	223	0.0005	.	.	425.51	0.739454
1630008430965	15348A		.	.	244	0.0003	285	0.0002	294	0.0003	243	0.0001	.	.	224	0.0005	.	.	43.89	0.739871
1620010714803	60420A		.	.	.	.	333	0.0001	394	0.0001	.	.	.	.	225	0.0005	.	.	20.36	0.739771
1620007197427	T6687A		.	.	88	0.0027	308	0.0001	.	.	143	0.0006	.	.	226	0.0005	.	.	152.57	0.740524
1620006986014	97659A		.	.	.	.	.	.	141	0.0011	181	0.0003	149	0.0003	227	0.0005	173	0.0004	63.97	0.740840
1620007158561	42625A		.	.	120	0.0017	144	0.0014	179	0.0008	158	0.0005	42	0.0056	228	0.0005	210	0.0002	270.16	0.742172
1620000018416	72832A		.	.	.	.	.	.	340	0.0002	203	0.0002	124	0.0006	229	0.0005	.	.	39.66	0.742368
1005006741425	68776A		.	.	.	.	.	.	.	.	.	.	.	.	230	0.0004	.	.	12.29	0.742429
1650004558129LE	16271A		.	.	.	.	.	.	154	0.0010	123	0.0009	.	.	231	0.0004	.	.	73.46	0.742791
1005010446174	17921A		.	.	.	.	252	0.0003	201	0.0008	.	.	.	.	232	0.0004	237	0.0001	35.25	0.742965
1560012091468WF	M5934K		.	.	.	.	.	.	.	.	.	.	.	.	233	0.0004	98	0.0013	32.91	0.743127
1620011009808	68878A		.	.	204	0.0004	247	0.0003	329	0.0002	211	0.0001	97	0.0013	234	0.0004	.	.	69.79	0.743472
1620004427875	69761A		.	.	.	.	.	.	144	0.0011	195	0.0002	134	0.0004	235	0.0004	.	.	51.98	0.743728
1620001405240	T7546A		.	.	250	0.0002	298	0.0002	367	0.0001	233	0.0001	.	.	236	0.0004	.	.	32.58	0.743889
1005005287684	26492A		.	.	.	.	.	.	.	.	.	.	.	.	237	0.0004	.	.	12.29	0.743950
1560008561386BF	14781A		18	54	.	.	221	0.0005	109	0.0018	.	.	43	0.0052	238	0.0004	15	0.0155	409.80	0.745971
6760004833094	93582A		.	.	.	.	.	.	.	.	.	.	.	.	239	0 0004	165	0.0004	18.63	0 746063
1630007776698	15068A		35	.	24	0.0088	45	0.0086	64	0.0039	38	0.0084	13	0.0216	240	0.0004	20	0.0117	1508.12	0.753504
1095004767948	74941A		.	.	.	.	368	0.0000	401	0.0001	280	0.0000	.	.	241	0.0004	.	.	14.41	0.753575
1680007029382LS	14443A		.	.	.	.	.	.	.	.	.	.	.	.	242	0.0004	.	.	12.29	0.753636
1620007330993	77261A		21	47	260	0.0002	213	0.0005	346	0.0002	200	0.0002	.	.	243	0.0004	.	.	47.78	0.753871
1620009317355	74571A		.	.	246	0.0003	122	0.0018	381	0.0001	95	0.0016	.	.	244	0 0004	.	.	149.16	0.754607
6720010688350	34129A		.	.	.	.	.	.	.	.	.	.	.	.	245	0.0004	.	.	12.29	0.754668

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620010710538	15862A		.	.	335	0.0000	354	0.0001	395	0.0001	231	0.0001		.	246	0.0004		.	21.728	0.754775
6605009497835	93672A		.	.		.		.		.		.		.	247	0.0004		.	12.289	0.754836
1620012005320	28110A		.	.	268	0.0002	257	0.0003	399	0.0001	240	0.0001	170	0.0001	248	0.0004		.	37.325	0.755020
	M5566K		.	1		.		.		.		.		.	249	0.0004		.	12.289	0.755081
1620009299692	74575A		.	.	211	0.0004	195	0.0006	280	0.0003	140	0.0007		.	250	0.0004		.	82.940	0.755490
3120P879596F	M7619K		.	.		.		.		.		.		.	251	0.0004	162	0.0004	18.634	0.755582
3120P879593F	M7620K		.	.		.		.		.		.		.	252	0.0004		.	12.289	0.755642
1620011741655	15877A		.	.	265	0.0002	258	0.0003	252	0.0004	159	0.0005		.	253	0.0004		.	59.580	0.755938
5330ND025812GAH	M8710K		.	.		.		.		.		.		.	254	0.0004		.	12.289	0.755997
1440010841618AB	83191A		.	.		.		.		.		.		.	255	0.0004		.	12.289	0.756058
1620008670810	74551A		.	.	269	0.0002	411	-0.0004	353	0.0002	163	0.0005	143	0.0003	256	0.0004	254	0.0001	42.364	0.756267
1440011093258JB	66736A		.	.		.		.		.		.		.	257	0.0004		.	12.289	0.756327
1630005404253	34507A		.	.	207	0.0004	271	0.0002	263	0.0004	127	0.0008	175	0.0001	258	0.0003		.	76.781	0.756708
1620007057261	69887A		.	.	303	0.0001	288	0.0002	397	0.0001		.	119	0.0008	259	0.0003		.	35.992	0.756884
5365012790018WF	M7505K		.	.		.		.		.		.		.	260	0.0003		.	9.217	0.756929
5365012790023WF	M7512K		.	.		.		.		.		.		.	261	0.0003		.	9.217	0.756975
5365012790017WF	M7511K		.	.		.		.		.		.		.	262	0.0003		.	9.217	0.757020
1630010627046	15752A		.	.	29	0.0070	52	0.0055	143	0.0011	31	0.0075	130	0.0005	263	0.0003		.	812.157	0.761027
5365012793476WF	M7522K		.	.		.		.		.		.		.	264	0.0003		.	9.217	0.761072
1620010141983	25917A		.	.	197	0.0004	249	0.0003	319	0.0002	154	0.0005	108	0.0010	265	0.0003		.	78.871	0.761462
5315004347447LE	M9775K		.	.		.		.		.		.		.	266	0.0003		.	9.217	0.761507
5365012793473WF	M7519K		.	.		.		.		.		.		.	267	0.0003		.	9.217	0.761552
5365012790021WF	M7516K		.	.		.		.		.		.		.	268	0.0003		.	9.217	0.761598
5365012793475WF	M7521K		.	.		.		.		.		.		.	269	0.0003		.	9.217	0.761643
5365012793474WF	M7524K		.	.		.		.		.		.		.	270	0.0003		.	9.217	0.761689
5306008249117	M9195K		.	.		.		.	218	0.0006		.		.	271	0.0003		.	21.961	0.761797
1620006238913	69573A		.	.	288	0.0001	202	0.0006	317	0.0002	220	0.0001	129	0.0006	272	0.0003		.	50.337	0.762046
6760010447792	88985A		.	.		.		.		.		.		.	273	0.0003		.	9.217	0.762091
1005007265650	74851A		.	.		.		.		.		.		.	274	0.0003		.	9.217	0.762137
1630000528403	15053A		27	18	233	0.0003	146	0.0013	462	0.0000	55	0.0047	113	0.0009	275	0.0003	141	0.0006	293.396	0.763584
1630010716112	17964A	S	5	24	130	0.0015	134	0.0016	271	0.0003	151	0.0006		.	276	0.0003		.	148.090	0.764315
1560007886321BF	T7040Q		.	.		.		.		.		.		.	277	0.0003		.	9.217	0.764360
1630009376804	15728A		.	.	231	0.0003	100	0.0024	148	0.0011		.		.	278	0.0003		.	113.613	0.764921
1620010972968	69103A		.	.		.		.	243	0.0004	177	0.0003		.	279	0.0003		.	31.023	0.765074
5365P32-41126-3	M7565K		.	.		.		.		.		.		.	280	0.0003		.	9.217	0.765119
1620010976091	69104A		.	.		.		.	225	0.0005		.		.	281	0.0003		.	19.837	0.765217
1630010098474	15753A		.	.	270	0.0002	166	0.0009	510	0.0000	254	0.0000		.	282	0.0003	199	0.0002	46.267	0.765445
1560011990571BF	M5081K		.	.		.		.		.		.		.	283	0.0003		.	9.217	0.765491
1630000542557	15361A		5	8	239	0.0003	203	0.0008	406	0.0001	222	0.0001		.	284	0.0003		.	45.012	0.765713
1630008329087	22420A		.		205	0.0004	251	0.0003	265	0.0003	80	0.0023		.	285	0.0003	283	0.0000	142.218	0.766415
	M9408K		.	1		.		.	277	0.0003		.		.	286	0.0003		.	15.589	0.766492
3120012146745	M9409K		.	.		.		.	278	0.0003		.		.	287	0.0003		.	15.589	0.766568
1620ND053797G	26578A		.	.	219	0.0004	208	0.0005	211	0.0006	83	0.0022	117	0.0008	288	0.0003		.	164.816	0.767382
'1620009438754	78048A		.	.		.		.		.		.		.	289	0.0002		.	6.145	0.767412
1005000431167	83826A		.	.		.		.		.		.		.	290	0.0002		.	6.145	0.767442
1620008699889	74535A		.	.	258	0.0002	241	0.0004	437	0.0001	115	0.0010	179	0.0000	291	0.0002		.	72.123	0.767798
1620010715592	16582A		.	.	343	0.0000		.	449	0.0000	160	0.0005		.	292	0.0002		.	28.327	0.767938
1620002421519	T6301A		.	.	224	0.0003	261	0.0003	363	0.0001	145	0.0006		.	293	0.0002		.	55.488	0.768212
1560ND024233GBF	M0124K		.	.		.		.	250	0.0004		.		.	294	0.0002		.	14.641	0.768284

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620009872517	T9439A		.	.	309	0.0001	.	.	419	0.0001	.	.	.	.	295	0 0002	.	.	12.26	0.768344
5315005006801LE	69775A		.	.	340	0.0000	386	0.0001	423	0.0001	.	.	139	0.0004	296	0.0002	.	.	18.60	0.768436
1620000922837	34456A		28	53	290	0.0001	268	0.0003	391	0.0001	138	0.0007	.	.	297	0.0002	.	.	51.95	0.768692
1620010389101	69658A		.	.	175	0.0007	130	0.0017	193	0.0007	239	0.0001	96	0.0014	298	0.0002	.	.	128.38	0.769326
1620009248927	16288A		.	.	267	0.0002	360	0.0001	.	.	207	0.0001	112	0.0009	299	0.0002	.	.	38.21	0.769514
1560P16P194-87	M0002K		.	.	.	.	.	.	.	.	.	.	.	.	300	0.0002	117	0.0009	20.42	0.769615
1560P16P194-241	M0005K		.	.	.	.	.	.	.	.	.	.	.	.	301	0.0002	118	0.0009	20.42	0.769716
1620011249137	16727A		.	.	273	0.0001	262	0.0003	435	0.0001	174	0.0004	.	.	302	0.0002	.	.	38.64	0.769906
1630008254794	15327A		20	.	50	0.0053	24	0.0097	228	0.0005	129	0.0008	.	.	303	0.0002	21	0.0116	726.83	0.773492
1630004100858	74563A		.	.	54	0.0049	71	0.0035	242	0.0004	51	0.0051	.	.	304	0.0002	116	0.0009	551.37	0.776213
3040001646783LE	14991A		.	.	306	0.0001	287	0.0002	398	0.0001	.	.	.	.	305	0.0002	.	.	18.01	0.776301
1005010429820	63153AA		.	.	.	.	.	.	.	.	.	.	.	.	306	0.0002	.	.	6.14	0.776332
1620010710968	18314A		.	.	301	0.0001	310	0.0001	443	0.0001	.	.	.	.	307	0.0002	.	.	15.14	0.776406
1680011089680	T1067H		.	.	.	.	.	.	.	.	.	.	.	.	308	0.0002	140	0.0008	15.66	0.776484
1620000563339	T6779I		.	.	324	0.0001	336	0.0001	418	0.0001	237	0.0001	164	0.0002	309	0.0002	.	.	23.30	0.776599
1095004767947	62486A		.	.	.	.	.	.	450	0.0000	284	0.0000	.	.	310	0.0002	.	.	6.14	0.776629
	M7638K		.	1	.	.	.	.	.	.	.	.	.	.	311	0.0002	.	.	6.14	0.776659
1450011005926AH	16317A		.	.	.	.	.	.	407	0.0001	.	.	.	.	312	0.0002	.	.	8.27	0.776700
1005010086283	87051H		.	1	.	.	.	.	321	0.0002	.	.	.	.	313	0.0002	131	0.0006	19.91	0.776798
1430ND027897GBF	M8114K		.	.	.	.	.	.	.	.	.	.	.	.	314	0.0002	.	.	6.14	0.776829
1005010502735	69088A		.	.	.	.	.	.	.	.	.	.	.	.	315	0.0002	.	.	6.14	0.776859
1630011414695	69794A	S	5	26	72	0.0035	115	0.0019	119	0.0016	122	0.0009	.	.	316	0.0002	.	.	274.36	0.778213
1620003486485	17517A		.	.	326	0.0000	382	0.0000	365	0.0001	270	0.0000	.	.	317	0.0002	.	.	8.27	0.778253
1630000827955	15295A		23	236	14	0.0142	40	0.0071	.	.	46	0.0058	79	0.0021	318	0.0002	26	0.0106	1241 53	0.784378
1630010659469	16298A		.	.	302	0.0001	204	0.0006	297	0.0003	197	0.0002	.	.	319	0.0002	.	.	42.65	0.784589
1440001727419AH	57174A		.	.	.	.	.	.	244	0.0004	.	.	.	.	320	0.0002	.	.	14.64	0.784661
1005007755578	74857A		.	.	.	.	.	.	.	.	.	.	.	.	321	0.0002	.	.	6.14	0.784092
1630005557523	15387A		25	44	77	0.0033	41	0.0071	173	0.0008	88	0.0018	.	.	322	0.0002	57	0.0040	502.40	0.787170
1430000133077AH	M8840K		.	.	.	.	.	.	.	.	.	.	.	.	323	0.0002	244	0 0001	7.73	0.787208
1620000313537	62902A		.	.	.	.	.	.	430	0.0001	248	0.0001	157	0.0002	324	0.0002	.	.	16.43	0.787290
1005009953722	42078A		.	.	.	.	.	.	.	.	.	.	.	.	325	0.0002	.	.	6.14	0.787320
1620004023387	94829A		.	.	.	.	.	.	296	0.0003	245	0.0001	153	0.0002	326	0.0002	.	.	20.68	0.787422
1620008840372	T9564A		.	.	295	0.0001	365	0.0001	.	.	235	0.0001	141	0.0004	327	0.0002	.	.	24.90	0.787545
1630010597069	19847A		.	.	172	0.0007	158	0.0010	328	0.0002	191	0.0003	.	.	328	0.0002	.	.	80 40	0.787941
1620010710536	15834A		.	.	.	.	322	0.0001	.	.	.	.	.	.	329	0.0002	.	.	9.02	0.787986
1620012548600	28597A		.	.	299	0.0001	339	0.0001	523	0.0000	157	0.0005	.	.	330	0.0002	.	.	35.19	0.788160
1630005582584	15651A		.	2	155	0.0011	412	-0.0008	181	0.0008	109	0.0011	.	.	331	0.0001	.	.	89.73	0.788602
000F0016C	00167C		.	.	.	.	.	.	.	.	.	.	.	.	332	0.0001	188	0.0003	7.83	0.788641
1420ND030175GAH	M7171K		.	.	.	.	.	.	.	.	.	.	.	.	333	0.0001	.	.	3.07	0.788656
1420ND030176GAH	M7172K		.	.	.	.	.	.	.	.	.	.	.	.	334	0.0001	.	.	3.07	0.788671
1420ND030177GAH	M7173K		.	.	.	.	.	.	.	.	.	.	.	.	335	0.0001	.	.	3.07	0.788686
1420ND030178GAH	M7174K		.	.	.	.	.	.	.	.	.	.	.	.	336	0.0001	.	.	3.07	0.788702
1620001753939	T7163A	S	57	42	213	0.0004	229	0.0004	364	0.0001	79	0.0024	165	0.0002	337	0.0001	.	.	142.87	0.789406
3040003556251BF	M8275K		.	.	.	.	.	.	.	.	.	.	120	0.0008	338	0.0001	.	.	17.98	0.789495
1560P733002-003	M3893K		.	.	.	.	.	.	.	.	.	.	.	.	339	0.0001	.	.	3.07	0.789510
1620003084145	17494A		21	10	.	.	268	0.0003	388	0.0001	.	.	58	0.0033	340	0.0001	.	.	75 32	0.789882
1005005891271	23284A		.	.	.	.	.	.	.	.	.	.	.	.	341	0.0001	.	.	3.07	0.789897
1005000431167	74802A		.	.	.	.	.	.	.	.	.	.	.	.	342	0.0001	.	.	3.07	0.789912
1005002213325	74817A		.	.	.	.	.	.	.	.	.	.	.	.	343	0.0001	291	0.0000	3.07	0.789927

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NSN	PCN	S	OPERS	CBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
6720010678701	52448A														344	0.0001			3.072	0.789942
000F0004E	T1209A														345	0.0001	242	0.0001	4.659	0.789965
1820005343898	T7043A				338	0.0000	337	0.0001	508	0.0000	241	0.0001	171	0.0001	346	0.0001			12.250	0.790026
	T7263Q			i	360	0.0000	373	0.0000	434	0.0001	260	0.0000			347	0.0001			5.198	0.790052
1820003654001	69098A				220	0.0004	253	0.0003	355	0.0002			186	0.0002	348	0.0001	341	0.0000	35.637	0.790227
6605009159319	92679A														349	0.0001			3.072	0.790243
1630009000745	15248A				171	0.0008	171	0.0009	332	0.0002	149	0.0008			350	0.0001			91.753	0.790695
1650001685965BF	96274A						406	0.0000	313	0.0002	258	0.0000	178	0.0000	351	0.0001			7.320	0.790731
1620004107094	69385A								457	0.0000			151	0.0003	352	0.0001			8.662	0.790774
	M9357K			i											353	0.0001			3.072	0.790789
1620010569658	25369A				314	0.0001	269	0.0003	358	0.0001			159	0.0002	354	0.0001			21.545	0.790896
5306ND026872GAH	M6265K														355	0.0001	225	0.0001	4.659	0.790919
5340008703741AH	M700TK														356	0.0001			3.072	0.790934
1680011089660	T1065H														357	0.0001			3.072	0.790949
1680011089660	T1066H														358	0.0001	184	0.0003	7.831	0.790987
6760P1264-898	T5943Q														359	0.0001			3.072	0.791003
1680010530071LS	19557A						274	0.0002							360	0.0001			8.828	0.791046
1560P540109-017	M3895K														361	0.0001			3.072	0.791061
1560P540109-019	M3896K														362	0.0001			3.072	0.791076
1450001142786AH	59596A								521	0.0000					363	0.0001	223	0.0001	4.659	0.791099
1620007659187	69548A								413	0.0001	213	0.0001			364	0.0001			9.633	0.791147
1620006142351	69555A						304	0.0001	548	0.0000	215	0.0001			365	0.0001			10.386	0.791198
	M5356K			i											366	0.0001			3.072	0.791213
1620ND052083G	26579A				330	0.0000	338	0.0001	421	0.0001	182	0.0003	158	0.0002	367	0.0001	208	0.0002	28.283	0.791353
1620009438753	69288A				331	0.0000	385	0.0000	422	0 0001	183	0.0003			368	0.0001	209	0 0002	21.678	0.791460
1620005802857	15438A														369	0.0001			3.072	0.791475
1620011146869	16623A				245	0.0003	208	0.0008	385	0.0001	92	0.0017			370	0.0001			109.850	0.792017
1630009414191	15302A				179	0.0006	168	0.0009	354	0.0002	186	0.0003			371	0.0001			70.465	0.792365
5310ND029610GAH	M5789K														372	0.0001	262	0.0001	4.659	0.792388
1620007729657	T69441	S	24	73											373	0.0001			3.072	0.792403
000F00016A	C0162C														374	0.0001			3.072	0.792418
1325000099597	26679A						330	0.0001							375	0.0001			5.950	0.792447
1560011136448BF	M4969K														376	0.0001			3.072	0.792462
1095009118407	15819A								405	0.0001					377	0.0001			5.196	0.792488
1005009365371	74887A														378	0.0001			3.072	0.792503
1620009224173	18182A		27	139	167	0.0008	125	0.0017	239	0.0004					379	0.0001			92.403	0.792959
1630010098475	19266A				251	0.0002	141	0.0014	495	0.0000	232	0.0001	156	0.0002	380	0.0001	220	0.0001	61.088	0.793261
1450000058722AH	M4841K														381	0.0001	224	0.0001	4.659	0.793284
1620010594518	M9354K														382	0.0001			3.072	0.793299
1560001377637BF	M6769K														383	0.0001			3.072	0.793314
1620004100874	69625A								456	0 0000			160	0.0002	384	0.0001	307	0.0000	6.799	0.793347
000F0016D	00169C														385	0.0001			3.072	0.793363
1325004918006	16228A						383	0.0000							386	0.0001			3.072	0.793378
1560P16P194-95	M3928K														387	0.0001	218	0.0002	6.245	0.793409
1430ND028568GAH	M6118K														388	0.0001	43	0.0057	93.488	0.793870
1560ND029964GWF	M9755K														389	0.0001	305	0.0000	3.072	0.793885
1560ND030438GWF	M9761K														390	0.0001			3.072	0.793900
1680011089660	T1064H														391	0 0001	170	0.0004	9.417	0.793947
	T4047J			i	319	0.0001	404	0.0000			226	0.0001			392	0.0001			11.498	0.794063

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1820001877445	T4521Q		.	7	256	0.0002	387	0.0000	529	0.0000	273	0.0000		.	393	0.0001	185	0 0003	15.810	0.794081
1630004649167	74709A		.	.	305	0.0001	232	0.0004	458	0 0000	180	0.0003		.	394	0.0001		.	31.882	0.794239
1005004197188	18395A		.	36		.		.	415	0 0001		.		.	395	0.0001	182	0.0003	9.955	0.794288
1005005703715	19899A		.	.		.		.	374	0.0001		.		.	396	0.0001		.	5.196	0.794313
1620009763391	69577A		.	.	346	0.0000		.	500	0 0000	251	0.0001		.	397	0.0001		.	7.509	0.794350
1620011431155	69578A		.	.	242	0.0003	210	0.0005	295	0.0003		.		.	398	0.0001		.	35.801	0.794527
5315002952512LE	74525A		.	.	274	0.0001	172	0.0009	314	0.0002	263	0.0000	140	0.0004	399	0 0001		.	44.662	0.794747
1427011043011AB	16354A		.	.		.		.		.		.		.	400	0 0001	151	0 0005	11.004	0.794802
7105P857712F	M6576K		.	.		.		.		.		.		.	401	0.0001	49	0.0050	82.385	0.795208
1630010414570	15698A		.	.	67	0.0040	173	0.0008		.	185	0.0003		.	402	0.0001	111	0.0009	213.252	0.796260
1620009535572	69566A		.	.		.		.	436	0.0001		.	183	0.0000	403	0.0001		.	5.196	0.796286
1580010058769BF	M9921K		.	.		.		.		.		.		.	404	0.0001		.	3.072	0.796301
1560P877530F	M4170K		.	.		.		.		.		.		.	405	0.0001		.	3.072	0.796316
	M7680K		.	1		.		.		.		.		.	406	0.0001		.	3.072	0.796331
	M7682K		.	1		.		.		.		.		.	407	0.0001		.	3.072	0.796346
1630000752003	74565A		.	.	285	0.0001	255	0.0003	501	0.0000		.		.	408	0.0000		.	12.822	0.796409
1620006142352	69558A		.	.	352	0.0000	295	0.0002	499	0.0000	216	0.0001		.	409	0.0000		.	10.192	0.796459
1560P878263F	M3907K		.	.		.		.		.		.		.	410	0 0000	310	0.0000	0.000	0.796459
5310012766189	M6239K		.	.		.		.		.		.		.	411	0.0000		.	0.000	0.796459
000F0016A	T4162N		.	.		.		.		.		.		.	412	0.0000	221	0.0001	1.586	0.796467
1005010525278	19908A		.	.		.		.	389	0.0001		.		.	413	0.0000		.	2.124	0.796477
1560P733003-003	M3894K		.	.		.		.		.		.		.	414	0.0000		.	0.000	0.796477
1620003051849	69707A		.	.	259	0.0002	395	0.0000	386	0.0001	201	0.0002		.	415	0.0000		.	18.976	0.796571
1420ND030072GAH	M7169K		.	.		.		.		.		.		.	416	0.0000		.	0.000	0.796571
1420ND030174GAH	M7170K		.	.		.		.		.		.		.	417	0.0000		.	0 000	0.796571
1420ND030179GAH	M7175K		.	.		.		.		.		.		.	418	0.0000		.	0 000	0.796571
1420ND030180GAH	M7176K		.	.		.		.		.		.		.	419	0.0000		.	0.000	0.796571
5340ND029661GAH	M9564K		.	.		.		.		.		.		.	420	0.0000		.	0.000	0.796571
5340ND029665GAH	M9567K		.	.		.		.		.		.		.	421	0.0000		.	0.000	0.796571
1427010158956AB	75223A		.	.		.		.		.		.		.	422	0.0000	126	0.0007	11.104	0.796626
1560P210050-3	M3903K		.	.		.		.		.		.		.	423	0.0000		.	0.000	0.796626
1560001371370BF	M5389K		.	.		.		.		.		.		.	424	0.0000	300	0.0000	0.000	0.796626
1560P16P194-241	M3933K		.	.		.		.		.		.		.	425	0.0000	240	0.0001	1.586	0.796634
1560009834324BF	18365A		.	.		.		.	74	0.0030		.	162	0.0002	426	0.0000	178	0.0003	72.206	0.796990
1560001706671BF	18863A		.	.		.		.	81	0.0027		.		.	427	0.0000	186	0.0003	62.108	0.797296
1620001947597	T5039I		.	1	348	0.0000	400	0.0000		.	246	0.0001		.	428	0.0000		.	4.436	0.797318
1630001238808	15644A		.	.	349	0.0000	328	0.0001	473	0.0000	218	0.0001		.	429	0.0000		.	7.314	0.797354
1630005090317	T8586A		.	.	263	0.0002	276	0.0002	467	0.0000	209	0.0001		.	430	0.0000		.	18.170	0.797444
	M7509K		.	1		.		.		.		.		.	431	0.0000		.	0.000	0.797444
1620005918508	69556A		.	.	337	0.0000	326	0.0001	542	0.0000	214	0.0001		.	432	0.0000		.	7.314	0.797480
1620010403581	T9743I		.	.		.	388	0.0000	538	0.0000		.	172	0.0001	433	0.0000		.	1.863	0.797489
1620003051728	68884A		.	6	312	0.0001	396	0.0000	497	0.0000	125	0.0008		.	434	0.0000	95	0.0014	61.688	0.797793
	M4010K		.	1		.		.		.		.		.	435	0.0000		.	0.000	0.797793
000F0016B	00166C		.	.		.		.	390	0.0001	236	0.0001		.	436	0.0000	124	0.0007	17.664	0.797881
1560P32-80153-3	M0001K		.	.		.		.		.		.		.	437	0.0000		.	0.000	0.797881
1560P87724GF	M3906K		.	.		.		.		.		.		.	438	0.0000		.	0.000	0.797881
	M4161K		.	1		.		.		.		.		.	439	0.0000		.	0.000	0.797881
	M4908K		.	1		.		.		.		.		.	440	0 0000		.	0.000	0.797881
3120ND029912GLE	M4925K		.	.		.		.		.		.		.	441	0.0000		.	0.000	0.797881

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1560P1651301-11	M6246K														442	0			0.000	0.797881
	M57569K			1											443	0			0.000	0.797881
1560K01658988WF	M57826K														444	0			0.000	0.797881
1630007947437	T5652A				344	0.0000	346	0.0001	483	0.0000	264	0.0000	177	0.0001	445	0			4.741	0.797904
162001160/167	T6111A								453	0.0000					446	0			0.000	0.797904
5845L8798G1F	M5974K														447	0			0.000	0.797904
1620006587970	69557A														448	0			0.000	0.797904
1005000180845	37055A														449	0			0.000	0.797904
1560010495906BF	M4383K														450	0	123	0.0008	12.690	0.797967
	M5386K			1											451	0			0.000	0.797967
	M6985K			1											452	0			0.000	0.797967
1630001473854	15576A						199	0.0006	526	0.0000	242	0.0001			453	0	304	0.0000	21.702	0.798074
16300101406561C	16404A				296	0.0001	314	0.0001	494	0.0000					454	0	351	0.0000	6.867	0.798108
1630010109337	19973A						264	0.0003							455	0			8.633	0.798150
1560P111656F	M0031K														456	0			0.000	0.798150
1630ND0261486	M2031K														457	0			0.000	0.798150
1560P32-60041-2	M3925K														458	0			0.000	0.798150
1560P105870F	M3927K														459	0			0.000	0.798150
1560P109289F	M3930K														460	0			0.000	0.798150
1560K0165698WF	M7819K														461	0			0.000	0.798150
1560011578040WF	T7692A								438	0.0001					462	0	339	0.0000	2.124	0.798161
1005005585216	19896A						402	0.0000	414	0.0001					463	0			2.124	0.798171
4710ND029559GAH	M7989K														464	0			0.000	0.798171
	M4165K			1											465	0	258	0.0001	1.586	0.798179
1620001058933	26290A														466	0			0.000	0.798179
3120001313526	M4930K														467	0			0.000	0.798179
4710010048829BF	M5329K														468	0	78	0.0021	33.311	0.798343
1560ND025589GBF	M5274K														469	0	318	0.0000	0.000	0.798343
5306002972588FG	M9194K								138	0.0011					470	0	175	0.0004	29.709	0.798490
1560P16P194-67	M3932K														471	0	267	0.0001	1.586	0.798498
	M6797K			1											472	0			0.000	0.798498
1005010280626	19876A								282	0.0003					473	0			6.372	0.798529
1560P880500F	M4176K														474	0			0.000	0.798529
1005003441550	26357A			1					480	0.0000					475	0	238	0.0001	1.586	0.798537
6760010414689	62228A														476	0			0.000	0.798537
1620006099886	90400A	S	28	55	358	0.0000	381	0.0000	496	0.0000	198	0.0002			477	0	353	0.0000	8.873	0.798581
1620009195750	19959A								356	0.0002	278	0.0000	181	0.0000	478	0			4.248	0.798602
1560P53-11065-3	M0030K														479	0			0.000	0.798602
1560P112810F	M3923K														480	0	356	0.0000	0.000	0.798602
5340P109832F	M3946K														481	0	268	0.0001	1.586	0.798610
1430ND023219GBF	M8096K														482	0			0.000	0.798610
1630008329088	15583A		18	20	105	0.0021	70	0.0035	217	0.0006	148	0.0008	32	0.0084	483	0	74	0.0023	416.880	0.800666
1630011894176	T7863I				149	0.0011			511	0.0000					484	0			43.883	0.800883
1620009383574	19681A								478	0.0000	288	0.0000	187	0.0000	485	0			0.000	0.800883
1560012400000BF	M9119K														486	0			0.000	0.800883
	M9693K			1											487	0			0.000	0.800883
4720P113565F	M3910K														488	0			0.000	0.800883
1560P112812F	M3922K														489	0	256	0.0001	1.586	0.800891
4710006800G3	M5937K														490	0			0.000	0.800891

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	M5972K			1											491	0			0.00000	0.800891
3120003879680BF	M8501K														492	0			0.00000	0.800891
1560P106647F	M0033K														493	0	274	0	0.00000	0.800891
1620010451024	17605A								475	0.0000	244	0.0001			494	0			4.43646	0.800912
1430009215077AH	56976A														495	0			0.00000	0.800912
1560P880769F	M4190K														496	0	284	0	0.00000	0.800912
1560001201711BF	M6526K														497	0			0.00000	0.800912
4710001499148	M9707K														498	0			0.00000	0.800912
4710010246631	M6588K														499	0			0.00000	0.800912
4710010246631	M6590K														500	0			0.00000	0.800912
1560011938817BF	M4523K														501	0			0.00000	0.800912
	M5799K			1											502	0			0.00000	0.800912
4710010501027BF	M5996K														503	0			0.00000	0.800912
1430ND030076GBF	M6115K														504	0			0.00000	0.800912
4730006894298BF	M6906K														505	0			0.00000	0.800912
	M3924K			1											506	0			0.00000	0.800912
1560P16P194-67	M3331K														507	0	292	0	0.00000	0.800912
4710002373128BF	M4813K														508	0			0.00000	0.800912
5315004144936BF	M5599K														509	0			0.00000	0.800912
	M6580K			1											510	0			0.00000	0.800912
4710010984700BF	M6832K														511	0			0.00000	0.800912
4710002324142BF	M6925K														512	0			0.00000	0.800912
1450ND059997GAH	M7875K														513	0			0.00000	0.800912
4710010500188BF	M9697K														514	0			0.00000	0.800912
1620002695025	69321A								464	0.0000	225	0.0001			515	0			4.43646	0.800934
4710001141686	M4322K														516	0			0.00000	0.800934
5340005273213BF	M6537K								375	0.0001					517	0	286	0	2.12403	0.800945
1560010948834BF	M6564K														518	0			0.00000	0.800945
1560ND026767GBF	M6774K														519	0			0.00000	0.800945
	M6807K			1											520	0			0.00000	0.800945
4710010500188BF	M9700K														521	0			0.00000	0.800945
4710001141686	M4325K														522	0			0.00000	0.800945
	M4774K			1											523	0			0.00000	0.800945
4710010962886BF	M4809K														524	0			0.00000	0.800945
6615ND030416GWF	M6398K														525	0			0.00000	0.800945
4710004T44105BF	M6618K														526	0			0.00000	0.800945
4710002383836BF	M7338K														527	0			0.00000	0.800945
4710ND030323GBF	M7891K														528	0			0.00000	0.800945
4710010500188BF	M9695K														529	0			0.00000	0.800945
4710010500188BF	M9896K														530	0			0.00000	0.800945
1630001398476	15575A						300	0.0002							531	0			5.75532	0.800973
1630010555056	15822A				315	0.0001	355	0.0001	540	0.0000	262	0.0000			532	0			6.86698	0.801007
1560011029047BF	M5844K														533	0			0.00000	0.801007
4710001520837BF	M4632K														534	0			0.00000	0.801007
4710004144993BF	M7015K														535	0			0.00000	0.801007
1560003903918BF	M7426K														536	0	306	0	0.00000	0.801007
4710001538109	M9880K														537	0			0.00000	0.801007
1560P371437-3	M4240K														538	0			0.00000	0.801007
156000594777GBF	M6777K														539	0			0.00000	0.801007
3040ND029844GAH	M7091K														540	0			0.00000	0.801007
4730ND030191GAH	M7484K														541	0			0.00000	0.801007
1560ND029692GBF	M7923K														542	0			0.00000	0.801007
1560003421873BF	M9374K														543	0	336	0	0.00000	0.801007

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	M9575K			1											544	0			0.0000	0.801007
	M9744K			1											545	0	302	0.0000	0.0000	0.801007
1560ND030603GBF	M9771K														546	0			0.0000	0.801007
1560ND030468GWF	M9773K														547	0			0.0000	0.801007
4710001589138	M9896K														548	0			0.0000	0.801007
4710001538109	M9898K														549	0			0.0000	0.801007
1620011853806	69901A										286	0.0000			550	0	295	0.0000	0.0000	0.801007
5340ND027414GAH	M6487K														551	0	301	0.0000	0.0000	0.801007
8760010965035	16504A														552	0			0.0000	0.801007
1560ND027702GBF	M5275K														553	0	319	0.0000	0.0000	0.801007
4710004213458	M6021K														554	0			0.0000	0.801007
4710001241476	M6584K														555	0			0.0000	0.801007
4710004144991BF	M6607K														556	0			0.0000	0.801007
4710004144991BF	M6608K														557	0			0.0000	0.801007
1560OT0607944BF	M6852K														558	0			0.0000	0.801007
1560OU6130785BF	M7002K														559	0			0 0000	0.801007
4710002384132BF	M7014K														560	0			0.0000	0.801007
4710ND030626GBF	M7897K														561	0			0.0000	0.801007
1560012400000BF	M9120K														562	0			0.0000	0.801007
5340ND030020GAH	M9580K														563	0			0.0000	0.801007
4710001538663	M9881K														564	0			0.0000	0.801007
4710001538663	M9895K														565	0			0.0000	0.801007
47100108810788F	M9897K														566	0			0.0000	0.801007
1630011392892	T5573A				322	0.0001	340	0.0001	459	0.0000					567	0			6.8670	0.801041
1560P1686530-97	M3921K														568	0			0.0000	0.801041
1560P874634F	M4215K														569	0	314	0.0000	0.0000	0.801041
4710004144985	M5810K														570	0			0.0000	0.801041
4710001241476	M6594K														571	0			0.0000	0.801041
47100049192768F	M6622K														572	0			0.0000	0.801041
4710001241880	M6795K														573	0			0.0000	0.801041
1560P105849F	M7844K														574	0			0.0000	0.801041
1560P106134F	M7899K														575	0	331	0.0000	0.0000	0.801041
47100108827698F	M9882K														576	0			0.0000	0.801041
1630009271825	15222A			1	253	0.0002	222	0.0005	372	0.0001	202	0.0002			577	0	100	0.0011	50.8126	0.801292
1560P879536F	M4179K														578	0			0.0000	0.801292
1560P1686307-39	M4940K														579	0			0.0000	0.801292
	M4963K			1											580	0	316	0.0000	0.0000	0.801292
1560PT6B6307-40	M4965K														581	0			0.0000	0.801292
1560011156086BF	M5319K														582	0			0.0000	0.801292
1560P16B6530-61	M5633K														583	0			0.0000	0.801292
1450ND027212GAH	M6762K														584	0	269	0.0001	1.5862	0.801298
1560P16B6530-19	M7523K														585	0			0.0000	0.801299
1680010693585BF	M7802K														586	0			0.0000	0.801299
	M9574K			1											587	0			0.0000	0.801299
1560P880497F	M4167K														588	0	112	0.0009	14.2762	0.801370
1560P880502F	M4180K														589	0			0.0000	0.801370
4710001085546	M4423K														590	0			0.0000	0 801370
1560011938B17BF	M4522K														591	0			0.0000	0.801370
47100015208728F	M4635K														592	0			0.0000	0.801370

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4710002372978BF	M4777K														593	0			0.0000	0.801370
	M5030K			1											594	0	317	0.0000	0.0000	0.801370
4710005700522	M5932K														595	0			0.0000	0.801370
4710005700522	M5933K														596	0			0.0000	0.801370
4710005700522	M5935K														597	0			0.0000	0.801370
4710005700522	M5936K														598	0			0.0000	0.801370
4710002324208BF	M5980K														599	0			0.0000	0.801370
4710002324201	M5988K														600	0			0.0000	0.801370
4710002324208BF	M5991K														601	0			0.0000	0.801370
4710002324201	M5992K														602	0			0.0000	0.801370
4710004213482	M6019K														603	0			0.0000	0.801370
	M6105K			1											604	0	285	0.0000	0.0000	0.801370
1440ND025665GAH	M6139K														605	0			0.0000	0.801370
1560004319668BF	M6279K														606	0			0.0000	0.801370
1560004319668BF	M6280K														607	0			0.0000	0.801370
4710002314368	M6913K														608	0			0.0000	0.801370
4710002324119BF	M6916K														609	0			0.0000	0.801370
1560006130798BF	M6963K														610	0	328	0.0000	0.0000	0.801370
4710004975205	M7016K														611	0			0.0000	0.801370
4710ND030625GBF	M7894K														612	0			0.0000	0.801370
1560P109415F	M7900K														613	0			0.0000	0.801370
1560P1686530-73	M7921K														614	0			0.0000	0.801370
5315005214827	M8251K														615	0			0.0000	0.801370
5340ND030385GBF	M9593K														616	0			0.0000	0.801370
4710010500192BF	M9694K														617	0			0.0000	0.801370
4710001538109	M9894K														618	0			0.0000	0.801370
4710001538102BF	M9899K														619	0			0.0000	0.801370
1560P880505F	M4177K														620	0	312	0.0000	0.0000	0.801370
1560P880503F	M4184K														621	0			0.0000	0.801370
1560P881559F	M4205K														622	0			0.0000	0.801370
4710001443560	M5804K														623	0			0.0000	0.801370
	M6264K			1											624	0	320	0.0000	0.0000	0.801370
1560004319668BF	M6281K														625	0	130	0.0007	11.1037	0.801425
4710002233951BF	M6922K														626	0			0.0000	0.801425
1560P000330F	M7199K														627	0			0.0000	0.801425
4710001085576	M7216K														628	0			0.0000	0.801425
1560P1177CPF	M7828K														629	0			0.0000	0.801425
1560P111570F	M7847K														630	0			0.0000	0.801425
1560P103001F	M7859K														631	0			0.0000	0.801425
4710ND030441GBF	M7893K														632	0			0.0000	0.801425
1560001636181BF	M8677K														633	0			0.0000	0.801425
1560010297256BF	M9333K														634	0	334	0.0000	0.0000	0.801425
1560ND029906GBF	M9750K														635	0	338	0.0000	0.0000	0.801425
3120P0000000000	T4920Q														636	0			0.0000	0.801425
1560P112163F	M0031K														637	0			0.0000	0.801425
1560ND026768GBF	M6649K														638	0			0.0000	0.801425
	M6915K			1											639	0			0.0000	0.801425
1630002272000	15749A				255	0.0002	273	0.0002	429	0.0001					640	0			15.8580	0.801503
1560001371370BF	M5387K														641	0	299	0.0000	0.0000	0.801503
	M5798K			1											642	0			0.0000	0.801503
5325ND029878GAH	M5910K														643	0	346	0.0000	0.0000	0.801503
5315005214839	M4752K														644	0			0.0000	0.801503
1560ND029692GBF	M7931K														645	0			0.0000	0.801503

OGDEN 80/20 SORTED BY MANPRC

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
5365P433R207H01	M8570K		.	.	.	.	.	.	.	.	.	.	.	.	646	0	.		0	0.801503
1560P1686530-43	M5635K		.	.	.	.	.	.	.	.	.	.	.	.	647	0	.		0	0.801503
1560ND026920GBF	M5186K		.	.	.	.	.	.	.	.	.	.	.	.	648	0	.		0	0.801503
1560ND026768GBF	M6647K		.	.	.	.	.	.	.	.	.	.	.	.	649	0	.		0	0.801503
1560ND026787GBF	M6757K		.	.	.	.	.	.	.	.	.	.	.	.	650	0	.		0	0.801503
1430P879220F	M4069K		.	.	.	.	.	.	.	.	.	.	.	.	651	0	.		0	0.801503
	M3748K		.	i	.	.	.	.	.	.	.	.	.	.	652	0	.		0	0.801503
1620010667227	T7664Q		.	.	.	.	.	.	.	.	.	.	.	.	653	0	.		0	0.801503

																			162455	

RCC EARNED HOURS FOR HNPWU...OCT 88 THRU JAN 89

	PROD NO.		NOUN	RCC DPEH	RCC DPEH X	CUMM X EARNED HR
1	001248	000F0004E	AIRCRAFT	1361.00	0.0858	0.0858
2	001268	00RF0004C	AIRCRAFT	1326.70	0.0836	0.1694
3	M4631K	2330P8516153		660.60	0.0416	0.2110
4	T72660	4935P9116		500.00	0.0315	0.2425
5	T73330			500.00	0.0315	0.2740
6	13822A	1560007883941BF	RING ASS	487.05	0.0307	0.3047
7	15641A	1630002769849	F4 HSG	479.86	0.0302	0.3349
8	14539A	1560009116682BF	STBLRF4E	479.22	0.0302	0.3651
9	13829A	1560007906873BF	RING ASS	424.02	0.0267	0.3918
10	15728A	1630009376604	HOUSING	336.00	0.0212	0.4130
11	001298	000F0004C	AIRCRAFT	325.60	0.0205	0.4335
12	16915A	1620009485966	TRUCK AY	301.51	0.0190	0.4525
13	T5736I	1630005756758		282.50	0.0178	0.4703
14	74805A	1005000566753	GUN M61A	274.34	0.0173	0.4876
15	14781A	1560008561386BF	HKPNT F4	246.00	0.0155	0.5031
16	M7871K	1450ND029644GAH		244.00	0.0154	0.5185
17	M4586K	1730P8852369-10		240.28	0.0151	0.5336
18	M4587K	1730P8852369-20		240.28	0.0151	0.5487
19	69354A	1620010597842	KC-135 M	216.65	0.0137	0.5624
20	15068A	1630007776698	BS2 BRK	186.36	0.0117	0.5741
21	15327A	1630008254794	BRKC130	183.57	0.0116	0.5857
22	M4823K	8140011515345		175.92	0.0111	0.5968
23	T2709I	SYS-0000S140002		174.00	0.0110	0.6078
24	16836A	1620001099286	STRUTF4C	170.60	0.0107	0.6185
25	001198	000F0004C	AIRCRAFT	168.90	0.0106	0.6291
26	15295A	1630000027955	F111 BRK	168.50	0.0106	0.6397
27	17565A	1620010204973	STRUT	162.62	0.0102	0.6499
28	13816A	1560002466164BF	TEFLAP	160.34	0.0101	0.6600
29	16837A	1620001099287	STRUTF4C	158.18	0.0100	0.6700
30	15162A	1630002692622	KC135BRK	154.72	0.0097	0.6797
31	T4971Q	1300GROUNDTEST		150.00	0.0095	0.6892
32	13288A	1560007944727BF	STABILAT	147.67	0.0093	0.6985
33	18133A	1560002466159BF	TEFLAP	140.38	0.0088	0.7073
34	T6295I	1620002421514		132.00	0.0083	0.7156
35	M3009K	1450010618477AB		130.00	0.0082	0.7238
36	14729A	1560009547752BF	DUCT F4	126.75	0.0080	0.7318
37	M6966K	3920000625516AH		116.32	0.0073	0.7391
38	001998	000F0004E	AIRCRAFT	107.30	0.0068	0.7459
39	001098	00RF0004C	AIRCRAFT	97.20	0.0061	0.7520
40	25638A	1005010086203	HOUSING	95.19	0.0060	0.7580
41	T5530I	1630005470116		94.00	0.0059	0.7639
42	001188	000F0004E	AIRCRAFT	92.70	0.0058	0.7697
43	M6118K	1430ND028568GAH		90.00	0.0057	0.7754
44	17402A	1620010627002	F15-NLG	88.20	0.0056	0.7810
45	M1641K	4210P8633369		88.00	0.0055	0.7865
46	74521A	1620001877445	NLG	85.64	0.0054	0.7919
47	63822A	1005008953726	M168 GUN	85.58	0.0054	0.7973
48	68769A	1005031886968	FEEDER	81.36	0.0051	0.8024
49	M6576K	7105P857712F		80.10	0.0050	0.8074
50	74524A	1620002468005	DOOIE D	75.01	0.0047	0.8121
51	74527A	1620004427877	BRACE DR	75.00	0.0047	0.8168

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RCC EARNED HOURS FOR MNPWW...OCT 88 THRU JAN 89

	PROD NO.		NOUN	RCC DPEH	RCC DPEH X	CUMM X EARNED HR
52	N4722K	4920P8748714		70.00	0.0044	0.8212
53	68614A	1005010463536	TRANSFER	69.00	0.0043	0.8255
54	17143A	1620001398474	B52H-AFT	68.62	0.0043	0.8298
55	17142A	1620001398473	B52H-FWD	68.51	0.0043	0.8341
56	63393A	1005010617748	NB-3ARAC	67.20	0.0042	0.8383
57	15387A	1630005557523	T38 BRK	63.95	0.0040	0.8423
58	T72910	4935P9150		60.00	0.0038	0.8461
59	001218	000F0004D	AIRCRAFT	58.80	0.0037	0.8498
60	25319A	1005002755748	HOUSING	57.63	0.0036	0.8534
61	15054A	1630000585242	KC135BRK	56.60	0.0036	0.8570
62	T4119N	000F0004G		56.00	0.0035	0.8605
63	13296A	1560008590777BF	FLAP ASY	52.50	0.0033	0.8638
64	T1806A			52.00	0.0033	0.8671
65	M7874K	1450NB029953GAN		49.00	0.0031	0.8702
66	63819A	1005010595785	M61A1	45.37	0.0029	0.8731
67	15752A	1630010627046	A10 BRK	45.08	0.0028	0.8759
68	74924A	1095004752437	RELEASE	44.10	0.0028	0.8787
69	74692A	1620001791425	BOGIE BH	42.82	0.0027	0.8814
70	74831A	1005004985359	TRANSFER	42.00	0.0026	0.8840
71	72896A	1630004649162	CS RTR	39.80	0.0025	0.8865
72	17577A	1620010054193	CSM6LLHF	38.50	0.0024	0.8889
73	15603A	1630005918349	KC135 BP	37.49	0.0024	0.8913
74	15503A	1630000329088	FB111BRK	37.07	0.0023	0.8936
75	16297A	1620010374639	CH3-NLG	35.84	0.0023	0.8959
76	83317A	1620011627542	DR BRACE	34.88	0.0022	0.8981
77	72893A	1630002421525	VALVE	34.56	0.0022	0.9003
78	M5329K	4710010488298F		33.00	0.0021	0.9024
79	13308A	1560004834393BF	FLAPASSY	31.50	0.0020	0.9044
80	72895A	1630004649160	CS STR	31.32	0.0020	0.9064
81	00162C	000F0016A	AIRCRAFT	30.30	0.0019	0.9083
82	M5570K	5310009305173		30.00	0.0019	0.9102
83	M6237K	5310012766189AQ		30.00	0.0019	0.9121
84	74923A	1095004752436	RELEASE	29.50	0.0019	0.9140
85	74516A	1620001791083	BRACE BH	29.11	0.0018	0.9158
86	84321A	1560009106230BF	FLAP R.H	28.00	0.0018	0.9176
87	17575A	1620010054191	CSMLGRHA	27.50	0.0017	0.9193
88	18349A	1560008670561BF	MANIFOLD	27.12	0.0017	0.9210
89	T72120	1325002250901		24.00	0.0015	0.9225
90	15161A	1630008810815	C141 BRK	23.52	0.0015	0.9240
91	18509A	1560000304597BF	DOOR	23.20	0.0015	0.9255
92	TS6931	1630008691784		23.00	0.0014	0.9269
93	25598A	1630007057296	T38 TT	22.80	0.0014	0.9283
94	69803A	1620011680338	CH3-NLG	22.26	0.0014	0.9297
95	68884A	1620003051726	FISH-ANN	22.05	0.0014	0.9311
96	72399A	6760008796682CU	MAGAZINE	20.78	0.0013	0.9324
97	25874A	1630011996430	F16 BRK	20.24	0.0013	0.9337
98	M5934K	1560012091468WF		20.02	0.0013	0.9350
99	74909A	1095001419328	RACK ASY	20.00	0.0013	0.936
100	15222A	1630009271825	F4 HSG	18.18	0.0011	0.937
101	TS6220	9999PANPBOX		17.50	0.0011	0.937
102	T72730	4935P9216		17.00	0.0011	0.93

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RCC EARNED HOURS FOR MNPUW...OCT 88 THRU JAN 89

	PROD NO.		NOUN	RCC DPEH	RCC DPEH %	CUMM % EARNED HR
103	17578A	1620010054194	CSMLGRHF	16.50	0.0010	0.9406
104	28041A	1630002262376	BR PLATE	16.33	0.0010	0.9416
105	M5224K	1560ND028068CBF		16.02	0.0010	0.9426
106	T6858A	1620001157419		15.50	0.0010	0.9436
107	15757A	1630009141329	WHL C136	15.00	0.0009	0.9445
108	M7882K	1450ND02961SGAH		15.00	0.0009	0.9454
109	62956A	1427011043012AB	C&C UNIT	14.60	0.0009	0.9463
110	74858A	10050078G1463	BOOSTER	14.56	0.0009	0.9472
111	15698A	1630010414570	CSA BRKE	14.49	0.0009	0.9481
112	M4167K	1560PP80497F		14.40	0.0009	0.9490
113	36192A	1630008691784	PLATE AY	14.26	0.0009	0.9499
114	78048A	1620009438754	BRACE	14.12	0.0009	0.9508
115	13309A	1560004834394BF	FLAP ASY	14.00	0.0009	0.9517
116	74568A	1630004100858	A7 BRK	14.00	0.0009	0.9526
117	M0002K	1560P16P194-67		13.50	0.0009	0.9535
118	M0005K	1560P16P194-241		13.50	0.0009	0.9544
119	00141B	000V0010A	AIRCRAFT	12.50	0.0008	0.9552
120	M5244K	1560ND028005CBF		12.24	0.0008	0.9560
121	M8723K	1730P8318103		12.22	0.0008	0.9568
122	T4574Q	1620PB1X8633707		12.00	0.0008	0.9576
123	M4303K	1560010495906BF		11.80	0.0007	0.9583
124	00166C	000F0016B	AIRCRAFT	11.40	0.0007	0.9590
125	72077A	1620004325651	NLG	11.40	0.0007	0.9597
126	75223A	1427010158956AB	G/C UNIT	11.00	0.0007	0.9604
127	26578A	1620ND053797C	BRG BRAC	10.83	0.0007	0.9611
128	13295A	1560008590776BF	FLAP ASY	10.50	0.0007	0.9618
129	M4906K	1560P16B6307-40		10.38	0.0007	0.9625
130	M6201R	156000431966BBF		10.38	0.0007	0.9632
131	87051H	10050100B6203	HOUSING	10.02	0.0006	0.9638
132	M5308K	1560001239497BF		10.00	0.0006	0.9644
133	74518A	1620001791087	BRACE BR	9.87	0.0006	0.9650
134	74895A	10050099B8912	FEEDER	9.80	0.0006	0.9656
135	T60131	1420004096955JB		9.60	0.0006	0.9662
136	74955A	10950099G0098	RACK	9.50	0.0006	0.9668
137	97491A	1630008803507	BRK CYL	9.36	0.0006	0.9674
138	00131B	000C0130E	AIRCRAFT	9.00	0.0006	0.9680
139	15519A	1630001132133	FB111STR	9.00	0.0006	0.9686
140	T1067H	16B0011089660		9.00	0.0006	0.9692
141	15053A	1630000528493	BRAKEASS	8.96	0.0006	0.9698
142	M6927K	1560005182799BF		8.91	0.0006	0.9704
143	74658A	1620001486466	BALLSCRU	8.88	0.0006	0.9710
144	74975A	10050030051J5	BOOSTER	8.84	0.0006	0.9716
145	16776A	1630008473731	A37 BRK	8.82	0.0006	0.9722
146	15642A	1630010054189	C130 BP	8.74	0.0006	0.9728
147	96041A	66050083653J5	COMPUTER	8.45	0.0005	0.9733
148	42078A	10050089537J2	HOUSING	8.35	0.0005	0.9738
149	69921A	1560010074122BF	DRACCHUT	8.35	0.0005	0.9743
150	T5046J	1560008561386BF		8.10	0.0005	0.9748
151	16354A	1427011043011AB	CONTROL	8.00	0.0005	0.9753
152	19938A	1620010056009	A10-NLG	8.00	0.0005	0.9758
153	M1595K	1560P16B710-02		8.00	0.0005	0.9763

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RCC EARNED HOURS FOR MAPUU...OCT 88 THRU JAN 89

	PROB NO.		NOUN	RCC OPEN	RCC OPEN X	CUMM X EARNED HR
154	T78821			8.00	0.0005	0.9768
155	M6604K	1650003017883		7.92	0.0005	0.9773
156	93159A	6605001113645	TRANSMIT	7.84	0.0005	0.9778
157	68887A	5841010909930BF	PANEL,SS	7.50	0.0005	0.9783
158	M3934K	1560P16P194-125		7.44	0.0005	0.9788
159	14782A	1560003507824BF	DOOR LHF	7.20	0.0005	0.9793
160	M7081K	3560PX8852351		7.00	0.0004	0.9797
161	97709A	1620006986015	CYC	6.80	0.0004	0.9801
162	M7619K	3120P879596F		6.75	0.0004	0.9805
163	M7620K	3120P879593F		6.75	0.0004	0.9809
164	14720A	1560009547748BF	DUCT F4	6.50	0.0004	0.9813
165	93582A	6760004833094	MAGAZINE	6.30	0.0004	0.9817
166	T45890	1620PB1X8745039		6.30	0.0004	0.9821
167	68735A	1630010830445	F15ABRK	6.27	0.0004	0.9825
168	00126C	000F0004C	AIRCRAFT	6.00	0.0004	0.9829
169	M4253K	5315001922153		6.00	0.0004	0.9833
170	T1064H	1680011089660		6.00	0.0004	0.9837
171	T45540	1620PB1X8633716		6.00	0.0004	0.9841
172	T45950	1620PB1X8745045		6.00	0.0004	0.9845
173	97659A	1620006986014	CYLINDER	5.92	0.0004	0.9849
174	00161A	000F0016A	AIRCRAFT	5.90	0.0004	0.9853
175	M9194K	5306002972568FC		5.61	0.0004	0.9857
176	T46040	1620PB1X8745050		5.50	0.0003	0.9860
177	T69620	1560006060669		5.50	0.0003	0.9863
178	18365A	1560009834324BF	WING SEC	5.40	0.0003	0.9866
179	74821A	1005003472304	BOOSTER	5.00	0.0003	0.9869
180	15229A	1630003154832	T33 BRK	4.80	0.0003	0.9872
181	73041A	1005003005136	BOOSTER	4.68	0.0003	0.9875
182	18395A	1005004197188	BODY ROT	4.50	0.0003	0.9878
183	74836A	1005005699715	BOOSTER	4.50	0.0003	0.9881
184	T1066H	1680011089660		4.50	0.0003	0.9884
185	T45210	1620001877445		4.50	0.0003	0.9887
186	18063A	1560001706673BF	C WING	4.40	0.0003	0.9890
187	M7616K	4920018720773BF		4.25	0.0003	0.9893
188	00167C	000F0016C	AIRCRAFT	4.20	0.0003	0.9896
189	14814A	1560004896619BF	PYLNRF4C	4.20	0.0003	0.9899
190	14783A	1560003507825BF	DOOR RHF	4.14	0.0003	0.9902
191	16019A	1620010248844	STRUT F4	4.00	0.0003	0.9905
192	61718A	1420003135161CJ	WIRING H	4.00	0.0003	0.9908
193	74977A	1005000180825	CONTROL	4.00	0.0003	0.9911
194	T4184N			4.00	0.0003	0.9914
195	T4185N	000F00049		4.00	0.0003	0.9917
196	15639A	1630010054188	C130 PP	3.72	0.0002	0.9919
197	91561A	6760001455298	CASSETTE	3.60	0.0002	0.9921
198	MS361K	1560MD027650GBF		3.60	0.0002	0.9923
199	15753A	1630010098474	WHL E3AM	3.52	0.0002	0.9925
200	15521A	1630008562073	FB111 PP	3.45	0.0002	0.9927
201	15616A	1630005678162	C141 BP	3.45	0.0002	0.9929
202	13725A	1560009243008BF	FLAP R H	3.36	0.0002	0.9931
203	68891A	1630008562195	FB111 BP	3.22	0.0002	0.9933
204	M7528K	597SP6318097		3.06	0.0002	0.9935

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RCC EARNED HOURS FOR MNPUU...OCT 88 THRU JAN 89

	PROD NO.		NOUN	RCC DPEH	RCC DPEH X	CUMM X EARNED HR
205	15803A	10950023929 29	HOUSING	3.00	0.0002	0.9937
206	T45910	1620PB1X8745041		3.00	0.0002	0.9939
207	T74701	TAC-00003882033		3.00	0.0002	0.9941
208	26579A	1620ND052083C	DRC BRAC	2.97	0.0002	0.9943
209	69288A	16200094387 53	BRACE	2.97	0.0002	0.9945
210	42625A	1620007158561	STRUT	2.96	0.0002	0.9947
211	42626A	1620007158562	B52-RH.T	2.96	0.0002	0.9949
212	13732A	15600087473388F	BOORAY	2.90	0.0002	0.9951
213	14813A	15600048966178F	PYLNRF4C	2.87	0.0002	0.9953
214	00165A	000F00168	AIRCRAFT	2.78	0.0002	0.9955
215	M4905K	5340ND028513GAH		2.60	0.0002	0.9957
216	M7617K	3120P879409F		2.50	0.0002	0.9959
217	16317A	1450D11005926AH	ELV W C	2.40	0.0002	0.9961
218	M3928K	1560P16P194-95		2.40	0.0002	0.9963
219	M4712K			2.40	0.0002	0.9965
220	19266A	1630810098475	E3A BRK	2.36	0.0001	0.9966
221	T4162N	000F0016A		2.28	0.0001	0.9967
222	M5953K	1560005043326BF		2.16	0.0001	0.9968
223	M4840K	1450000056722AH		2.11	0.0001	0.9969
224	M4841K	1450000056722AH		2.11	0.0001	0.9970
225	M6265K	5306ND026072GAH		2.09	0.0001	0.9971
226	72879A	1620004463776	ML6 OUTR	2.04	0.0001	0.9972
227	00124C	000FJ004E	AIRCRAFT	2.00	0.0001	0.9973
228	59596A	1450001142786AH	YOKE AY	2.00	0.0001	0.9974
229	M4472K	15600059298 7BF		2.00	0.0001	0.9975
230	M6426K	1650P71348936		2.00	0.0001	0.9976
231	M7436K			2.00	0.0001	0.9977
232	M7949K	9999PFIXTURE		2.00	0.0001	0.9978
233	M8721K			2.00	0.0001	0.9979
234	M9407K			2.00	0.0001	0.9980
235	T1302A	9999P0V10A		2.00	0.0001	0.9981
236	74958A	10950045384 07	RACK	1.80	0.0001	0.9982
237	17921A	10050104461 74	DRUMASSY	1.53	0.0001	0.9983
238	26357A	10050034415 50	ROTORBDY	1.50	0.0001	0.9984
239	M0031K	1560P111656F		1.50	0.0001	0.9985
240	M3933K	1560P16P194-241		1.50	0.0001	0.9986
241	M5578K	5315ND030071GBF		1.50	0.0001	0.9987
242	T1209A	000F0004E		1.50	0.0001	0.9988
243	T4679N	1430ND026070GAH		1.50	0.0001	0.9989
244	ME840K	1430000133077AH		1.40	0.0001	0.9990
245	M6759K			1.38	0.0001	0.9991
246	17313A	16200065 18222	TRUNNION	1.35	0.0001	0.9992
247	62963A	16800040510 42LS	SEAT	1.35	0.0001	0.9993
248	62964A	16800041827 85LS	SEAT	1.35	0.0001	0.9994
249	M5802K	5310ND029869CBF		1.32	0.0001	0.9995
250	15523A	1630001576723	WHL F111	1.28	0.0001	0.9996
251	19911A	1630009141329	WHEEL	1.25	0.0001	0.9997
252	95948A	6760010293270	CONTROL	1.20	0.0001	0.9998
253	M4887K	1560P875345F		1.20	0.0001	0.9999
254	74551A	16200086700 10	SHAFT AS	1.15	0.0001	1.0000
255	55026A	1430008174132AH	06 MCU	1.10	0.0001	1.0001

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ACC EARNED HOURS FOR MNPUW...OCT 88 THRU JAN 89

	PROD NO.		NOUN	RCC DPEH	RCC DPEH X	CUMM X EARNED HR
256	M3922K	1560P112812F		1.00	0.0001	1.0002
257	70373A	6760000035596	CASSETTE	1.05	0.0001	1.0003
258	M4165K			1.02	0.0001	1.0004
259	13294A	1560008590773BF	FLAP ASY	1.00	0.0001	1.0005
260	M4141K	1560NCE1190B7BF		1.00	0.0001	1.0006
261	M4585K	1730P879788F		1.00	0.0001	1.0007
262	M5789K	5310ND029610CAH		1.00	0.0001	1.0008
263	M5904K	4920009784049		1.00	0.0001	1.0009
264	M9542K	1620010760457		1.00	0.0001	1.0010
265	T45530			1.00	0.0001	1.0011
266	T4579Q	1620PB1X8745033		1.00	0.0001	1.0012
267	M3932K	1560P16P194-67		0.96	0.0001	1.0013
268	M3946K	5340P109832F		0.90	0.0001	1.0014
269	M6762K	1450ND027212CAH		0.88	0.0001	1.0015
270	68973A	1440010643475AB	LAUNCHER	0.84	0.0001	1.0016
271	M4724K	4920P8619603		0.80	0.0001	1.0017
272	M9329K	5120P7233784-03		0.80	0.0001	1.0018
273	M9330K	5120P7233784-01		0.80	0.0001	1.0019
274	M0033K	1560P106647F		0.78	0.0000	1.0019
275	M4541K	1560010190194BF		0.76	0.0000	1.0019
276	M6333K	5220L869888F		0.75	0.0000	1.0019
277	M5803K	5310ND030156CBF		0.72	0.0000	1.0019
278	M4996K	5360ND029601CAH		0.70	0.0000	1.0019
279	M7715K	5365ND927653CUF		0.68	0.0000	1.0019
280	M7843K	1560P108322F		0.68	0.0000	1.0019
281	M7424K	1560003903918BF		0.66	0.0000	1.0019
282	96076A	6605008365333	AMPLIFIE	0.65	0.0000	1.0019
283	22420A	1630008329087	WHEEL MG	0.64	0.0000	1.0019
284	M4190K	1560P880769F		0.60	0.0000	1.0019
285	M6105K			0.60	0.0000	1.0019
286	M6537K	5340005273213BF		0.60	0.0000	1.0019
287	M6564K	1560010948843BF		0.60	0.0000	1.0019
288	M6571K	1560010948843BF		0.60	0.0000	1.0019
289	M9761K	1560ND030458CUF		0.60	0.0000	1.0019
290	72858A	1620003238292	CYLINDER	0.56	0.0000	1.0019
291	74817A	1005002213325	FEEDER A	0.56	0.0000	1.0019
292	M3931K	1560P16P194-67		0.54	0.0000	1.0019
293	M9759K	1560ND029906CBF		0.54	0.0000	1.0019
294	98168A	1630004351350	CYLINDER	0.52	0.0000	1.0019
295	69901A	1620011853606	INSERT	0.50	0.0000	1.0019
296	M4640K	4920P879778F		0.50	0.0000	1.0019
297	M4726K	4920P337114-1		0.50	0.0000	1.0019
298	M4903K	5340ND028511CAH		0.50	0.0000	1.0019
299	M5387K	1560001371370BF		0.50	0.0000	1.0019
300	M5389K	1560001371370BF		0.50	0.0000	1.0019
301	M6487K	5340ND027414CAH		0.50	0.0000	1.0019
302	M9744K			0.50	0.0000	1.0019
303	T44210	1620PB1BFIXTURE		0.50	0.0000	1.0019
304	15576A	1630001473854	FSE BRK	0.48	0.0000	1.0019
305	M9755K	1560ND029964CUF		0.48	0.0000	1.0019
306	M7426K	1560003903918BF		0.42	0.0000	1.0019

RCC EARNED HOURS FOR MMPUU...OCT 88 THRU JAN 89

	PROB NO	NOUN	RCC DPEH	RCC DPEH X	CUMM X EARNED HR
307	69625A 1620004100874	CYLINDER	0.40	0.0000	1.0019
308	91401A 6720008791127	BODY	0.40	0.0000	1.0019
309	M3906K 1560P877246F		0.38	0.0000	1.0019
310	M3907K 1560P878263F		0.38	0.0000	1.0019
311	M3921K 1560P16B6530-97		0.38	0.0000	1.0019
312	M4177K 1560P880595F		0.38	0.0000	1.0019
313	M4206K 1560P881557F		0.38	0.0000	1.0019
314	M4215K 1560P874634F		0.38	0.0000	1.0019
315	M4940K 1560P16B6307-39		0.38	0.0000	1.0019
316	M4963K		0.38	0.0000	1.0019
317	M5030K		0.38	0.0000	1.0019
318	M5274K 1560ND025509CBF		0.38	0.0000	1.0019
319	M5275K 1560ND027702CBF		0.38	0.0000	1.0019
320	M6264K		0.38	0.0000	1.0019
321	M6266K 1560011429208BF		0.38	0.0000	1.0019
322	M6420K 1560004508917BF		0.38	0.0000	1.0019
323	M6421K 1560004508917BF		0.38	0.0000	1.0019
324	M6728K 1560010953535BF		0.38	0.0000	1.0019
325	M6776K 1560005947776BF		0.38	0.0000	1.0019
326	M6777K 1560005947776BF		0.38	0.0000	1.0019
327	M6908K 1560002319189BF		0.38	0.0000	1.0019
328	M6963K 1560006130798BF		0.38	0.0000	1.0019
329	M7604K 1560P112138F		0.38	0.0000	1.0019
330	M7859K 1560P103001F		0.38	0.0000	1.0019
331	M7899K 1560P106134F		0.38	0.0000	1.0019
332	M7921K 1560P16B6530-73		0.38	0.0000	1.0019
333	M7946K 1045P36-2603-2		0.38	0.0000	1.0019
334	M9333K 1560010297256BF		0.38	0.0000	1.0019
335	M9368K 1560004356750BF		0.38	0.0000	1.0019
336	M9374K 1560009342187JBF		0.38	0.0000	1.0019
337	M9594K 1560010933971BF		0.38	0.0000	1.0019
338	M9750K 1560ND029906CBF		0.38	0.0000	1.0019
339	T7692A 1560011578048WF		0.38	0.0000	1.0019
340	68618A 1085006236434	AMMO CAN	0.36	0.0000	1.0019
341	69098A 1620003654001	BALLSCRU	0.34	0.0000	1.0019
342	19906A 1560019747724WF	MLG DOOR	0.33	0.0000	1.0019
343	18147A 1440001398604AH	MULTI LI	0.30	0.0000	1.0019
344	26029A 1630010054188	C130 NPP	0.30	0.0000	1.0019
345	T78810 1450P863C301039		0.30	0.0000	1.0019
346	M5910K S32SND029878CAH		0.26	0.0000	1.0019
347	14557A 1560009109099BF	PYLON	0.25	0.0000	1.0019
348	M1854K 1560ND026082CBF		0.25	0.0000	1.0019
349	90425A 6660008000844BF	TRANSMIT	0.20	0.0000	1.0019
350	92913A 6660007612331BF	TRANSMIT	0.20	0.0000	1.0019
351	16404A 1630010140656LC	C130H WH	0.12	0.0000	1.0019
352	M8500K 3120004549244		0.12	0.0000	1.0019
353	90400A 1620006099886	LINK	0.10	0.0000	1.0019
354	M8718K		0.10	0.0000	1.0019
355	91533A 6720001257219	BODY / S	0.08	0.0000	1.0019
356	M3923K 1560P112810F		0.06	0.0000	1.0019
357	72897A 1630004649165	CS EP	-3.20	-0.0082	1.0017

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RCC EARNED HOURS FOR MNPWW. OCT 88 THRU JAN 89

PROD NO		MDWN	RCC DPEH	RCC BPEH X	CUMM X EARNED HR
358	17567A 1620010381912	KC-135 N	-43.33	-0.0027	0.9990
			15,870.42		

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OGDEN 80/20 SORTED BY MANPWW

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
000F0004E	00124B		.	.	70	0.0039		.	2	0.0775	227	0.0001		.	11	0.0188	1	0.0858	3744.75	0.018475
00RF0004C	00126B		.	.	74	0.0035		.	1	0.0782		.		.	16	0.0146	2	0.0836	3575.29	0.036115
2330P8516153	M4631D		.	.		.		.		.		.		.		.	3	0.0416	859.88	0.039370
4935P9116	T7266Q		.	.		.		.		.		.		.		.	4	0.0315	499.67	0.041838
	T7333Q		.	1		.		.		.		.		.		.	5	0.0315	499.67	0.044301
15600078839418F	13822A		.	.		.		.		.		.		.	88	0.0026	6	0.0307	566.88	0.047098
1630002769849	15641A		32	141	34	0.0068	35	0.0078	45	0.0053	22	0.0123		.	193	0.0007	7	0.0302	1654.54	0.055261
15600091168828F	14539A		.	65		.		.	20	0.0088		.		.		.	8	0.0302	665.96	0.058546
15600079068738F	13829A		.	.		.		.	44	0.0054		.		.		.	9	0.0267	538.23	0.061202
163009376604	15728A		.	.		.		.		.		.		.		.	10	0.0212	336.28	0.062861
000F0004G	00129B		.	.	190	0.0005		.	10	0.0145		.		.	72	0.0033	11	0.0205	754.50	0.066583
1620009485068	16915A		.	.	116	0.0019	20	0.0108	15	0.0106	45	0.0059	7	0.0302	9	0.0190	12	0.0190	2315.59	0.078008
1630005756750	T5736I		.	.	48	0.0055	55	0.0050	75	0.0029		.		.		.	13	0.0178	707.24	0.081497
1005000566753	74805A		.	2		.		.	71	0.0033		.	88	0.0017	5	0.0278	14	0.0173	1230.31	0.087567
15600085613868F	14781A		18	54		.	221	0.0005	109	0.0019		.	43	0.0052	238	0.0004	15	0.0155	409.80	0.089589
1450N0029644GAH	M7871K		.	.		.		.		.		.		.		.	16	0.0154	244.28	0.090794
1730P8852369-10	M4586K		.	.		.		.		.		.		.		.	17	0.0151	239.52	0.091976
1730P8852369-20	M4587K		.	.		.		.		.		.		.		.	18	0.0151	239.52	0.093157
1620010597842	69354A		12	54	25	0.0088	12	0.0140	33	0.0068	21	0.0124	34	0.0078	13	0.0184	19	0.0137	2313.41	0.104571
1630007776698	15068A		35	.	24	0.0088	45	0.0066	64	0.0039	38	0.0064	13	0.0216	240	0.0004	20	0.0117	1508.12	0.112012
1630008254794	15327A		20	.	50	0.0053	24	0.0097	228	0.0005	129	0.0008		.	303	0.0002	21	0.0116	726.83	0.115598
8140011515345	M4823K		.	.		.		.		.		.		.		.	22	0.0111	176.07	0.116466
SYS-00005140002	T2709I		.	.		.		.		.		.		.		.	23	0.0011	17.45	0.116552
1620001099286	16836A		.	11	15	0.0131	13	0.0137	9	0.0161	10	0.0279	2	0.0695	4	0.0296	24	0.0107	4870.74	0.140583
000F0004G	00119B		.	.	254	0.0002		.	18	0.0090		.		.	109	0.0020	25	0.0108	428.73	0.142698
1630000827955	15285A		23	236	14	0.0142	40	0.0071		.	48	0.0058	79	0.0021	318	0.0002	26	0.0108	1241.53	0.148824
1620010204973	17565A		10	.	23	0.0099	10	0.0161	24	0.0083	6	0.0336	3	0.0551	8	0.0197	27	0.0102	4318.94	0.170132
15600024661648F	13816A		.	.		.		.	164	0.0009		.		.		.	28	0.0101	179.33	0.171017
1620001099287	16837A		30	87	17	0.0129	15	0.0124	6	0.0176	8	0.0306	1	0.0722	2	0.0356	29	0.0100	5200.55	0.196675
1630002692822	15162A		28	136	11	0.0166	23	0.0097	48	0.0047	15	0.0195	176	0.0001	65	0.0038	30	0.0097	2178.78	0.207424
1300PGROUNDTEST	T4971Q		.	.		.		.		.		.		.		.	31	0.0095	150.69	0.208167
15600079447278F	13288A		.	50		.		.	46	0.0051		.		.		.	32	0.0093	255.85	0.209430
15600024661598F	18133A		.	.		.		.	166	0.0009		.		.		.	33	0.0088	158.71	0.210213
1620002421514	T6295I		76	56	143	0.0012	150	0.0013	200	0.0006	35	0.0068	105	0.0012	104	0.0021	34	0.0083	618.24	0.213263
14500106184778B	M3009K		.	.		.		.		.		.		.	45	0.0057	35	0.0082	305.20	0.214769
1560095477528F	14729A		.	.		.		.		.		.		.		.	36	0.0080	126.90	0.215395
3920000625516AH	M6966K		.	.		.		.		.		.		.		.	37	0.0073	115.80	0.215966
000F0004E	00199B		.	.	169	0.0003		.	7	0.0174		.		.		.	38	0.0068	509.36	0.218479
00RF0004C	00109B		.	.	182	0.0005		.	14	0.0109		.		.	108	0.0020	39	0.0061	409.67	0.220500
10050100B6283	25638A		.	.		.		.		.		.		.		.	40	0.0060	95.17	0.220970
1630005470116	T5530I		.	.	118	0.0017	116	0.0019	156	0.0010		.		.		.	41	0.0059	237.32	0.222141
000F0004E	00118B		.	.	235	0.0003		.		.		.		.	139	0.0013	42	0.0058	143.91	0.222851
1430ND028568GAH	M6118K		.	.		.		.		.		.		.	388	0.0001	43	0.0057	93.49	0.223312
1620010627002	17402A		.	17	69	0.0040	30	0.0086	90	0.0024	25	0.0105	11	0.0230	39	0.0072	44	0.0056	1662.46	0.231514
4210P8633369	M1641K		.	.		.		.		.		.		.		.	45	0.0055	87.24	0.231945
1620001877445	74521A		.	7	44	0.0060	21	0.0104	34	0.0066	13	0.0200		.	34	0.0079	46	0.0054	1894.49	0.241291
1005008953726	63822A		.	.		.		.	158	0.0009		.		.	40	0.0071	47	0.0054	322.91	0.242885
1005001886968	68769A		.	.		.		.	266	0.0003		.		.		.	48	0.0051	87.27	0.243315
7105P857712F	M6576K		.	.		.		.		.		.		.	401	0.0001	49	0.0050	82.38	0.243722

OGDEN 80/20 SORTED BY MANPWW

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620002488005	74524A																50	0.0047	74.55	0.244089
1620004427877	74527A			2	39	0.0062	14	0.0134	47	0.0049	2	0.0494	26	0.0108	10	0.0189	51	0.0047	3785.10	0.262764
4920P8748714	M4722K																52	0.0044	69.79	0.263108
1005010463536	68614A																53	0.0043	68.21	0.263445
1620001398474	17143A		15	38	10	0.0197	8	0.0204	21	0.0085	5	0.0341	5	0.0414	1	0.0400	54	0.0043	5134.89	0.288779
1620001398473	17142A		15	28	12	0.0161	9	0.0162	23	0.0084	9	0.0290	6	0.0321	3	0.0326	55	0.0043	4241.38	0.309704
1095010617748	83383A														66	0.0037	56	0.0042	180.30	0.310594
1630005557523	15387A		25	44	77	0.0033	41	0.0071	173	0.0008	88	0.0018			322	0.0002	57	0.0040	502.40	0.313073
4935P9150	17291Q																58	0.0038	60.28	0.313370
000F0004D	00121B				236	0.0003			57	0.0043					194	0.0007	59	0.0037	183.50	0.314275
1005002755748	25318A								308	0.0002							60	0.0036	61.35	0.314578
1630005852 42	15054A																61	0.0036	57.10	0.314860
000F0004G	T4118N																62	0.0035	55.52	0.315134
1560008590777BF	13296A																63	0.0033	52.35	0.315392
	T1806A			1													64	0.0033	52.35	0.315650
1450ND029953GAH	M7874K																65	0.0031	49.17	0.315893
1005010595785	63819A		34						218	0.0008			152	0.0003	60	0.0042	66	0.0029	193.37	0.316847
1630010627046	15752A																67	0.0028	44.41	0.317086
1095004752437	74924A						104	0.0022									68	0.0028	107.72	0.317597
1620001791425	74692A				18	0.0121	56	0.0049	49	0.0047	44	0.0059	38	0.0065	24	0.0106	69	0.0027	1474.91	0.324874
1005004985359	74831A						270	0.0002	387	0.0001							70	0.0026	49.12	0.325117
1630004649162	72896A				49	0.0055	61	0.0047	93	0.0023							71	0.0025	443.17	0.327303
1620010054193	17577A		21	5			47	0.0058	42	0.0054	26	0.0100	16	0.0184	38	0.0073	72	0.0024	1330.45	0.333867
1630005918349	15603A		11		52	0.0051	50	0.0057	114	0.0017	50	0.0052					73	0.0024	672.36	0.337184
1630008329088	15583A		18	20	105	0.0021	70	0.0035	217	0.0006	146	0.0006	32	0.0084	483	0.0000	74	0.0023	416.86	0.339241
1620010374639	16297A			1	129	0.0015	91	0.0028	198	0.0006	97	0.0016	74	0.0023	63	0.0040	75	0.0023	426.38	0.341345
1620011627542	83317A				110	0.0020	78	0.0031	126	0.0014	111	0.0011			112	0.0020	76	0.0022	343.88	0.343041
1630002421525	72893A								268	0.0003							77	0.0022	41.27	0.343245
471001004882 9BF	M5329K														468	0.0000	78	0.0021	33.31	0.343409
1560004834393BF	13308A																79	0.0020	31.72	0.343566
1630004649160	72895A				82	0.0031	103	0.0022	240	0.0004							80	0.0020	227.20	0.344687
000F0016A	00162C				318	0.0001			247	0.0004	104	0.0012					81	0.0019	95.86	0.345160
5310009305173	M5570K																82	0.0019	30.14	0.345308
5310012788189AQ	M6237K																83	0.0019	30.14	0.345457
1095004752436	74923A						254	0.0003									84	0.0019	38.77	0.345648
1620001791083	74516A		67		141	0.0013	95	0.0026	104	0.0020	19	0.0156	82	0.0020	62	0.0040	85	0.0018	1049.96	0.350828
1560009106230BF	84321A																86	0.0018	28.55	0.350969
1620010054191	17575A			37	5	0.0393	48	0.0058	26	0.0081	14	0.0197	8	0.0285	17	0.0132	87	0.0017	3744.30	0.369442
1560008670561BF	18349A			30													88	0.0017	26.97	0.369576
1325002250901	T7212Q																89	0.0015	23.79	0.369693
1630008810815	15161A				36	0.0063	67	0.0037	94	0.0023	27	0.0090	110	0.0010	164	0.0009	90	0.0015	876.01	0.374015
1560000304597BF	18509A																91	0.0015	23.79	0.374132
1630008691784	T5693I				170	0.0008	140	0.0015	309	0.0002							92	0.0014	101.54	0.374633
1630007057296	25598A				289	0.0001	160	0.0010	299	0.0003	198	0.0002					93	0.0014	70.22	0.374980
1620011680338	69803A				114	0.0020	136	0.0015	176	0.0008	150	0.0006	77	0.0021	115	0.0019	94	0.0014	286.27	0.376392
1620003051726	68884A			6	312	0.0001	396	0.0000	497	0.0000	125	0.0008			434	0.0000	95	0.0014	61.69	0.376696
6760008796682CW	72399A																96	0 0013	20.62	0.376798
1630011996430	25874A		27	98	7	0.0270	27	0.0092	192	0.0007	91	0.0018			220	0.0005	97	0 0013	1472.57	0 384063
1560012091468WF	M5934K														233	0.0004	98	0 0013	32.91	0.384226

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1095001419328	74909A		.	.			374	0.0000	308	0.0002					187	0.0009	99	0.0013	52.52	0.384485
1630009271825	15222A		.	1	253	0.0002	222	0.0005	372	0.0001	202	0.0002			577	0.0000	100	0.0011	50.81	0.384736
9999PAMBOX	T5622Q		.	.													101	0.0011	17.45	0.384822
4935P9216	T7273Q		.	.													102	0.0011	17.45	0.384908
1620010054194	17578A		21	5	8	0.0264	85	0.0041	63	0.0041	47	0.0054	18	0.0170	42	0.0064	103	0.0010	2027.08	0.394909
1630002262376	28041A		.	.	131	0.0014	194	0.0007	202	0.0006			85	0.0018			104	0.0010	138.14	0.395590
1560ND028868GBF	M5224K												135	0.0004	214	0.0006	105	0.0010	41.75	0.395796
1620001157419	T6850A	S	40	14	119	0.0017	186	0.0008	258	0.0004	137	0.0007	102	0.0012	134	0.0014	106	0.0010	211.63	0.396840
1630009141329	15757A		.	.	58	0.0048	18	0.0114	188	0.0007	66	0.0031			128	0.0015	107	0.0009	732.30	0.400453
1450ND029615GAH	M7882K																108	0.0009	14.28	0.400524
1427011043012AB	62956A														215	0.0006	109	0.0009	32.71	0.400685
1005007861463	74858A																110	0.0009	14.28	0.400756
1630010414570	15698A		.	.	67	0.0040	173	0.0008			185	0.0003			402	0.0001	111	0.0009	213.25	0.401808
1560P880497F	M4167K														588	0.0000	112	0.0009	14.28	0.401878
1630008691784	36192A		.	.	152	0.0011	72	0.0035	186	0.0007	204	0.0002					113	0.0009	182.62	0.402779
1620009438754	78048A		.	.	203	0.0004			320	0.0002	142	0.0006					114	0.0009	61.10	0.403081
1560004834394BF	13309A																115	0.0009	14.28	0.403151
1630004100858	74568A		.	.	54	0.0049	71	0.0035	242	0.0004	51	0.0051			304	0.0002	116	0.0009	551.37	0.405871
1560P16P194-67	M0002K														300	0.0002	117	0.0009	20.42	0.405972
1560P16P194-241	M0005K														301	0.0002	118	0.0009	20.42	0.406073
000V0010A	00141B						376	0.0000	30	0.0072	189	0.0003	123	0.0007	147	0.0012	119	0.0009	230.43	0.407210
1560ND028885GBF	M5244K												92	0.0016			120	0.0008	42.50	0.407419
1730P8338103	M8723K																121	0.0008	12.69	0.407482
1620P81X8633707	T4574Q																122	0.0008	12.69	0.407545
1560010495906BF	M4383K														450	0.0000	123	0.0008	12.69	0.407607
000F0016B	00166C								390	0.0001	236	0.0001			436	0.0000	124	0.0007	17.66	0.407894
1620004325651	72877A	S	12	19	91	0.0025	133	0.0018	88	0.0025	134	0.0008	31	0.0090	85	0.0027	125	0.0007	496.13	0.410142
14270101589S6AB	75223A														422	0.0000	126	0.0007	11.10	0.410197
1620N00537976	28578A																127	0.0007	11.10	0.410252
1560008590776BF	13295A																128	0.0007	11.10	0.410306
1560P16B6307-40	M4965K																129	0.0007	11.10	0.410361
1560004319668BF	M6281K														625	0.0000	130	0.0007	11.10	0.410416
1005010086283	87051H		.	1					321	0.0002					313	0.0002	131	0.0006	19.91	0.410514
1560001239497BF	M5388K																132	0.0006	9.52	0.410561
1620001791087	74518A		.	2	238	0.0003	386	0.0000	257	0.0004	57	0.0045	128	0.0006	189	0.0007	133	0.0006	262.31	0.411855
1005009988912	74895A		.	.											218	0.0006	134	0.0006	27.95	0.411993
1420004098955JB	T6013I		.	.													135	0.0006	9.52	0.412040
1095009960098	74955A		.	.			123	0.0018	96	0.0023					94	0.0023	136	0.0006	180.83	0.412932
1630000883507	97491A		.	.					199	0.0006							137	0.0006	22.26	0.413042
000C0130E	00131B								19	0.0089							138	0.0006	198.56	0.414022
1630001132133	15519A		11	.	153	0.0011	60	0.0048	206	0.0006			125	0.0006			139	0.0006	215.45	0.415085
1880011088680	T1067H														308	0.0002	140	0.0006	15.66	0.415162
1630000528403	15053A		27	18	233	0.0003	148	0.0013	462	0.0000	55	0.0047	113	0.0009	275	0.0003	141	0.0006	283.40	0.416810
1560005182799BF	M6927K																142	0.0006	9.52	0.416656
1620001486466	74652A		.	.	107	0.0021	154	0.0011	148	0.0011	116	0.0010	57	0.0033	82	0.0030	143	0.0006	346.34	0.418365
1005003005135	74975A		.	.									115	0.0009			144	0.0006	26.29	0.418495
1630008473731	18776A		.	.	209	0.0004	119	0.0019	444	0.0000	188	0.0003	185	0.0000			145	0.0006	93.46	0.418956
1630010054189	15642A	S	11	5	136	0.0014	98	0.0025	183	0.0007			100	0.0013			146	0.0006	176.40	0.419826
6605008365335	98041A		.	.													147	0.0005	7.93	0.419865

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NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1005008953722	42078A								343	0.0002							148	0.0005	12.18	0.419926
1560010074122BF	69921A																149	0.0005	7.93	0.419965
1560008561386BF	T5046J		18	54			120	0.0018	145	0.0011							150	0.0005	83.09	0.420375
1427011043011AB	16354A														400	0.0001	151	0.0005	11.00	0.420429
1620010856009	19938A				174	0.0007			120	0.0016	98	0.0016	56	0.0034	47	0.0053	152	0.0005	367.01	0.422240
1560P1GB710-82	M1595K																153	0.0005	7.93	0.422279
	T7882I			1													154	0.0005	7.93	0.422318
1650003017883	M6604K														212	0.0006	155	0.0005	28.37	0.422448
6605001113645	93159A																156	0.0005	7.93	0.422487
5841010909930BF	68887A																157	0.0005	7.93	0.422526
1560P16P194-125	M3934K																158	0.0005	7.93	0.422565
1560003507824BF	14782A																159	0.0005	7.93	0.422604
1560PX8852351	M7081K																160	0.0004	6.34	0.422636
1620006986015	97709A								125	0.0014	173	0.0004	142	0.0003			161	0.0004	59.42	0.422929
3120P879596F	M7619K														251	0.0004	162	0.0004	18.63	0.423021
3120P8795933F	M7620K																163	0.0004	6.34	0.423052
1560009547748BF	14728A		8	2					360	0.0001							164	0.0004	8.47	0.423094
6760004833094	93582A														239	0.0004	165	0.0004	18.63	0.423186
1620PB1X8745039	T4589Q																166	0.0004	6.34	0.423217
1630010830445	68735A				93	0.0024	90	0.0028	155	0.0010	141	0.0007	147	0.0003	182	0.0007	167	0.0004	262.06	0.424510
00RF0004C	00126C																168	0.0004	6.34	0.424541
5315001922153	M4253K																169	0.0004	6.34	0.424573
1680011089660	T1064H														391	0.0001	170	0.0004	9.42	0.424619
1620PB1X8633716	T4554Q																171	0.0004	6.34	0.424650
1620PB1X8745045	T4595Q																172	0.0004	6.34	0.424682
1620006986014	97659A								141	0.0011	181	0.0003	149	0.0003	227	0.0005	173	0.0004	63.97	0.424997
000F0016A	00161A								131	0.0013							174	0.0004	33.96	0.425165
5306002972568FG	M9194K								138	0.0011					470	0.0000	175	0.0004	29.71	0.425311
1620PB1X8745050	T4604Q																176	0.0003	4.76	0.425335
1560006060669	T6962Q																177	0.0003	4.76	0.425358
1560009834324BF	18365A								74	0.0030			162	0.0002	426	0.0000	178	0.0003	72.21	0.425715
1005003472304	74821A												133	0.0005			179	0.0003	14.08	0.425784
1630003154832	15229A			3			413	-0.0011	507	0.0000			146	0.0003			180	0.0003	-21.31	0.425679
1005003005136	73041A												132	0.0005			181	0.0003	14.08	0.425748
1005004197188	18395A			36					415	0.0001					395	0.0001	182	0.0003	9.96	0.425798
1005005699715	74836A																183	0.0003	4.76	0.425821
1680011089660	T1066H														358	0.0001	184	0.0003	7.83	0.425860
1620001877445	T4521Q			7	258	0.0002	387	0.0000	529	0.0000	273	0.0000			393	0.0001	185	0.0003	15.81	0.425938
1560001708671BF	18883A								81	0.0027					427	0.0000	186	0.0003	62.11	0.426244
4920010720773BF	M7616K																187	0.0003	4.76	0.426268
000F0016C	00167C														332	0.0001	188	0.0003	7.83	0.426306
1560004896619BF	14814A								408	0.0001	70	0.0029					189	0.0003	135.54	0.426975
1560003507825BF	14783A																190	0.0003	4.76	0.426998
1620010248844	16019A			20	51	0.0052	46	0.0064	39	0.0055	40	0.0063	10	0.0237	18	0.0130	191	0.0003	1633.71	0.435059
1420003135161CJ	61718A																192	0.0003	4.76	0.435082
1005000180825	74977A																193	0.0003	4.76	0.435106
	T4104N			1													194	0.0003	4.76	0.435129
000F00004D	T4105N																195	0.0003	4.76	0.435153
1630010054188	15639A	S	13	4	164	0.0009	414	-0.0013	221	0.0005							196	0.0002	12.29	0.435213

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6760001455298	91561A																197	0.0002	3.172	0.435229
1560ND027658GBF	M5361K																198	0.0002	3.172	0.435244
1630010098474	15753A				270	0.0002	188	0.0009	510	0.0000	254	0.0000			282	0.0003	199	0.0002	46.267	0.435473
1630008562073	15521A		11		208	0.0004	192	0.0007	351	0.0002			118	0.0008			200	0.0002	58.428	0.435761
1630005676162	15616A				210	0.0004	301	0.0002	305	0.0002			188	0.0001			201	0.0002	30.997	0.435914
1560009243008BF	13725A																202	0.0002	3.172	0.435930
1630008562185	88891A				241	0.0003	280	0.0002	377	0.0001			187	0.0001			203	0.0002	24.883	0.436052
5975P8318097	M7528K																204	0.0002	3.172	0.436068
1005002392929	15803A						390	0.0000	509	0.0000							205	0.0002	3.172	0.436084
1620PB1X8745041	T4591Q																206	0.0002	3.172	0.436099
TAC-00003882033	T74701																207	0.0002	3.172	0.436115
1620ND052083G	26579A				330	0.0000	338	0.0001	421	0.0001	182	0.0003	158	0.0002	367	0.0001	208	0.0002	28.283	0.436254
1620009438753	89288A				331	0.0000	385	0.0000	422	0.0001	183	0.0003			368	0.0001	209	0.0002	21.878	0.436361
1620007158561	42625A				120	0.0017	144	0.0014	179	0.0008	158	0.0005	42	0.0056	228	0.0005	210	0.0002	270.161	0.437694
1620007158562	42626A				103	0.0021	131	0.0017	153	0.0010	130	0.0008	41	0.0058	55	0.0047	211	0.0002	445.075	0.439890
1560008747338BF	13732A																212	0.0002	3.172	0.439906
1560004896617BF	14813A								439	0.0001	85	0.0020					213	0.0002	94.026	0.440370
000F0016B	00165A								446	0.0000	208	0.0001					214	0.0002	7.609	0.440407
5340ND028513GAH	M4905K																215	0.0002	3.172	0.440423
3120P879409F	M7617K												122	0.0007			216	0.0002	16.216	0.440503
1450011005926AH	16317A																217	0.0002	3.172	0.440519
1560P16P194-95	M3928K														387	0.0001	218	0.0002	6.245	0.440549
	M4712K			1													219	0.0002	3.172	0.440565
1630010098475	19266A				251	0.0002	141	0.0014	495	0.0000	232	0.0001	158	0.0002	380	0.0001	220	0.0001	61.088	0.440866
000F0016A	T4162N														412	0.0000	221	0.0001	1.586	0.440874
1560005043326BF	M4842K																222	0.0001	1.586	0.440882
1450000056722AH	M4840K																223	0.0001	1.586	0.440890
1450000056722AH	M4841K														381	0.0001	224	0.0001	4.659	0.440913
5306ND026872GAH	M6285K														355	0.0001	225	0.0001	4.659	0.440936
1620004463776	72879A	S	108	51	200	0.0004	248	0.0003	174	0.0008	81	0.0023	48	0.0045	99	0.0022	226	0.0001	296.649	0.442399
000F0004F	00124C																227	0.0001	1.586	0.442407
1450001142786AH	59596A								521	0.0000					383	0.0001	228	0.0001	4.859	0.442430
1560008592987BF	M4472K																229	0.0001	1.586	0.442438
1650P71348936	M6426K																230	0.0001	1.586	0.442446
	M7496K			1											200	0.0007	231	0.0001	23.093	0.442560
9999PFIXTURE	M7949K																232	0.0001	1.586	0.442568
	M8721K			1													233	0.0001	1.586	0.442576
	M9407K			1													234	0.0001	1.586	0.442583
9999POV10A	T1302A																235	0.0001	1.586	0.442591
1095004538407	74958A						207	0.0008	227	0.0005					185	0.0007	236	0.0001	50.979	0.442843
1005010446174	17921A						252	0.0003	201	0.0006					232	0.0004	237	0.0001	35.253	0.443017
1005003441550	26357A			1					480	0.0000					475	0.0000	238	0.0001	1.586	0.443024
1560P11656F	M0031K																239	0.0001	1.586	0.443032
1560P16P194-241	M3933K														425	0.0000	240	0.0001	1.586	0.443040
5315ND030071GBF	M5578K																241	0.0001	1.586	0.443048
000F0004E	T1209A														345	0.0001	242	0.0001	4.659	0.443071
1430ND026070GAH	T4679N																243	0.0001	1.586	0.443079
1430000133C77AH	M8840K														323	0.0002	244	0.0001	7.731	0.443117
	M6759K			1													245	0.0001	1.586	0.443125

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NSN	PCN	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620006518222	17313A	.	22	162	0.0008	94	0.0027	95	0.0023	49	0.0053	39	0.0081	58	0.0044	246	0.0001	648.018	0.446322
1680C04051042LS	62863A	.	.	.	.	265	0.0003	274	0.0003	.	.	.	.	70	0.0033	247	0.0001	117.979	0.446904
1680004152785LS	62964A	.	.	.	.	272	0.0002	275	0.0003	.	.	.	.	71	0.0033	248	0.0001	115.102	0.447472
5310ND029869GBF	M5802K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	249	0.0001	1.586	0.447480
1630001576723	15523A	5	.	137	0.0014	43	0.0089	172	0.0008	20	0.0147	.	.	131	0.0014	250	0.0001	968.160	0.452256
1630009141329	19811A	.	.	188	0.0005	101	0.0024	411	0.0001	223	0.0001	.	.	.	.	251	0.0001	97.157	0.452736
6760010293270	95948A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	252	0.0001	1.586	0.452743
1560P875345F	M4007K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	253	0.0001	1.586	0.452751
1620008670810	74551A	.	.	269	0.0002	411	-0.0004	353	0.0002	183	0.0005	143	0.0003	256	0.0004	254	0.0001	42.364	0.452960
1430008174132AH	55026A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	255	0.0001	1.586	0.452968
1560P112812F	M3922K	.	.	.	.	.	.	.	.	.	.	.	.	489	0.0000	256	0.0001	1.586	0.452976
6760C00035596	70373A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	257	0.0001	1.586	0.452984
	M4165K	.	i	.	.	.	.	.	.	.	.	.	.	465	0.0000	258	0.0001	1.586	0.452992
1560008590773BF	13294A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	259	0.0001	1.586	0.452999
1560NCE119887BF	M4141K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	260	0.0001	1.586	0.453007
1730P879788F	M4585K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	261	0.0001	1.586	0.453015
5310ND02961CGAH	M5789K	.	.	.	.	.	.	.	.	.	.	.	.	372	0.0001	262	0.0001	4.659	0.453038
4920009784849	M5984K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	263	0.0001	1.586	0.453046
1620010760457	M9542K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	264	0.0001	1.586	0.453054
	T4553Q	.	i	.	.	.	.	.	.	.	.	.	.	.	.	265	0.0001	1.586	0.453061
1620PB1X8745033	T4579Q	.	.	.	.	.	.	.	.	.	.	.	.	.	.	266	0.0001	1.586	0.453069
1560P16P194-67	M3932K	.	.	.	.	.	.	.	.	.	.	.	.	471	0.0000	267	0.0001	1.586	0.453077
5340P109832F	M3946K	.	.	.	.	.	.	.	.	.	.	.	.	481	0.0000	268	0.0001	1.586	0.453085
1450ND027212GAH	M6752K	.	.	.	.	.	.	.	.	.	.	.	.	584	0.0000	269	0.0001	1.586	0.453093
1440010643475AB	68973A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	270	0.0001	1.586	0.453101
4920P8619603	M4724K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	271	0.0001	1.586	0.453108
5120P7233784-03	M9329K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	272	0.0001	1.586	0.453116
5120P7233704-01	M9330K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	273	0.0001	1.586	0.453124
1560P106647F	M0033K	.	.	.	.	.	.	.	.	.	.	.	.	493	0.0000	274	0.0000	0.000	0.453124
1560010190194BF	M4501K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	275	0.0000	0.000	0.453124
5220L869888F	M6333K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	276	0.0000	0.000	0.453124
5310ND030156GBF	M7803K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	277	0.0000	0.000	0.453124
5360ND029601GAH	M4996K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	278	0.0000	0.000	0.453124
5365ND927653GWF	M7715K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	279	0.0000	0.000	0.453124
1560P108322F	M7843K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	280	0.0000	0.000	0.453124
1560003903918BF	M7424K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	281	0.0000	0.000	0.453124
0605003365333	96076A	.	.	.	.	.	.	.	.	.	.	.	.	.	.	282	0.0000	0.000	0.453124
1630008329087	22420A	.	.	205	0.0004	251	0.0003	265	0.0003	80	0.0023	.	.	285	0.0003	283	0.0000	142.218	0.453826
1560P880769F	M4190K	.	.	.	.	.	.	.	.	.	.	.	.	496	0.0000	284	0.0000	0.000	0.453826
	M6105K	.	i	.	.	.	.	.	.	.	.	.	.	604	0.0000	285	0.0000	0.000	0.453826
5340005273213BF	M6537K	.	.	.	.	.	.	375	0.0001	.	.	.	.	517	0.0000	286	0.0000	2.124	0.453836
1560001094884 3B	M6564K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	287	0.0000	0.000	0.453836
1560010948843BF	M6571K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	288	0.0000	0.000	0.453836
1560ND030498GWF	M9761K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	289	0.0000	0.000	0.453836
1620003238292	72858A	.	.	.	.	.	.	167	0.0009	282	0.0000	62	0.0028	158	0.0010	290	0.0000	102.013	0.454339
1005002213325	74817A	.	.	.	.	.	.	.	.	.	.	.	.	343	0.0001	291	0.0000	3.072	0.454355
1560P16P194-67	M3931K	.	.	.	.	.	.	.	.	.	.	.	.	507	0.0000	292	0.0000	0.000	0.454355
1560ND029906GBF	M9759K	.	.	.	.	.	.	.	.	.	.	.	.	.	.	293	0.0000	0.000	0.454355
1630004351350	98168A	.	.	.	.	.	.	383	0.0001	.	.	.	.	.	.	294	0.0000	2.124	0.454365

OGDEN 80/20 SORTED BY MANPWW

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1620011853808	69901A										286	0.0000			550	0.0000	295	0	0 0000	0.454365
4920P879778F	M4640K																296	0	0 0000	0.454365
4920P337114-1	M4726K																297	0	0.0000	0.454365
5340ND0285116AH	M4903K																298	0	0.0000	0.454365
1560001371370BF	M5387K														641	0.0000	299	0	0.0000	0.454365
1560001371370BF	M5389K														424	0.0000	300	0	0 0000	0.454365
5340ND027414GAH	M6487K														551	0.0000	301	0	0 0000	0.454365
	M9744K			i											545	0.0000	302	0	0.0000	0.454365
1920PB1BFIXTURE	T4421Q																303	0	0.0000	0.454365
1630001473854	15576A						199	0.0006	526	0.0000	242	0.0001			453	0.0000	304	0	21.7024	0.454472
1560ND029964GWF	M9755K														389	0.0001	305	0	3.0724	0.454487
1560003903918BF	M7426K														536	0.0000	306	0	0.0000	0.454487
1620004100874	69625A								456	0.0000			160	0.0002	384	0.0001	307	0	6.7990	0.454521
6720008791127	91401A						399	0.0000									308	0	0.0000	0.454521
1560P877246F	M3906K																309	0	0.0000	0.454521
1560P878263F	M3907K														410	0.0000	310	0	0.0000	0.454521
1560P16B6530-97	M3921K																311	0	0.0000	0.454521
1560P880505F	M4177K														620	0.0000	312	0	0.0000	0.454521
1560P881557F	M4208K																313	0	0.0000	0.454521
1560P874634F	M4215K														569	0.0000	314	0	0.0000	0.454521
1560P1686307-39	M4940K																315	0	0.0000	0.454521
	M4963K														580	0.0000	316	0	0.0000	0.454521
	M5030K			i											594	0.0000	317	0	0.0000	0.454521
1560ND025589GBF	M5274K														469	0.0000	318	0	0 0000	0.454521
1560ND027702GBF	M5275K														553	0.0000	319	0	0.0000	0.454521
	M6264K			i											624	0 0000	320	0	0.0000	0.454521
1560011429208BF	M6266K																321	0	0.0000	0.454521
1560004508917BF	M6420K																322	0	0.0000	0.454521
1560004508917BF	M6421K																323	0	0.0000	0.454521
15600.9953535BF	M6728K																324	0	0.0000	0.454521
1560005947776BF	M6776K																325	0	0.0000	0.454521
1560005947776BF	M6777K																326	0	0.0000	0.454521
1560002319189BF	M6908K																327	0	0.0000	0.454521
1560006130798BF	M6983K														610	0.0000	328	0	0.0000	0.454521
1580P112138F	M7604K																329	0	0.0000	0.454521
1560O103001F	M7659K																330	0	0.0000	0.454521
1560P106134F	M7899K														575	0.0000	331	0	0.0000	0.454521
1560P16B6530-73	M7921K																332	0	0.0000	0.454521
1005P36-2603-2	M7946K								362	0.0001							333	0	2.1240	0.454531
1560010297256BF	M9333K														634	0.0000	334	0	0.0000	0.454531
156C004356750BF	M9368K																335	0	0.0000	0.454531
1560003421873BF	M9374K														543	0.0000	336	0	0.0000	0.454531
1560010933971BF	M9594K																337	0	0.0000	0.454531
1560ND029906GBF	M9750K														635	0.0000	338	0	0.0000	0.454531
1560011578040WF	T7692A								438	0.0001					462	0.0000	339	0	2.1240	0.454542
1005006236434	68618A						398	0.0000									340	0	0.0000	0.454542
1620003654001	69098A				220	0.0004	253	0.0003	355	0.0002			166	0.0002	348	0.0001	341	0	35.6374	0.454718
1560010747724WF	19906A																342	0	0.0000	0.454718
1440001398604AH	18147A										161	0.0005					343	0	22.1823	0.454827

OGDEN 80/20 SORTED BY MANPWW

NSN	PCN	S	OPERS	OBSER	PGPS	PGPP	PGWS	PGWP	PNAS	PNAP	PRAS	PRAP	PRBS	PRBP	PRCS	PRCP	PWWS	PWWP	LTOT	CUM
1630010054188	26029A	S	13	4	300	0.0001	275	0.0002	441	0.0001							344	0.0000	11.9	0.454886
1450P863C301039	T7881Q																345	0.0000	0.0	0.454886
5325ND029878GAH	M5910K														643	0.0000	346	0.0000	0.0	0.454886
1560009109099 9B	14557A																347	0.0000	0.0	0.454886
1560ND026082GBF	M1854K								527	0.0000							348	0.0000	0.0	0.454886
6680008800844BF	90425A																349	0.0000	0.0	0.454886
6680007612331BF	92913A																350	0.0000	0.0	0.454886
1630010140656LC	16404A				298	0.0001	314	0.0001	494	0.0000					454	0.0000	351	0.0000	6.9	0.454920
3120004549244	M8500K																352	0.0000	0.0	0.454920
1620006099886	90400A	S	28	55	358	0.0000	381	0.0000	496	0.0000	198	0.0002			477	0.0000	353	0.0000	8.9	0.454963
	M8718K			1													354	0.0000	0.0	0.454963
6720001257219	91533A										283	0.0000					355	0.0000	0.0	0.454963
1560P112810F	M3923K														480	0.0000	356	0.0000	0.0	0.454963
1630004649165	72897A						410	-0.0002	549	-0.0001							357	0.0002	-4.7	0.454940
1620C:0381912	17567A		12	17	232	0.0003	415	-0.0021	550	-0 0001	113	0.0011	51	0.0039	73	0.0033	358	0.0027	215.1	0.456001
																			82426.0	

FOR YOUR EASE, WE HAVE SUBDIVIDED THIS SECTION INTO THE FOLLOWING:

A - 2.1 FACILITY LAYOUT
B - 2.2 EQUIPMENT
C - 2.3 WORK FORCE
D - 2.4 REPAIR WORK TECHNOLOGIES
E - 2.5 WORKLOAD MIX AND VOLUME
F - 2.6 MATERIAL HANDLING
G - 2.7 STORAGE
H - 2.8 PROCESS FLOW CHARTS

THE PROFILE SHEETS ARE IN THE FOLLOWING BOOKS

MANPGW	BRAKES
MANPGP	WHEELS
MANPWW	MAIN LANDING GEAR EXCEPT C5
MANPWW	NOSE LANDING GEAR EXECPT C5
MANPRA	C5 MAIN LANDING GEAR
MANPRA	C5 Bogie Beam.
MANPRA	Nose LANDING GEAR.

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to ALL DEPARTMENTS at RCC MANP__ at OO ALC.

POINT(S) OF CONTACT: GREG KAUFFMAN

AS-IS CONDITION: SCRAP PARTS THAT DO NOT DIMENSIONALY FALL IN TO THEIR GUIDE OF REPAIRABILITY.

TO-BE: WORK WITH THE PROCESS ENGINEERS MANAGERS SNOW THEM WHAT FLAME SPRAY CAN DO ALSO GET GET T.O._ TO ALLOW THE PARTS TO BE REPAIRED USING FLAME SPRAY

POTENTIAL IMPROVEMENTS: LARGE COST SAVINGS.

NOTE YOU MAY WANT TO SET UP A P.A.T. TEAM FOR THIS.

IMPLEMENTATION COST:

SCHEDULE:

OTHER OBSERVATION

FOCUS STUDY
~~QUICK FIX OPPORTUNITY~~

TITLE: A potential process improvement opportunity (PIO) exists to ALL DEP. at RCC MANPWW at 00 ALC.

POINT(S) OF CONTACT: NANCY HARTMAN.

AS-IS CONDITION: HAVE TO FOR LONG PERIODS OF TIME AN ENGINEER TO RESPOND.

TO-BE: MOVE AN ENGINEER IN HOUSE.

$\frac{(12\ HR)}{2\ WKS}\left(\frac{52\ WKS}{YEAR}\right)\left(\frac{\$44.05}{HR}\right)$ $13,743.60 PER YEAR

OR SET UP ~~A DEDICED~~ REQUIRED RESPONCE TIME FOR THE ENGINEER TO REPLY BY THEY NEED A MEMORANDUM OF AGREEMENT WORK OUT WITH THE ENGINEERS.

POTENTIAL IMPROVEMENTS:

IMPLEMENTATION COST:

SCHEDULE: $\left(\frac{12\ HR}{2\ WK}\right)\left(\frac{52\ WK}{YR}\right)(31.98) = 9,977.60$

Quick Fix?

FOCUS STUDY

WHEN THE HAVE A PROBLEM ON A PROJECT AND CALL AN ENGINEER AND ASK FOR HELP IT CAN TAKE UP TO A WEEK FOR A RESPONCE. NANCY HARTMAN THE SCHEDULER SAYS THEY LOOSE APPROXIMATELY 12 HRS IN 2 WEEKS.

12 HR @ ~~144.85~~ $148 PER HR) 26 WEEK PER YEAR 8 = ~~$13,743.60~~ $9,977.76

WASTED WHILE WAITING FOR ENG. RESPONCE

FOCUS STUDY
~~QUICK FIX OPPORTUNITY~~

TITLE: A potential process improvement opportunity (P10) exists to _____ at RCC MAUPHW at OO ALC.

POINT(S) OF CONTACT: GREG KAUFFMAN

AS-IS CONDITION:

TO-BE: CHECK OUT SCRAP AND SEE HOW MUCH COULD BE SAVED BY USING FLAME SPRAY TO BUILD UP THE WORN OUT PORTION OF THE PART.

POTENTIAL IMPROVEMENTS: I WOULD SUGGEST A P.A.T. TO IDENTIFY THE PARTS. AND THE PROCESS ENGINEERS TO WORK WITH D/mm.

IMPLEMENTATION COST:

SCHEDULE:

Observation

FOCUS STUDY

SEE WHAT HIGH VOLUME PARTS THAT ARE GOING TO SALVAGE COULD BE SAVED BY SENDING THEM THROUGH THE FLAME SPRAY PROCESS AND THEN MACHINING THEM.



FOCUS STUDY
~~QUICK FIX OPPORTUNITY~~

TITLE: A potential process improvement opportunity (P10) exists to WELDING at RCC MANPOWER at OO ALC.

POINT(S) OF CONTACT: NANCY HARTMAN.

AS-IS CONDITION: WHEN YOU ORDER MATERIALS YOU HAVE A MINIMUM AMOUNT EXAMPLE IF YOU NEED A PIECE OF ALUM 5"X5" X 1/2" THICK. YOU CAN NOT ORDER JUST THAT AMOUNT YOU NEED TO ORDER A FULL SHEET.

TO-BE: HAVE A PAT TEAM WORK ON THIS.

POTENTIAL IMPROVEMENTS:

IMPLEMENTATION COST:

SCHEDULE:

Observation

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to WELDING AREA at RCC MANCHU at OO ALC.

POINT(S) OF CONTACT: NANCY HARTMAN

AS-IS CONDITION: HAVE TO ORDER IN MIN. LOT QUANTITY.

TO-BE: ORDER JUST WHAT IS NEEDED NOT AN EXCESS AMOUNT

POTENTIAL IMPROVEMENTS: LESS SCRAP 30%

IMPLEMENTATION COST: LOW.

SCHEDULE:

OBSOLETE

NANCY STATED THAT WHEN THE GET A JOB IN AND THE NEED A PIECE OF ALUMINUM 4" X 4" X.S THICK THEY HAVE TO BRING IN A FULL SHEET WITH IS 48" X 144" X.S THICK. WHAT DO THEY DO WITH THE REST OF IT? SHE SAID THEY TRY TO USE IT ON OTHER JOBS. BUT STILL APPROXIMENTLY 50% IS SCRAP. WHEN THEY ORDER BOLTS IF THEY ONLY NEED 4 THEY STILL HAVE TO BRING IN 100 BOLTS. THE STORE THE EXCESS MATERIAL OUT SIDE IN THE YARD. WHEN THE YARD IS CLEANED OUT IT ALL GOES TO SALVAGE. THIS IS ABOUT 30% OF ALL THE MATERIALS BROUGHT IN TO WELDING.

NOTE

WHY DON'T YOU SET UP A WAREHOUSE WHERE THE COULD REQUISITION ~~BY~~ MATERIALS ON A AS REQUIRED FOR THE JOB AND NOT A LOT MINIMUM.

A 20% SAVING ON ALL MATLS BROGHT INTO INTO WELD. DUE TO THE FACT THAT YOU DON'T HAVE A LARGE SURPLUS TO BEGIN WITH

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to ALL SHOPS at RCC MANPOW at OO ALC.

POINT(S) OF CONTACT: CURTIS WORDEN

AS-IS CONDITION: PLACE SAFETY GEAR ON SHELF

TO-BE: PLACED IN APPROVED CABINET. MADE FOR SAFETY EQUIPMENT.

POTENTIAL IMPROVEMENTS: REGULATIONS SAY THE SAFETY EQUIPMENT NEEDS TO BE IN AN APPROVED CABINET.

IMPLEMENTATION COST: $70.00 PER WORKER

SCHEDULE:

OBSERV

CURTIS HAS PUT IN FOR SAFETY LOCKER AND EQUIPMENT HAS TURNED HIM. THEY SAID THAT THERE WAS NOT ANY MONEY FOR SUCH ITEMS. HE SHOWED ME THE REQUISITION HE MADE OUT TO SUPPLY THE LOCKER COST $60.00 AND THEY ARE IN A WAREHOUSE ON BASE. THE ~~ITEMS~~ ITEMS HE WANTED TO PUT IN THESE LOCKERS WERE SAFETY ITEMS.

HELMENT	AT	$50.00	
EAR MUFFS	AT	$20.00	APPROXIMATED COST
FACE SHIELD	AT	15.00	
COVER ALLS	AT	25.00	
SHOES #	AT	50.00	
RESPIRATOR	AT	100.00	
TOTAL		260.00	

HE NEEDS THE LOCKERS NOT ONLY TO ELIMINATE PILFERAGE BUT TO COMPLY WITH OSHA REGULATIONS.

ISSUE/TURN-IN REQUEST

TRIC		A. INCHECKER, NAME, DATE (TIN)	B. INSPECTOR, NAME-STAMP, DATE (TIN)
1 2 3	4 5 6 7	ORC Code: MANPOW REQ SEQ # 9114-0002	ASC 006 UNIT COST 60.90
1 S U		CUST. CODE 103 AE	
		REQUESTER, TIME & DATE (ISU)	

STOCK NUMBER			UNIT OF ISSUE	QUANTITY	C. QTY AUTH/IN USE/NEW	DOCUMENT NUMBER					
NSC	NIIN	ADDN				ACT	ORG.	SHOP	DATE	SER NO	DUP
8 9 10 11	12 13 14 15 16 17 18 19 20	21 22	23 24	25 26 27 28 29		30	31 32 33	34 35	36 37 38 39	40 41 42 43	44
7125	005301938		EA	00055	0 0 55	P					

PART NUMBER	D. PART NUMBER/MFGR CODE OR NAME/REMARKS	E. T.O. REFERENCE/TECHNICAL PUBLICATION OR END-ITEM APPLICATION/NEAT HIGHER ASSEMBLY
		AUTHORITY INITIAL ISSUE

WORK ORDER	TER			WS	PROJECT	PRI		U/C	MARK FOR	F.T.O. PSC AND/OR LRRC
SHIP TO	51	52	54	56 60	57 58 59	60 61	62 63 64	65 66	DOCUMENT NUMBER / POST/POST 67 68 69 70 71 72 73 74 75 76 77 78 79 80	
45 46 47 48 49 50		52 53		01	670	06	6HZ	C4	WORDF	

G. TIME & DATE OF DELIVERY	H. DELIVERY TIME	I.	J. NOMENCLATURE
			LOCKER CLOTHING

AF FORM 2005 PREVIOUS EDITION WILL BE USED.

2. Wiping all surfaces with alcohol swipes may be adequate. Detergent washing and disinfectant procedures are necessary in many cases:

a. Remove any filters, canisters or cartridges.

b. Wash facepiece and breathing tube (if any) in a commercially available cleaner-disinfectant solution (eg MSA Cleaner-Sanitizer II, part # 34337, local purchase # 7910L4034331BX), or they may be washed with a liquid detergent solution and then dipped in one of the following disinfectant solutions:

1. Hypochlorite solution (50 ppm chloride) for two minutes. Add approximately two ml Clorox or Purex (household bleach) to one liter of water (two tablespoons/gallon).

2. Aqueous iodine solution (50 ppm iodine) for 2 minutes.

3. Quaternary ammonium solution (200 to 500 ppm of quaternary ammonium compounds in water) for two minutes.

c. Rinse completely in clean, warm water less than 120°F

d. Air dry in a clean area.

DESCRIBE CHOSEN CLEANING METHOD(S):
MSA cleaner Sanitizer II

d. Storage.

1. Respirators shall be stored to protect against dust, sunlight, heat, extreme cold, excessive moisture and chemicals. Respirators for emergency use should be stored in compartments built for the purpose, clearly marked to indicate the content and must be quickly accessible at all times. Routinely used respirators may be placed in plastic bags. Respirators shall not be stored in tool lockers or boxes unless they are in containers or cartons. Respirators shall not be stored in chemical storage cabinets, lockers, rooms or areas.

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to HEAT TREAT at RCC/IMHOPWW at 00 ALC.

POINT(S) OF CONTACT: RICH SANDALL

AS-IS CONDITION: TRANSPORT ALL THE BRAKES TO E&I CHECK & SEND REJECTS BACK

TO-BE: CHECK IN AREA & JUST SEND UP THE GOOD PARTS.

Q.F. 7

POTENTIAL IMPROVEMENTS: COST SAVINGS $2036.34

IMPLEMENTATION COST: $1,000 TO $1,800
FOR SURFACE BLOCK & INDICTOR

SCHEDULE:

RICH SAID THAT OUT OF 40 DISC 12 OF THEM ON THE AVERAGE WOULD HAVE TO BE REPROCESSED. THIS WORK OUT TO BE 30%. THE PARTS ARE THEN SENT UP TO E&I TO BE CHECKED FOR FLATNESS. THOSE THAT DO NOT PASS THE 30% ARE SENT BACK TO BE RE STRESS RELIVED. (THE 30%)

NOTE

I ASKED THE WHY THEY WERE NOT CHECK OUT IN THE HEAT TREAT AREA BY E&I RICH SIAD IT IS BECAUSE THEY DONT THAT THE EQUIPMENT

IT TAKES THEM .1788 HR TO MAKE THE ROUND TRIP.

COST EVALUATION BELOW.

$$\left(\frac{.1788\ HR}{TRIP}\right)\left(\frac{5\ TRIPS}{WEEK}\right)\left(\frac{52\ WKS}{YEAR}\right)\left(\frac{31.98}{HOUR}\right) \quad \$1486.69 \text{ SPENT FOR TRIPS / YR.}$$

I WOULD SUGGEST A GRANITE OR CAST IRON SURFACE PLATE IN THE AREA. THIS WOULD ELIMINATE THE THE EXTRA TRIPS IN MOVING THE 30% TWO TIMES FROM E&I BACK TO HEAT TREAT AND FROM HEAT TREAT BACK UP TO E&I.

CURTIS STATED THAT HE HAS BEEN WAITING FOR 10 3/4-10 X10" LONG BOLTS FOR A DIE NEED FOR THE F&. THE FOREMAN NOR DO I UNDERSTAND WHY IT IT SHOULD TAKE OVER A YEAR TO GET THESE BOLTS THEY FINALLY ENDED UP USING ALL THREAD WITH A PLATE WELDED ON THE BOTTOM OF THEM.

NOTE

I FEEL THAT EACH DIVISION SHOULD HAVE THERE OWN MISC BUDGET AND OR THEIR OWN PURCHASING AGENT.

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to FLAME SPRAY at RCC MAUPWW at OO ALC.

POINT(S) OF CONTACT: CURTIS WORDEN

AS-IS CONDITION: NO BACK UP FOR SANDBLASTER

Q.F.

TO-BE: NEED BACK UP UNIT

POTENTIAL IMPROVEMENTS: GET A CONVERSION KIT FOR A SMALL IN HOUSE BLASTER

IMPLEMENTATION COST: IF THE PRESENT SANDBLASTER GOES DOWN FOR 8 HR. AND SHUTS THE SHOP DOWN IT COST $2,466.80 TO THE RCC IN WAGES $2,100

SCHEDULE:

THIS IS A CRITICAL PIECE OF EQUIPMENT

QUICK FIX OPPORTUNITY

TITLE: A potential process improvement opportunity (PIO) exists to FLAME SPRAY _____ at RCC DRAPING at 00 _____ ALC.

POINT(S) OF CONTACT: CURTIS WORDEN

AS-IS CONDITION: THEY HAVE 1 SAND BLASTER FOR ALL OF FLAME SPRAY. WHEN IT GOES DOWN THE DEPARTMENT IS SHUT DOWN.

TO-BE: GET A CONVERSION KIT FOR THE SMALL SAND BLASTER TO CONVERT IT FROM A SUCTION BLASTER IN TO A PRESSURE BLASTER

POTENTIAL IMPROVEMENTS: SAVINGS YOU WOULD GET IF THE BLASTER WENT OUT FOR 8 HRS.
(44 HRS PER AC)(7 OPERATORS)(8 HRS DOWN) = ~~$3486.80~~ $1790.88

IMPLEMENTATION COST: $31.98

SCHEDULE:

EQUIPMENT

AS LONG AS THE EQUIPMENT WORKS I AM HAPPY. HOWEVER WE DO NOT HAVE A BACK UP FOR OUR SANDBLASTER. EQUIPMENT (DIVISION) TOLD CURTIS THERE IS NO MONEY FOR A BACK UP SAND BLASTER. CURTIS FOUND A CONVERSION KIT TO CHANGE A SMALL SUCTION BLASTER IN TO A PRESSURER BLASTER. THIS KIT COST $2,100.

NOTE

WITH SEVEN PEOPLE IN THE SHOP IF THE BLASTER IS DOWN FOR ONE DAY YOU HAVE LOST THE COST OF THE CONVERSION KIT

(44.05 PER HR)(7 OPERATORS)(8 HRS. SHIFT) = $2466.80

THERE PROBLEM IS FIRST THEY USE A DIFFERENT TYPE OF TYPE OF MEDIA THAN PEOPLE IN THE SURROUNDING BUILDINGS. SECOND IF THE PART SETS FOR VERY LONG (3 OR 4 HRS) IT STARTS THE CORROSION PROCESS. IT THEN HAS TO BE RESAND BLASTER

CURTIS GOT A BID ON A NEW SANDBLASTER TO REPLACE THE PRESENT UNIT. THE COST WAS $30,000 FOR THIS UNIT. HE SAID THAT THERE HAS NOT BEEN A REPRESENTATIVE FORM EQUIPMENT WORKING WITH THE VENDORS ON GETTING QUOTE FOR A SANDBLASTER. ~~AND~~ NOTE THIS MEANS WHEN HIS SANDBLASTER QUITS HIS SHOP IS SHUT DOWN.

NOTE

I FEEL THAT YOU COULD HAVE A PROBLEM IN FLAME SPRAY I A BACK UP SAND BLASTER IS NOT LOCATED. I FEEL THAT THE CONVERSON KIT WOULD BE A GOOD QUICK FIX. FOR LONG RANGE I WOULD SUGGEST ~~BE~~ PUTTING ANOTHER SANDBLASTER IN THE BUDGET. ~~FOR~~ TO BE PURCHASED WITH IN THE NEXT FEW YEARS.

Section F—Miscellaneous

4-10. Depot Maintenance Personnel Turnover. The annual rate of turnover of personnel performing depot maintenance. This rate is based on the average number of civilian personnel assigned to AFLC depot maintenance functions during calendar year 1985 and the total depot maintenance personnel losses experienced during that year. The source of the data is the Advanced Personnel Data System-Civilian (APDS-C), E300. The OPR is HQ AFLC/DPCC.

1985 Depot Maintenance Personnel Turnover Rate

$$\text{Losses} \quad \frac{2,449}{40,109} = .0611$$
$$\text{Assigned}$$

4-11. AF Maintenance Personnel Turnover. The annual rate of turnover of enlisted personnel performing Air Force base level maintenance. This rate is based upon the total number of enlisted personnel assigned to aircraft maintenance Air Force specialty codes at the end of FY85 and the total number of losses experienced during that year. The source of the data is the Retention Statistic Report prescribed by AFM 30-130, Vol 1 and the Airman Force Characteristics P769 Report Prescribed by AFR 30-3 and AFR 700-4, Vol 1 and Vol 2. The OPRs are HQ AFMPC/DPMATE and HQ AFMPC/DPMYA

FY85 AF Maintenance Personnel Turnover Rate

$$\text{Losses} \quad \frac{18,923}{147,567} = .1282$$
$$\text{Assigned}$$

4-12. Monthly Assigned Hours. The number of hours per month a military or civilian employee is assigned for duty. Monthly assigned hours is based on a 5-day 40-hour work week. This factor equals calendar days per month less holiday and relief days (Saturday, Sunday, or compensatory weekday for weekend workday) times hours per day. The standard Air force monthly assigned hours used in allocating manpower is 167.929 hours. The source of the data is AFR 26-1. The OPR is HQ USAF/PRM. The prescribing directive is AFR 26-1 (Vol III).

4-13. Annual Available Hours. The number of hours per year a military or civilian employee is available for primary duty. Annual available hours is equal to monthly assigned hours less total nonavailable hours (leave, PCS related absences, medical leave, organizational duties, education and training, social actions, miscellaneous, overseas peculiar activities and special absenses) times 12 months. The standard annual available hours for military and civilian personnel are presented. The source of the data is AFR 26-1. The OPR is HQ USAF/MPM. The prescribing directive is AFR 26-1 (Vol III).

Calendar days	30.4375
Less:	
Holiday	0.75
Relief Days	8.6964
Assigned Days	20.9911
Times hours per day	8.0
No. Assigned hours	167.929

	Military		Civilian	
	CONUS	OS	CONUS	OS
Monthly Assigned Hours	167.929	167.929	167.929	167.929
Less Total Nonavailable	22.730	24.464	22.65	20.76
Monthly Hours Available	145.2	143.5	145.3	147.2
Times Number of Months	12.0	12.0	12.0	12.0
Annual Hours Available	1742.4	1722.0	1743.6	1766.4

1744

WAGE FOR OVER TIME

DIRECT	$18.65
INDIRECT	10.06
OVERHEAD	3.27
TOTAL	31.98

BASE SALARY - WITH NO BENEFITS. $12.44

STANDARD HOURS WORK PER 1 MAN 1744 HRS

OVERTIME IS 7½% OF THE TIME

(1744 HRS)(7.5%) = 130.8 HRS. OVERTIME / MAN

OVER TIME PAY = BASE PAY (12.44)(1.6) = $18.66 FOR OT.

PAY FOR.

A. STANDARD HRS. = (1744 HR)($\frac{\$31.98}{HR}$) = 55,773.12 MAN/YEAR

B OVERTIME HRS. (130.8 HRS)($\frac{\$18.66}{HR}$) = 2440.73 OT PAY

TOTAL PAY WITH OVERTIME ONE MAN = 58213.85

11/3/82

ENGINEERING NOTEBOOK

CHUCK CRAWFORD

OO-ALC

FLAME SPRAY

HEAT TREAT

CASTING

WELDING

NOTES TAKE WHILE ON A TOUR GIVEN BY CURTIS WORDEN ON MAY 12-1989

1 IN FLAME SPRAY THEY CAN SPRAY THE SAME MATERIAL OR A DIFFERENT MATERIAL OVER THE BASE METAL.

2 THE BASE METAL DOES NOT EXCEED 250° DURING THE FLAME SPRAY OPERATION.

3 THEY HAVE THE ABILITY TO SPRAY CERAMIC MATERIALS ON BASE METALS.

4 FLAME SPRAY DOES NOT HAVE A .9 ACCENT TENSION STRENGTH.

5 THE BASE MATERIAL MUST BE AT LESS 80% OF THE TOTAL SIZE NEEDED FOR THE FLAME SPRAY PROCESS TO BE EFFECITIVE.

6 THEY HAVE A NEW (THERMO SPRAY) PLASMA FLAME SPRAY UNIT. THIS UNIT IS IN IT'S OWN ROOM DUE TO THE NOISE THAT IT MAKES.

7 THE PLASMA FLAME SPRAY UNIT IS TOTALLY PROGRAMMABLE.

8 WE ALSO REBUILD THE HEAT BLANKETS HERE.

9 EACH STATION HAS TO HAVE ITS ON VENTILATION SYSTEM.

10. QUESTION HOW MANY TYPES OF FLAME SPRAY ARE THERE?

ANSWER THERE ARE 3 TYPES.

1 ARC

2 COMBUSTION

3 PLASMA

11 QUESTION HOW IS THE WORK LOAD?
ANSWER IT IS CONSTANT.

12 QUESTION HOW FAST CAN THE MATERIAL BE APPLIED
ANSWER FLAME SPRAY CAN PUT ON .060 OF AN INCH
IN 20 MINUTES. PLATING TAKES 1 HOUR TO PUT ON
.001 OF AN INCH

13 WHEN THE STEAM VALVE ON THE DEGREASER
WENT DOWN IT TOOK TWO HOURS TO GET IT
FIXED. NOTE EVERY THING MUST BE DEGREASED
BEFORE IT CAN BE FLAME SPRAYED.

14 THE REST OF THE EQUIPMENT IS IN GOOD SHAPE
MOST OF THEIR PROBLEMS WITH EQUIPMENT IS
ELECTRICAL WHEN IT GOES DOWN.

15 MOST OF THE EQUIPMENT IS 10 TO 15 YEARS
OLD. IT HAS COME HERE FROM OTHER BASES.

16 THE AIR USED TO FORCE THE FLAME SPRAY MAT'L
ON TO THE PART MUST BE VERY CLEAN.

17 WHEN WE OVERHAUL SOMETHING WHY DON'T
WE OVER HAUL IT THE SAME WAY EVERY TIME.
THE ROUTING SHOULD BE THE SAME ALL OF THE TIME.
FOR THE SAME PART. THE ROUTING SHOULD BE
TAILORED FOR THAT PART. THE SAME OPERATION EACH TIME FOR FLAME SPRAY
NOTE FROM HIS POINT OF VIEW I AGREE. HOWEVER
WHEN I LOOK AT THE TOTAL OPERATION FROM
DISASSEMBLY TO ASSEMBLY I DISAGREE. I FEEL
THAT THEY NEED BETTER ENGINEERING SUPPORT
IN GEN. TO THE EXTENT OF HAVING A FULL TIME
ENGINEER ASSIGNED TO THAT WORK AREA. WITH IS
DESK LOCATED IN THEIR OFFICE. WITH THIS KIND
OF SUPPORT THE PARTS WOULD BE SENT TO THE
CORRECT RCC FOR REPAIR WITH THE CORRECT ROUTING
AS YOU KNOW NOT ALL PARTS THAT COME OUT OF THE GEARS
REQUIRE THE SAME REPAIR. HOWEVER CERTIAN ITEMS.
REQUIRE CERTIAN REPAIR SO ROUTINGS COULD BE
COULD BE WRITTEN TO TAKE CARE OF THESE
PROBLEMS.

NOTE I FEEL THAT THIS IS SOMETHING THAT SHOULD BE SERIOUSLY LOOKED AT.

SCHEDULING.

I DON'T HAVE ANY REPORTS SENT OVER HERE TO FLAME SPRAY TO TELL US WHAT OUR PRIORITIES SHOULD BE. I RUN BY WHAT HAS BEEN HERE THE LONGEST. WE NEED A SCHEDULE SO THAT WE CAN SUPPLY THE ITEMS WITCH IS NEED BE THE NEXT PERSON DOWN THE LINE. ALSO IF ONE OF OUR CUSTOMERS NEED A PARTICULAR ITEM WE PUSH THAT ITEM

EQUIPMENT

THEY HAVE AN OLD SAND BLASTER THAT NEEDS TO BE REPLACED. CURTIS WAS TOLD THAT THERE WAS NO MONEY IN THE BUDGET FOR THIS UNTILL 1993 OR 1995. I ASKED CURTIS WHAT HAPPENED IF THE SAND BLASTER WENT COMPLETELY OUT. HE SAID THAT IF I WAS COMPLETELY DEAD THEY WOULD PROBABLY BE ABLE TO FIND THE MONEY TO REPLACE IT.

NOTE WHEN THE SANDBLASTER OR DEGREASER GO DOWN THIS SHUTS THE SHOP DOWN. AND THE SEVEN FLAME SPRAY OPERATORS.

NOTE CURTIS WAS NOT SURE IF THE STOCK REPAIR PARTS FOR SAND BLASTER AND DEGREASER OR NOT. HOWEVER I FEEL THAT ALL OF THE CRITICAL PARTS FOR THESE TWO UNITS SHOULD BE STOCKED.

NOTE THE SANDBLASTER IS DOWN EVERY 25 DAYS FOR 4.4 HRS. OF UNSCHEDULED MAINTANCE.

THE DEGREASER IS DOWN EVERY 15 DAYS FOR 3.2 HRS

AFTER TALKING TO MEL ANDERSON HE SAID THAT THEY HAVE OVER NEWS WHICH THEY ATTACH TO THE WCDS. THEY SHOULD PROBABLY MAKE A SKETCH OF THE PART THAT WAY THEY CAN IDENTIFY EXACTLY WHAT NEEDS TO BE BOILT UP AND HOW MUCH. SEE WCD ON NEXT PAGE

THE TRACKING SYSTEM AND SCHEDULING SYSTEM NEED TO BE IMPROVED ACCORDING TO CURTIS. CURTIS WORDEN BELIEVES THAT IF YOU TRAIN THE PERSONAL TO DO QUALITY WORK AND THEN HOLD THEM TO . THE TASK OF DOING THAT TYPE OF WORK CORRECTLY NOTE I AGREE TEACH THEM AND THEN LET THEM KNOW WHAT YOU EXPECT.

CURTIS HELPS HIS PEOPLE UNDERSTAND WHAT IS EXPECTED OF THEM. HE THEN GETS THEM TO DO IT BY TRUSTING THEM. HE BELIVES IN TAKING THE OUT TO LISTEN TO HIS PEOPLE AND WORK WITH THEM. THIS HELPS TO UNIFY THE RCC. NOTE I FEEL THAT THIS IS A VERY GOOD PRACTICE AND HELP THE EMPLOYEE TO GAIN A BETTER ATTITUDE TO WARDS WORK & QUALITY.

<u>TRANSPORTATION</u>

CURTIS SAYS THAT HE HAS A PROBLEM GETTING ITEMS MOVED IN A TIMELY MANNER. PERHAPS TRANSPORTATION SHOULD HAVE A SPECIFIC ROUTE AND TIME SCHEDULE TO FOLLOW. THIS WOULD ALLOW THE PARTS TO MOVE IN A MORE TIMELY MANNER. AT PRESENT THE HAVE TO CALL TRANSPORTATION TO GET ITEMS MOVED. THEY ARE NOT ALWAYS PUNCTUAL. SOME TIMES WE SET PARTS OUT FOR THEM AND WE HAVE TO BRING THEM BACK IN AT QUITING TIME.

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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED
[illegible]		[illegible]	[illegible]	[illegible]

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
[illegible]	[illegible]	[illegible]

10 MODEL DESIGN/SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	OUTER CYLINDER

15 DISPATCH STATION	16. PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19. "P"	20 "Q"
25B	[illegible] 445 QC-M	GRIT BLAST COLLAR AREAS PRIOR TO FLAME SPRAY. *C/P MOVE		M	
25B	[illegible] 445 QC-M	FLAME SPRAY STEERING COLLAR AREA TO A THICKNESS TO ALLOW MACHINING BACK TO 7.118/7.120 OD 3.352/3.355 WIDTH METCO SPRAY MIL-STD-869 *C/P MOVE		M	
25B	[illegible] 220 445 QC-M	FLAME SPRAY TOWING COLLAR AREA TO A THICKNESS TO ALLOW MACHINING BACK TO 7.118/7.120 OD 2.228/2.230 WIDTH *C/P MOVE		M	
69	[illegible] QC-M	MACHINE STEERING COLLAR AREA 7.118/7.120 OD 3.352/3.355 WIDTH 63 RMS FINISH *C/P MOVE			
69	[illegible] 228 [illegible] QC-M	MACHINE TOWING COLLAR AREA 7.118/7.120 OD 2.228/2.230 WIDTH 63 RMS FINISH *C/P MOVE		M	
26	[illegible] 230	ANODIZE OUTER CYLINDER TYPE II O.D. ONLY *C/P MOVE		M	
26	[illegible] 445 QC-M	ANODIZE OUTER CYL TYPE II COMPLETE ID & OD. *C/P MOVE		M	
8	[illegible] 234 [illegible] QC-M	HONE UPPER SEAL BORE TO REMOVE TYPE II ANODIZE 32 RMS 5.522 MAX		M	
8	[illegible] 236 [illegible] QC-M	POLISH UPPER SEAL BORE TO REMOVE TYPE II ANODIZE 32 RMS 5.522 MAX		M	

ACCORDING TO CURTIS (FOREMAN) THEY PUT ON .020 MORE THAN THE FINISH DIMENSION TO ALLOW FOR MACHINING

THE EXTRA AMOUNT VARYS DEPENDING UPON THE OPERATOR

21 FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	15512N
		B	D	

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15512D

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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC RCC	5 DATE SCHED	6 DATE COMPLETED
17567A				

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
		889MC27

10 MODEL/DESIGN SERIES	11 STOCK NUMBER	12 OPTIONAL
KC135 R056		

13 SERIAL NUMBER	14 NOUN
L30637	OUTER CYLINDER

15 DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19. P	20 Q
26	170	VAPOR DEGREASE *C/P MOVE			
26A	175	F.P.I. *C/P MOVE * * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT. *	M	K	
26	180	SHOT PEEN OUTER CYLINDER REWORK AREAS .010/.014 *C/P MOVE	70552	M 70552 APR 26 1989	
26	183	SHOT-PEEN I.D. FOR ANODIZE .010/.014 INTENSITY *C/P MOVE	70552	M 70552 APR 26 198	
26	185	SHOT-PEEN TRUNNION SOCKET HOLES I.D. 100% 2.250 HOLES *C/P MOVE*	70552	M 70552 APR 26 198	
26	190	CLEAN SHOT PEENED AREAS OF OUTER & SOCKET *C/P MOVE	70552	APR 26 198	
26	200	POLISH STEERING COLLAR AREAS TO REMOVE 70-80% OF SHOT *C/P MOVE	70093	26 APR 1989	
26	210	POLISH TOW LUG AREA TO REMOVE 70-80% OF SHOT *C/P MOVE	70093	26 APR 1989	
25B	212	VAPOR DEGREASE COLLAR AREAS OF OUTER CYL PRIO TO FLAME SPRAY. *C/P MOVE			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
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ORIGINAL LOST

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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED
74652A	1ea	MNPGP	4 MAY 1989	

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
B-15576-1	16G3-2-30-3 4S-1-182 AND SUPPLEMENTS	343

10 MODEL DESIGN SERIES	11 STOCK NUMBER	12 OPTIONAL
C5A MAIN	NSL	ALL NECESSARY OPERATIONS HAVE BEEN COMPLETED TO THE BEST OF MY KNOWLEDGE B Hayden
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	MECHANIC	P	O
		GOVERNING DIRECTIVES: AFLCR 66-51			
		BLAST IAW MIL-STD-1504			
		BAKE IAW 4S-1-182 MAO: 74-12			
		SHOTPEEN IAW MIL-S-13165			
		FPI IAW MIL-STD-6866			
		BRUSH PLATE IAW MIL-STD-865			
		FMPI IAW MIL-STD-1949			
		P/O N01561			
		GRIND IAW MIL-STD-865			
		FLAME SPRAY IAW MIL-STD-869			
		TEMPER ETCH IAW MIL-STD-867			
		CHROME PLATE IAW MIL-STD-1501 TYPE II CLASS III			
		STRIP IAW MIL-STD-871			
		********STEEL 298,000 **********			
		ALL PERSONNEL INVOLVED IN THE WORK PROCESSES SPECIFIED IN THIS DOCUMENT HAVE BEEN THOROUGHLY TRAINED AND ARE FAMILIAR WITH ALL PERTINENT SAFETY			
		PRACTICES AND HAZARDS CONTAINED IN THE BASIC TECHNICAL ORDER (T.O.) AND T.O. SUPPELMENTS REFERENCED IN BLOCK 8 OF THIS AFLC FORM 958. THE APPLIC			
		ABLE T.O.'S AND SUPPLEMENTS WILL ALWAYS BE USED IN CONJUNCTION WITH THIS DOCUMENT.			
		*COMPONENTS WILL BE THOROUGHLY			
		CLEANED & PROTECTED (C/P MOVE) FOR MOVES BETWEEN OPERATIONS/DISPATCH STATIONS.			
		****WARNING****			
		MANY OF THE FOLLOWING REPAIR PROCEDURES REQUIRE THE USE OF EQUIPMENT, PROCESSES & CHEMICALS WHICH ARE POTENTIALLY DANGEROUS TO			
		PERSONNEL. ADEQUATE SAFEGUARDS AND PRECAUTIONS MUST BE EMPLOYED TO PRECLUDE INJURIES.			

21 FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	
	MANEP	7 FEB 1989 Debbie Andrews	08 FEB 1989 Joyce Murray	21065N
		B Feb 7, 89 Mike Jones	D 7 FEB 1989 Edward Cudiak	

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2 NO	3 QUANTITY	4 PRODUCTION SEQ NO	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	BALL SCREW

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
	001	B-15576-1			
34C5	005 *REQD*	DISASSEMBLE *C/P MOVE		M 24 MAY	
34C	007 *REQD*	CHEM CLEAN *C/P MOVE		M 24 MAY 1989	
34B	009 *REQD*	BLAST CLEAN *C/P MOVE		M 24 MAY 1989	
34B	011 *REQD*	BAKE 4 HRS AT 350/400F DATE IN___ _____TIME IN_____		24 MAY 1989	
		DATE OUT__ _____TIME OUT_____ *C/P MOVE			
34M	013 *REQD*	FMPI *C/P MOVE	577 QO-M	K 24 MAY 1989	
34Z	015	F.P.I. FOR CRACK VERIFICATION IF REQ'D *C/P MOVE	M	K	
34E	016 *REQD*	E AND I CROSS PIN HOLES 1.600/1.603/1.607 SERVICE O/S PIN HOLES 1.690/1.700 MAX	577 QO-M	24 MAY 1989	
		UPPER END O.D. 3.747/3.748/3.745 SERVICE NOTE: A MINIMUM OF TWO FMPI'S (CONTINUED)			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SCHED	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19. P	20 Q
		ARE REQUIRED ON THIS PART. *C/P MOVE			
26	018	VAPOR DEGREASE *C/P MOVE			
26	019	STRIP CHROME FROM UPPER END ONLY IF REQUIRED. *C/P MOVE			
69	021	MACHINE CENTER ON SMALL INTERNAL DIA AT UPPER END .060 X 60 DEG. *C/P MOVE			
69	022	POLISH BALL GROOVE AREA TO REMOVE ROUGH AND SCORED AREAS. *C/P MOVE			
8	025	GRIND UPPER END OF SHAFT TO 3.783MIN FOR CHROME PLATE IF IT DOES NOT CLEAN UP , GO TO OPERATION 030 & INITIATE ALL APPLICABLE OPERATIONS			
		*C/P MOVE			
8	030	GRIND FOR FLAME SPRAY NOT TO EXCEED 3.705 MINIMUM *C/P MOVE 3.707			
69	035	MACHINE AS REQUIRED TO REMOVE FLAME SPRAY NOT TO EXCEED 3.705 MINIMUM. *C/P MOVE			
69	040	MACHINE CROSS BOLT HOLES OVERSIZE TO 1.690/1.700 TO CLEANUP *NOTE REMOVE ONLY ENOUGH MATL TO CLEAN UP (CONTINUED) 1690K			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

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1 NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	BALL SCREW

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
		*C/P MOVE			
26	060	NITAL ETCH 25 MAY 1989 TIME OUT 0130 DATE OUT *C/P MOVE	M	K	
		* * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *			
26B	070	BAKE 4 HRS AT 350/400F WITHIN 8 HRS OF ETCH DATE IN TIME IN 0200	25 MAY		
		DATE OUT MAY 25 1989 TIME OUT 1000 *C/P MOVE	71110 MAY 25 1989		
8A	080	FMPI *C/P MOVE * * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *	26 MAY 1989		
		* * * * * * * * * * * * * * * * * * *			
26	088	VAPOR DEGREASE *C/P MOVE	20566 26 MAY 1989		
26	090	SHOTPEEN REWORKED AREAS .012/.016 *C/P MOVE Head & Cross Winholes	70110 MAY 30 1989	M 70110	
26	096	PREPARE O.D. FOR CHROME PLATE TYPE II CLASS 3 MASK/FIXTURE/ETC. (CONTINUED)		M	

21. FINAL DESTINATION DISPATCH	FUNCTIONAL CODE	22. COORDINATION/INITIATING RCC SIGNATURE/DATE A	C	23. DOCUMENT/SN
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		B	D	

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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19. P	20 Q
		*MECHANIC SIGN OFF REQUIRED--------> *C/P MOVE			
26	098	PREPARE O.D. FOR CHROME PLATE, GRIT BLAST *C/P MOVE		M	
26	100	CHROME PLATE O.D. TYPE II CLASS 3 SUFFICIENT TO GRIND BACK TO 3.748 . DATE OUT TIME OUT		M	
		*MECHANIC SIGN OFF REQUIRED--------> *C/P MOVE			
26B	110	BAKE 23 HRS AT 350/400F WITHIN 4 HRS OF CHROME DATE IN_____TIME IN_____			
		DATE OUT_____TIME OUT_____ *C/P MOVE			
8	120	FINISH GRIND TO 3.747/3.748 WITH 32 RMS *C/P MOVE		M	
26B	130	BAKE 4 HRS AT 350/400F DATE IN _____TIME IN_____			
		DATE OUT_____TIME OUT_____ *C/P MOVE			
8A	140	FMPI *C/P MOVE	M	K	
		* * * * * * * N O T E * * * * * * * (CONTINUED)			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

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21065N **WORK CONTROL DOCUMENT (MEDS)**

1 DATE 8'040 | PAGE 7 OF 7 PAGES

2 ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q''
		*C/P MOVE			
69	179	MACHINE CROSS PIN BUSHING P/N 66C33001-107ST		M	
69	180	INSTALL CROSS PIN BUSHINGS P/N 66C33001-107ST INTERFERENCE FIT.003/.004 *C/P MOVE		M	
69	190	MACHINE FINISH BUSHINGS TO 1.600/1.603 I.D. *C/P MOVE		M	
34P	200	PRE-PAINT I.D. OF BALL SCREW *C/P MOVE			
34C5	210 *REQD*	FINAL ACCEPTANCE OF WORK CONTROL DOCUMENT FOR COMPLETENESS & ACCURACY OF ALL PRECEDING OPERATIONS THIS 958		M	
34C5	220 *REQD*	FINAL PRODUCT VISUAL INSPECTION *C/P MOVE		M	

21 FINAL DESTINATION		22 COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

ORM 958 NOV. 80 PREVIOUS EDITION WILL BE USED

21065N

065N WORK CONTROL DOCUMENT (MEDS)

1 DATE 89040 | PAGE 6 OF ___ PAGES

2 ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED
74652A	1			

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
B-155761		343

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
C5A MAIN		
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15 DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
		IF LAST NDT OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *			
26	145	VAPOR DEGREASE *C/P MOVE			
26A	150	FPI *C/P MOVE * * * * * * * N O T E * * * * * * * IF LAST NDT OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *	M	K	
25B	160	FLAME SPRAY .004/.007 USING METCO 405 BOND COAT & BUILDUP WITH METCO #5 STAINLESS AS REQUIRED TO MACHINE BACK TO 3.765 *C/P MOVE		M	
69	170	ROUGH MACHINE FLAME SPRAY TO 3.765 *C/P MOVE		M	
69	173	CLEAN UP CROSS PIN HOLES AFTER FLAME SPRAY *C/P MOVE		M	
8	175	FINISH GRIND FLAMESPRAY 3.747/3.748 MAINTAIN 64RMS FINISH AFTER GRIND. BLEND TAPERED AREA TO MAINTAIN 1.50 RAD. CHAMFER TOP END 20DEG. BY .200 *C/P MOVE		M	
69	178	BRUSH LHE CAD CHROME/FLAME SPRAY FADE OUT AREA (TAPERED END) IF REQUIRED. (CONTINUED)		M	

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

AFLC FORM 958 NOV. 80 PREVIOUS EDITION WILL BE USED

CURTIS SAID THAT THEY HAVE A BIG PUSH ON EFFECTIVENESS. THERE FOR HE DOES NOT FILL OPENINGS UNTILL HE HAS THE WORKLOAD TO JUSTIFY THE EXTRA MAN POWER. NOTE I FEEL THAT IS A VERY GOOD IDEA. THE NEW PEOPLE WOULD BE BROUGHT IN AT A LOWER SKILL LEVEL WHICH DOES CAUSE CURTIS A PROBLEM.
THEIR SCHEDULER IS NANCY HARTMAN.

HEAT TREAT.
IN HEAT TREAT THEY HAVE A STORAGE PROBLEM. THE WELDING DEPARTMENT'S MATERIALS SEEM TO CONSTANTLY END UP IN THE HEAT TREAT AREA. THIS IS A HAZARD TO THE WORKERS IN HEAT TREAT. NOTE I FEEL THAT THEY SHOULD HAVE A STORAGE AREA FOR THEIR MATERIALS CONSTRUCTED OUT SIDE OF THE BUILDING WITH A COVER OVER IT. THE MATERIAL COULD BE BETTER ORGANIZED AND THIS WOULD MAKE IT EASIER FOR THEM TO FIND WHAT THEY NEED. NOTE IF THE METAL IS LEFT OUTSIDE IT WILL RUST THUS CAUSING THE WELDER EXCESS WORK.

1 THE WORKLOAD VARIES. IT HAS SLIGHT FLUCTUATIONS PER QUARTER. THE IS MORE WORK EARLIER IN THE FISAL YEAR. THEY BARROW PEOPLE AS REQUIRED FOR THE LOAD.

2 AS FOR CONDEMNING PARTS WE DONT THEY ARE CONDEMNED BE FOR THEY GET HERE. BY E 43 FOR EACH PRODUCT LINE THE PROCESS STAYS THE THE SAME FOR THAT LINE.

3 WE ARE STAFFED ADEQUATELY WE HAVE WG 08 THROUGH WG 11. AS FOR TRAINING MOST OF THE TRAINING IS ON THE JOB TRAINING. I WOULD LIKE TO SEND THEM OUT FOR MORE TRAINING LIKE TO A TECHNICAL SCHOOL TO LEARN THE PRINCIPALS OF THE PROCESSES. AND NOT JUST HANDS ON EXPERIENCE.

I COULD REALY USE A BEGINNING COURSE FOR MY NEW EMPLOYEES IN MANPOWR. WE GIVE THEM I HOUSE TRAINNING SUCH AS TECH. DATA TRAINNING. I FEEL THEY NEED THE TECHICAL BACK GROUND ON IT SO THAT THEY UNDERSTRAND THE PROCESS.

CURTIS FEELS THAT THEY NEED TO HAVE A PRIORITY SYSTEM ON THE REPAIR OF BROKEN EQUIPMENT. THIS SYSTEM WOULD TELL THEM HOW LONG THEY WOULD HAVE TO BRING IT BACK IN TO OPERATING CONDITION. NOTE I THINK THIS IS A GOOD IDEA. THAT WAY THEY WOULD KNOW WHERE THEY HAD A CRITICAL PROBLEM OR WHERE THEY COULD LET IT WAIT. SEE EQUIPMENT FOR DETAILS.

ALONG WITH THE BEGINNING COURSE CURTIS WOULD LIKE ADVANCE COURSE IN FLAME SPRAY, HEAT TREAT, CASTING & WELDING. HE FEELS THAT THIS WOULD HELP HIS PEOPLE KEEP UP WITH THE NEW TECHNOLOGY AS IT COMES OUT.

<u>NOTE</u> I FEEL THE MORE HIS PEOPLE KNOW ABOUT THEIR JOB.. THEIR INTREST WILL INCRESS AND THEY WILL DO A BETTER JOB FOR HIM AND FOR THE AIR FORCE. MOST COMPANYS OFFER TRAINNING ON THEIR UNITS. (EQUIPMENT REPAIR PRIORITYS IS 1ST PRIORITY 2ND LIVE SHUT DOWN. AND ALL THE REST IS 3RD

AT PRESENT CURTIS IS CHECKING WITH PERKIN ELMER- METOC INC. ABOUT TRAINNING. THEY HAVE AN INSTITUTE ON FLAME SPRAY IN NEW YORK CITY. HE FEELS THAT THE PERSONAL IN CHARGE OF TRAINNING SHOULD GO OUT AND FIND A QUALITY TRAINNING COURSE IN THE SCIENCE OF FLAME SPRAY. NOT A SHORT COURSE GIVEN BY SOME ONE WITH OUT THE EQUIPMENT.

IN REPORT

CURTIS FEELS THAT FOR HIS PEOPLE TO BE A REAL ASSET TO THE AREA. THE NEED TO KNOW HOW THE GUN WORKS AND WHAT TO DO WHEN IT MALFUNCTIONS TO CORRECT THE PROBLEM. (OPERATOR P.M. / TROUBLE SHOOTING

EQUIPMENT

CURTIS FEELS THAT HIS EQUIPMENT IS IN GOOD SHAPE ALL EXCPT FOR THE SAND BLASTER AND THE DEGREASER. HE IS WORKING ON GETTING THEM REPLACED. (SEE EQUIPMENT)

ENGINEERING SUPPORT

CURTIS FEELS THAT THEY NEED TO GET MORE INVOLVED. HE COULD DEFINITELY COULD USE A GOOD PROCESS ENGINEER. FOR EXAMPLE WE ARE WORKING ON A STRUT AND HAVE A PROBLEM. WE HAVE TO GO DOWN OVER THE HILL TO GET AN ENGINEER. I DON'T FEEL ANY ONE REALLY KONWS WHAT WE DO UP HERE IN FLAME SPRAY. WHEN WE CALL THEM AND THEY RESPOND THEY HAVE NO REAL INTREST IN US. WE WANT SOME GOOD VALID INPUT NOT SOME WHO ALL JOST AGREES WITH US.

IT TAKE 10 DAYS FOR A 103 TO GET PROCESSED ON THE ADVERAGE. I WOULD SUGGEST THAT THEY START A LOG BOOK NOT I FEEL THAT THEY SHOULD GET SOME ENGINEERS UP BY ON IN THE BUILDINGS WHICH CONTAINS THE PRODUCT WHICH THEY ARE RESPONSIBLE FOR.

IN FLAME SPRAY WE HAVE ONLY ONE SHIFT AND WE' WORK THE NORMAL HOURS.

IN CASTING WE HAVE 2 OPERATORS AND ONE SHIFT WE ALSO WORK NORMAL HOUR. NORMAL HRS ARE 7 TO 3:30 MON. THRU. FRIDAY

HEAT TREAT HAS TWO SHIFT AND TWO OPERATORS PER SHIFT. FOR THE LAST MO. WE' HAVE BEEN RUNNING 12 HRS PER SHIF AND 7 DAYS A WEEK. HOPEFULLY THIS WILL END AT THE END OF MAY.

AS LONG AS THE EQUIPMENT WORKS I AM HAPPY. HOW EVER WE DO NOT HAVE A BACK UP FOR OUR SANDBLASTER. EQUIPMENT (DIVISION) TOLD CURTIS THERE IS NO MONEY FOR A BACK UP SAND BLASTER. CURTIS FOUND A CONVERSION KIT TO CHANGE A SMALL SUCTION BLASTER IN TO A PRESSURE BLASTER. THIS KIT COST $2,100.

NOTE

WITH SEVEN PEOPLE IN THE SHOP IF THE BLASTER IS DOWN FOR ONE DAY YOU HAVE LOST THE COST OF THE CONVERSION KIT

(44.05 PER HR)(7 OPERATORS)(8 HRS. SHIFT) = $2,466.80

THERE PROBLEM IS FIRST THEY USE A DIFFERENT TYPE OF TYPE OF MEDIA (ALUMINUM OXIDE) THAN IN THE SURROUNDING BUILDINGS. SECOND IF THE PART SETS FOR VERY LONG (3 OR 4 HRS) IT STARTS THE CORROSION PROCESS. IT THEN HAS TO BE RE SAND BLASTER

CURTIS GOT A BID ON A NEW SANDBLASTER TO REPLACE THE PRESENT UNIT. THE COST WAS $30,000 FOR THIS UNIT. HE SAID THAT THERE HAS NOT BEEN A REPRESENTATIVE FORM EQUIPMENT WORKING WITH THE VENDORS ON GETTING QUOTE FOR A SANDBLASTER. NOTE THIS MEANS WHEN HIS SANDBLASTER QUITS HIS SHOP IS SHUT DOWN. YOU MAY ALSO WANT TO THINK ABOUT A TOTAL REBUILD ON THE PRESENT UNIT.

NOTE

I FEEL THAT YOU COULD HAVE A PROBLEM IN FLAME SPRAY I A BACK UP SAND BLASTER IS NOT LOCATED. I FEEL THAT THE CONVERSON KIT WOULD BE A GOOD QUICK FIX. FOR LONG RANGE I WOULD SUGEST ~~BE~~ PUTTING ANOTHER SANDBLASTER IN THE BUDGET. ~~FOR~~ TO BE PURCHASED WITH IN THE NEXT FEW YEARS.

THIS BLASTER IS DOWN EVERY 25 DAYS FOR 4.4 HRS.

CURTIS HAS PUT IN FOR SAFETY LOCKER AND EQUIPMENT HAS TURNED HIM. THEY SAID THAT THERE WAS NOT ANY MONEY FOR SUCH ITEMS. HE SHOWED ME THE REQUISITION HE MADE OUT TO SUPPLY THE LOCKER COST $60.90 AND THEY ARE IN A WAREHOUSE ON BASE. THE ~~ITEMES~~ ITEMS HE WANTED TO PUT IN THESE LOCKERS WERE SAFETY ITEMS.

HELMENT	AT	$50.00	
EAR MUFFS	AT	$20.00	APPROXIMATED COST
FACE SHIELD	AT	15.00	
COVER ALLS	AT	25.00	
SHOES #	AT	50.00	
RESPIRATOR	AT	100.00	
TOTAL		260.00	

HE NEEDS THE LOCKERS NOT ONLY TO ELIMINATE PILFERAGE BUT TO COMPLY WITH OSHA REGULATIONS.

HEAT TREAT

THE FIRST THING WE NOTICED IN THE HEAT TREAT AREA WAS ALL THE EXTRA WELDING MATERIALS (STEEL ECT) THAT WAS SITTING IN FRONT OF THE HEAT TREAT OVENS. THIS COULD BE A HAZARD TO THE HEAT TREAT OPERATORS IF THE HAD TO GET AWAY FROM ONE OF THEIR OVENS IN A HURRY. IF THE METAL IS LEFT OUT SIDE IT WILL RUST.

RICH SANDAL AND GARY SIGMON ARE THE HEAT TREATERS ON DAY SHIFT. GARY SAID THAT THEY HAD 2 OPERATORS ON DAY SHIFT AND 2 ON NIGHT SHIFT WE WILL BE LOOSING 2 PEOPLE ON JUNE 5TH

NOTE

WHEN THEY ARE QUENCHING PARTS (LARGE ONE 50 POUNDS AND UP THEY SHOULD HAVE 2 PEOPLE. I GOT THIS INFO. FROM CURTIS THE FORMAN

RICH DID NOT FEEL THAT A LOT OF PEOPLE KNEW ABOUT HEAT TREAT. NOR DID THE REALLY KNOW WHAT THEIR CAPABILITIES ARE.

OUR PLANNER IS GREG KAUFFMAN PHONE 3698.
AND OUR SCHEDULER IS NANCY HARTMAN.

HOW IS THE TRAINNING HERE IN HEAT TREAT? WE NEED MORE TRAINNING BADLY. CURTIS IS WORKING ON IT BUT HAVING PROBLEMS GETTING IT. I FEEL THAT IF WE HAD MORE TRAINNING WE COULD DO A BETTER JOB. WE ARE ALLWAYS LOOKING FOR MORE INFORMATION TO HELP US DO OUR JOB BETTER. THERE IS A SET OF VIDEO TAPE OUT ON HEAT TREATING THE COST IS ABOUT $3,200.00

I WAS TALKING TO CHARLES IN FLAME SPRAY AND HE INFORMED ME THAT WHEN YOU USE STEEL GRIT ON ALUMINUM THAT IT STARTS THE CORROSION PROCESS THEREFORE THE USE A SPECIAL MEDIA. THEY ALSO MUST LEAVE THE PARTS IN THE MACHINES WHILE THEY ARE COOLING DOWN. THE MACHINES MUST ALSO BE KEPT RUNNING. OTHER WISE THE HEAT TRAVELS UP THE PART AND CAUSES PROBLEMS WITH THE FLAME SPRAY.

RICH SAID THAT OUT OF 40 DISC 12 OF THEM ON THE AVERAGE WOULD HAVE TO BE REPROCESSED. THIS WORK OUT TO BE 30%. THE PARTS ARE THEN SENT UP TO E&I TO BE CHECKED FOR FLATNESS. THOSE THAT DO NOT PASS THE 30% ARE SENT BACK TO BE RE STRESS RELIVED. (THE 30%) I GOT THIS INFO. FROM THE OPERATORS THERE IS NO LOG BOOK THAT THIS INFO. I ASKED ROGER MUNN

NOTE

I ASKED THE WHY THEY WERE NOT CHECK OUT IN THE HEAT TREAT AREA BY E&I RICH SIAD IT IS BECAUSE THEY DONT THAT THE EQUIPMENT

IT TAKES THEM .1788 HR TO MAKE THE ROUND TRIP. COST EVALUATION BELOW.

$\left(\frac{.1788\ HR}{TRIP}\right)\left(\frac{5\ TRIPS}{WEEK}\right)\left(\frac{52\ WKS}{YEAR}\right)\left(\frac{\$44.05}{HOUR}\right)$ $2,036.34 SPENT FOR TRIPS / YR.

I WOULD SUGGEST A GRANITE OR CAST IRON SURFACE PLATE IN THE AREA. THIS WOULD ELIMINATE THE THE EXTRA TRIPS IN MOVING THE 30% TWO TIMES FROM E&I BACK TO HEAT TREAT AND FROM ~~E&I~~ HEAT TREAT BACK UP TO E&I.

CURTIS STATED THAT HE HAS BEEN WAITING FOR 10 3/4-10 X10" LONG BOLTS FOR A DIE NEED TO MAKE PARTS FOR THE F&. THE FOREMAN NOR DO I UNDERSTAND WHY IT IT SHOULD TAKE OVER A YEAR TO GET THESE BOLTS THEY FINALLY ENDED UP ~~USING~~ USING ALL THREAD WITH A PLATE WELDED ON THE BOTTOM OF THEM.

NOTE

I FEEL THAT THERE NEED TO BE BETTER COMMUNICATION FROM THE PERSON ON THE FLOOR. THROUGH THE SHOPS UP THROUGH THROUGH MIC AND TO PURCHASING.

AS OF THE LAST OF JUNE THE STILL DONT HAVE THESE BOLTS

TALKING TO CRAIG WOOD THE FASCILITIES ENGINEER I FOUND OUT THAT TO GET TRAINING OUT OF THE AREA YOU NEED TO HAVE TRAINING MONEY AVAILABLE AS WELL AS TDY MONEY AVAILABLE. CRAIG FEELS THAT TRAINING IS AN IMPORTANT PROCESS. HE ALSO STATED THAT FLAME SPRAY NEED MORE PUBLICITY. DO NOW THAT IT IS HARDER TO LEARN WELDING THAN FLAME SPRAY. AND I THINK IT IS AS EASY TO LEARN ONE AS THE OTHER.

IS THERE A LOT MORE POTENTIAL FOR THE FLAME SPRAY PROCESS. I DON'T KNOW IF WE CAN DO A LOT MORE FOR THEM IN THE LANDING GEAR AREA.

TALKING TO PAT COFFEY THE WELDING SUPALT. SUPERVISOR.
HE TOLD ME THAT ON THE MAGNESIUM WHEELS
YOU NEED TO PRE HEAT AND ALSO POST HEAT THE PART.
THE REASON FOR THIS IS IT STRESS RELIVES AND
HELP ELIMINATE WARPAGE AND CRACKING.

TALKING TO RICH SANDALL LEAD HEAT TREATER. THE HAD
A LUCFER BOX FURANCE WHICH WENT OUT. THE
PUT IN AN ORDER FOR A NEW FORANCE. THE SPEC'S
WERE WRITTEN AND IT WENT OUT FOR BID. THE
BIDS CAME BACK AND LOW BIDDER GOT THE CONTRACT
THE FURANCE CAME IN THEY RAN IT UP TO
TEMPERATURE AND IT BUCKLED. THE OVEN ONLY
LASTED ONE WEEK. IT WENT BACK TO THE MANUFACTURE.
THE CONTRACT THEN WENT TO THE SECOND LOWEST
BIDDER.. WHEN THE NEXT FURANCE CAME IN THEY
LOOKED IT OVER AND IT LOOKED GOOD, BUT WHEN
IT WAS RAN UP TO TEMERATURE THEY FOUND
OUT THAT IT WAS NOT BUILT TO THE
SPECIFICATIONS OF THE CONTRACT EITHER.
NOTE
I THINK THAT THE SPECIFICATIONS SHOULD BE TIGHTEN
UP SO THAT THE MANUFACTURE KNOW EXACTLY
WHAT THE AIR FORCE WANTS. I ALSO THINK ON LARGE
ITEMS SUCH AS THIS THEY NEED TO SPECIFY A
TURN KEY SYSTEM. (THE AIR FORCE DOES NOT EXECPT
THE ITEM UNTILL IT IS RUNNING.
THEY ARE WORKING WITH THE CONTRACTOR ON THIS OVEN

WHEN WE GET A MICAP OR A SURGE WE HADE TO RUN THE LARGE FURANCE. THERE IS AN ESTIMATE THAT IT COST($500./HR.)? WE HAVE TO RUN THE LARGE ONE BECAUSE WE DO NOT HAVE A GOOD SMALL OVEN. A SMALL OVEN IS A LOT LESS EXPENSIVE TO RUN. AND WOULD BE IDEAL FOR SMALL PARTS.
WE HAVE BEEN WAITING FOR OVER 3 YEARS FOR THE REPACEMENT FOR OUR SMALL BOX OVEN.

RICH SAID THAT THEY ARE UPGRADING THERE INSTRUMENTATION TO DIGTIAL UNITS AND IT IS WORKING OUT VERY WELL.

NANCY HARTMAN SCHEDULER FOR MANPWW
OUR WORKLOAD FOR THE PAST 4 QUARTERS WAS
1 QUARTER 12,147 HRS
2 QUARTER 17,227 HRS
3 QUARTER 18,423 HRS
4 QUARTER 14,561 HRS
THE WORKLOAD IS DECREASING BECAUSE THERE IS NOT AS MUCH MISTER OR TEMPORY WORK LOAD
THE HRS FOR LAST ~~YEAR~~ YEAR WERE
1 QUARTER. I DONT HAVE THAT FIGURE
2 QUARTER 14,234 HRS
3 QUARTER 14,315 HRS
4 QUARTER 15,171 HRS.
THE WORK LOAD FLUCTUATES BECAUSE WE DID A LOT OF C130 FIXTURE WORK. A LOT OF THIS WORK LOAD IS FOR WELDING. THE WORK LOAD FOR HEAT TREAT (BRAKES) WILL BE EVEN HIGHER NEXT QUARTER THIS IS BECAUSE OF NEGOTIATIONS. THEY WILL ALWAYS HAVE PARTS TO DO. HOWEVER FLAME SPRAY AND HEAT TREAT NEED TO HAVE MORE PUBLICITY.

NOTE

YOU MAY WANT TO SET UP TOURS FOR P&W AND MMI THIS WAY THEY COULD SEE WHAT MANPWW COULD DO DO FIRST HAND. THIS WILL GIVE THEM ANOTHER OPTION ON WHERE THE MAY SEND WORK LOADS. OR HAVE MANE PROCESS ENGINEERS GO THROUGH FLAME SPRAY HEAT TREAT ECT TO ~~SEE~~ SHOW THEM WHAT THEY CAN DO. THIS WOULD HELP THE PROCESS ENGINEER ~~AS~~ AS HE WOULD ~~A~~ HAVE AN OPTION TO CHOOSE FROM FOR THE REPAIR PROCESS. THEY CAN THEN APPROACH THE MMM PERSONAL FOR SPECIFIC APPLICATIONS.

NANCY STATED THAT WHEN THE GET A JOB IN AND THE NEED A PIECE OF ALUMINUM 4"X4" X.S THICK THEY HAVE TO BRING IN A FULL SHEET WITH IS 48" X 144" X.S THICK. WHAT DO THEY DO WITH THE REST OF IT? SHE SAID THEY TRY TO USE IT ON OTHER JOBS. BUT STILL APPROXIMENTLY 50% IS SCRAP. WHEN THEY ORDER BOLTS IF THEY ONLY NEED 4 THEY STILL HAVE TO BRING IN 100 BOLTS. THE STORE THE EXCESS MATERIAL OUT SIDE IN THE YARD. WHEN THE YARD IS CLEANED OUT IT ALL GOES TO SALVAGE. THIS IS ABOUT 30% OF ALL THE MATERIALS BROUGHT IN TO WELDING.

PACER INNOVATE

<u>NOTE</u>

WHY DON'T YOU SET UP A WAREHOUSE WHERE THE COULD REQUISITION THE MATERIALS ON A AS REQUIRED FOR THE JOB AND NOT A LOT MINIMUM.

NANCY SAID THEY ORDERED 5 LENGTH'S OF ~~BLACK~~ BLACK PIPE. (1 LENGTH = 20') THEY ORDERED 5 IN FEB. IT CAME IN LATE AND WHEN IT GOT HERE IT WAS 1 5' PIECE OF PIPE NOT 5 20' PIECES OF PIPE. SHE SAYS THAT THIS IS A COMMON OCCURRANCE.

WE ORDERED A WHEEL THE COST WAS $240.00 EACH WE STOCK NUMBER DESCRIPTION WAS WHAT WE NEEDED HOWEVER WHEN I CAME IN IT WAS THE WRONG ITEM. WE CHECK EVERTHING OVER AND TRIED IT AGIAN. THE SAME THING HAPPENED. WE THEN WENT TO LOCAL PURCHASING AND GOT THE CORRECT WHEELS I THEN TRIED TO GET THE ROD CHANGED AND FOR A LONG TIME COULD NOT GET ANY TO CHANGE IT. NANCY FINALL GOT THE PART # CHANGED TO MATCH THE PART

NANCY WHAT ARE SOME OF THE CHANGES YOU WOULD LIKE TO SEE HAPPEN.

1 BIGGER WORKLOADS FOR MMAPWW

2. BETTER EQUIPMENT

3. MORE TRAINING

4. IMPROVEMENT INCENTIVE PROGRAM SEE NEXT PAGE

5 BETTER PRINTS. (WE GET PRINTS WITH NO DIMENSION AND OR FOZZY) IN THE FUTURE IF THE PRINTS ARE NOT CORRECT THEY WILL BE SENT BACK.

HOW OFTEN TO YOU END UP WAITING FOR MATERIALS? QUITE A LOT.

THEY HAVE TO WAIT A WEEK SOMETIMES FOR AN ENGINEER. SHE WOULD LIKE TO SEE ONE MOVED INTO THE AREA. SHE SAID THEY COULD FIND SPACE FOR HIM(OR HER)

NOTE

WHEN THEY ARE WORKING ON A LARGE PROJECT AND HAVE A PROBLEM. AND CALL THE ENGINEER. IF IT TAKES THEM A WEEK TO COME OVER LETS LOOK AT THE AFFECTS.

1 IF TIES UP A LARGE AMOUNT OF FLOOR SPACE

2. IT LOWER THE ENTHUSIASM. FOR THE PROJECT

3. THROWS THE SCHEDULE OFF (FROM THAT POINT ON)

4. FORMAN HAS TO GET THE EMPLOYEE ANOTHER JOB TO WORK ON.

5 TEAR DOWN & SET UP TIME

NANCY STATED THAT THEY LOST APPROXIMATELY 12 HRS. IN 2 WEEKS

(12 HRS)(2 WEEK)(44.05) = $13,743.60 TIME WASTED WHILE WAITING FOR ENGINEERING RESPONCE

I WOULD SUGGEST THAT THEY KEEP A LOG BOOK OF DOWN WAITE TIME. ECT. THIS WOULD GIVE YOU A BETTER PICTURE OF WHAT IS REALLY HAPPENING

4. IMPROVEMENT INSENTIVE PROGRAM.

A. WHEN THE OPERATOR COMES UP WITH A BETTER WAY TO DO THE JOB AND [redacted] HAVE A BETTER END ITEM PRODUCT.

THE PROBLEM IS A LOT OF THE TIME MANAGEMENT SAYS JUST FOLLOW THE PRINT.

NOTE

I FEEL THAT THERE NEEDS TO BE MORE INTERACTION BETWEEN THE TWO ORGANIZATIONS.

THEY ARE ABOUT TO START ROTATING THE FORK LIFTS FROM AREA TO AREA.

NOTE I COULD SEE THIS AS A PROBLEM. THE REASON IS THAT IF YOU HAVE ONE PIECE OF EQUIPMENT TO USE AND YOU ARE THE ONLY ONE RUNNING IT YOU WILL PROBABLY TAKE BETTER CARE OF IT BECAUSE YOU HAVE TO OPERATE IT DAY AFTER DAY.

ON THE OTHER HAND IF THEY ARE ROTATED YOU WILL NOT BE AS CAREFULL WITH IT BECAUSE WHEN IT BREAKS. THEIR IS NOT ONE PERSON RESPONSIBLE FOR THE UNIT.

MARCH WHAT IS YOU EVALUATION OF THIS RCC?

1 GOOD WORK LOAD
2 GOOD PEOPE TO WORK WITH
3 CHALLENGING
4 LIKE MY JOB.

NOTE

I HAVE NOTE MET ANY ONE SO FAR IN THIS RCC WHO DOES NOT LIKE HER.

GREG KAUFFMAN IS THE PLANNER FOR MAOFWW PHONE 3698
HOW IS THE WORK LOAD? THEY NEED MORE WORK
THEY ARE SENDING A LOT OF WORK OUT TO DIFFERENT
BASES. I THINK WE NEED TO LET THEM KNOW
WHAT WE CAN DO.
THERE IS A LACK OF COMMINUTION. WHEN PEOPLE
MOVE ON TO A NEW POSITION THE DO NOT EXPAIN ALL
THE DETAILS OF THE JOB TO THEIR PREDECESSOR.
THERE WAS BEEN A LOT OF SUGGESTIONS TO HAVE
FLAME SPRAY A PART THEN HAVE THE MACHINE
SHOP REMACHINE IT. THERE IS A LOT OF PARTS
THAT ARE PROBABLY BEING SCRAPED BECAUSE
PEOPLE DO NOT UNDERSTAND THE CAPABILITIES OF
FLAME SPRAY OR EVEN KNOW THAT IT EXIST.
IF THE DID UNDERSTAND THE WOULD ROUTE A LOT
MORE OF THEIR PARTS THAT FLAME SPRAY REPAIRABLE
TO FLAME SPRAY AND NOT TO SALVAGG. AT PRESENT
ALL OF THAT TYPE OF MATERIAL (PARTS) ARE BEING
SENT TO SALVAGE. PERHAPS THE SHOULD FORM
A TEAM OF PEOPLE. TAKE 1 PERSON FROM EACH
SHOP AND SENT THEM DOWN TO LOOK OVER THE
CONDEMNED PARTS. AND READ THE TAGS THAT SAYS
WHY THEY ARE CONDEMNED TO SEE IF THEY
CAN COME UP WITH A REPAIR PROCESS, ESPECIALLY
ON HIGH VOLUME ITEMS
I WOULD SUGGEST A PAT TEAM TO LOOK INTO
THIS.

WHEN GREG HAS AN PROBLEM HE GETS GOOD RESPONSE FROM ENGINEERING. USUALLY WITH IN A DAY. A 303 ~~TEAM~~ TAKES ABOUT 1 WEEK. (FOR HIS PROBLEMS)

HE FEELS STRONGLY THAT THEY NEED A METALLURGIST TO WORK WITH THE RCC AND ALL OVER BASE. WE NEED THIS TYPE OF PERSON TO VERIFY THE DECISIONS BEING MADE CONCERNING THE METAL WORKING WE DO; WELDING, HEAT TREAT, FLAME, SPRAY AND TO CHECK FOR MAT'L STRESS ~~OF PLANES~~. AND FATIGUE OF PLANES

NOTE

I AGREE A METALLURGIST COULD BE VERY VALUABLE TO THE BASE.

IN TALKING TO ANDY CURRY HE TOLD ME THAT THEY DID HAVE ONE. WELDON BETTS. I TOLD THE APPROPRIATE PEOPLE.

THE REASON IS THAT HE GOES TO THE ENGINEER AND DOES NOT WAITE UNTILL THE ENGINEER COMES TO HIM.

TALKING TO PAT COFFEY HE INFORMED ME THAT ON THE STANDARD PRODUCTS SUCH AS HOOK POINTS, DUCTS, GUN ROTORS, MISSILE DOMES, THE PROCESS IS THE FOR THAT PARTICULAR ITEM IS BASICALLY THE SAME TIME AFTER TIME.

WHEN THEY BUILD A FIXTURE, STAND OR SPECIAL PROJECT THE PROCESS VARY GREATLY.

WE SCRAP OUT OR CONDEMN 10% TO 15% ~~FO~~ OF THE ITEMS THAT COME IN FOR REPAIR

STAFFING

PAT STATED THAT THEY WERE UNDER STAFFED. WITH THE WORK LOAD WHICH IS COMMING IN HE NEEDS BETWEEN 8 TO 10 MORE WELDERS. TO KEEP UP WITH IT. ALSO TWO (2) EQUAL FOREMAN WS-10's TO MANAGE THE CREW'S.

TRAINING

THE GOVERMENT HAS A DEAL WORKED OUT WITH DAVIS COUNTY VOCATIONAL CENTER WHERE THEY WILL TEACH PATS NEW PEOPLE ARC, TIG AND MIG WELDING. THIS IS ADEQUATE FOR NEW WELDERS. WHEN THEY HAVE COMPLETED THIS WE TRAIN THEM TO OUR SYSTEM.

I WOULD LIKE TO BE ABLE TO SEND MY JOURNEYMEN WELDERS (GRADE 10 AND ABOVE) BACK TO LINCOLN FOR ADVANCE TRAINING AND TO KEEP UP WITH THE NEW PROCESSES.

WE NEED MORE TRAINING ON DIMENSIONING TOLERANCING AND BLUE PRINT READING. WE ALSO NEED MORE AND BETTER TRAINING ON THE CNC PLASMA CUTTING MACHINE.

NOTE

PAT IS ONE OF THE TWO PEOPLE WHO IS QUALIFIED TO OPERATE THIS PIECE OF EQUIPMENT. AS SOPHISTICATED AS THIS PIECE OF EQUIPMENT IS YOU REALLY NEED QUALIFIED PEOPE TO OPERATE IT.

PAT FEEL THE REASON WHY EFFECTIVENESS IN DOWN IS.

1 MORAL

2 POOR ATTITUDE

(THE WORKED FOR A DICTATOR FOR THE LAST FOUR OR FIVE YEARS) NOTE DEE SAID THAT IT WAS MORE LIKE 2 YEARS. THEY BROUGHT THE OLD SUPERVISOR UP TO THEIR OFFICE 2 YEARS AGO.

MORAL IS A VERY BIG PROBLEM.
PAT HELD A MEETING WITH HIS PEOPE TO SEE WHAT COULD BE DONE TO CHANGE THIS SITUATION.

1 THEY DISCUSSED MORAL

2 QUALITY

3 ATTITUDE

4 SELF MOTIVATION

HOPEFULLY NEW MANAGEMENT CAN TURN THIS SHOP AROUND.

NOTE

I FEEL AS A PAST WELDER, THAT IF PAT IS GIVEN THE OPPORTUNITY HE CAN TURN THIS GROUP AROUND. ALL THE OPERATORS I MET SEEM TO TO LIKE AND RESPECT HIM. HE KNOWS THEIR PROBLEMS, HE HAS BEEN WORKING IN THIS AREA AS A WELDER FOR MANY YEARS. HE HAS ALL READY ADDRESSED PART OF THEIR PROBLEMS IN THE SPECIAL MEETING HE CALLED. I WOULD STRONGLY SUGGEST THAT HE IS GIVEN THE CHANCE TO TRY AND TURN THIS UNIT AROUND. IF HE CAN YOU WILL HAVE A VERY GOOD WELDING SHOP!

PAT GOT THE SHOP TOGETHER AND ASKED THEM WHAT TOOL THEY NEEDED TO DO A BETTER JOB. PAT HAS THE LIST AND IS WORKING ON GETTING THE CTK & ITK'S UP DATED WITH THE EQUIPMENT THEY NEED TO PREFORM THE JOB CORRECTLY

SOME OF THE EQUIPMENT THAT NEEDS TO BE UP DATED

1- 30 TON PRESS.

A. THEY HAVE NO DIE'S TIE DOWN BOLTS OR ANY THING TO GO WITH THE PRESS

2- AIR PRESS

3 METAL IRON WORKER THE PRESENT ONE IS JUST ABOUT SHOT. OR POSSIBLY GET A REBUILT PRESS.

4- NEED WROUGHT IRON BENDER (FOR BENDING LOOPS RINGS ECT.)

5 METAL ROLLER SUGGESTION HAVE DI PEC LOOK FOR A GOOD USED ONE.

A WHEN WE NEED A PIECE ROLLED WE HAVE TO TAKE IT OVER TO SHEET METAL TO GET IT ROLLED FOR US. THIS TAKES AN EXCESSIVE AMOUNT OF TIME

6 WE NEED A BETTER PIPE COPING (PIPE NOTCHER) MACHINE.

IF WE HAD THIS EQUIPMENT WE COULD DO THE JOB FASTER, BETTER AND MEET THE COMPLETION DATES.

WE HAVE A SMALL ROD OVEN ON ORDER AND A HAND HELD PLASMA TORCH ORDER.

HOWEVER THEY HAVE NO IDEA WHEN THEY WILL COME IN.

EQUIPMENT

EQUIPMENT AND HAND TOOLS.
TALKING TO PAT - THE FOREMAN.
(THE HAND TOOLS ARE IN VERY POOR SHAPE.
AT ONE TIME THEY HAD 2 SLAG HAMMERS FOR THE COMPLETE SHOP. FOR A TIME THEY TOOK THE GRINDING DISC OUT OF THE LOCAL MIC AND PLACED THEM IN THE TOOL CRIB. THIS MEANT THAT THE WELDER HAD TO LEAVE THE AREA AND WALK UP TO THE TOOL CRIB WHICH IS IN THE CENTER OF THE BUILDING TO GET THE DISC. THIS TOOK IN A 5 TO 10 MINUTE TRIP EACH TIME THEY GO.
AT THE FIRST OF THE YEAR THEY DECIDED TO CHANGE I BACK TO THE OLD SYSTEM. HOW EVER NO ONE BOTHERED TO TELL PAT ABOUT THE CHANGE

NOTE

I THINK THE COMMUNICATION NEED TO BE IMPROVED. THEY DID NOT KNOW THAT IT WENT BACK TO THE OLD SYSTEM UNTILL THEY WENT UP TO THE TOOL CRIB AND WAS TOLD AT THAT TIME THEY WOULD HAVE TO GO TO THE MIC IN THEIR AREA.

PORTA POWER

IN WELDING YOU USE A PORTAPOWER TO ALIGN THE PROJET AS YOU ARE WORKING ON IT, TO STRAIGHTEN ECT. AT PRESENT THEY HAVE TO MAKE A TRIP TO THE TOOL CRIB TO BORROW ONE. THEY REALLY NEED ONE IN THE AREA. PAT IS WORKING ON GETTING THE CTK AND ITK UP DATED.

CTK: CENTRAL TOOL KIT
ITK INDIVIDUAL TOOL KIT.

ENGINEERING SUPPORT.

PAT COFFEY THE FOREMAN INFORMED ME THAT

1 THE ENGINEERS DO NOT SUPPLY ENOUGH INFORMATION ON THE BLUE PRINTS! WE END UP SPENDING EXCESSIVE AMOUNT OF TIME FIGURING OUT INFORMATION THAT THEY SHOULD SUPPLY. NOTE IN THE FUTURE THEY WILL BE SENT BACK IF THEY ARE NOT COMPLETE

PAT. STUDY

2. WHEN QUESTIONS ARE ASKED OR THEIR PRESENCES IS REQUESTED WE WAIT FOR DAYS FOR THEIR RESPONCE.

3 THE ENGINEERS WILL NOT GIVE THE SHOP PERSONAL CREDIT FOR THEIR VAST WORKING KNOWLEDGE THAT WE HAVE. WHEN THEY BRING DOWN A JOB. THEY HAVE A WELDER LOOK AT IT (BLUE PRINTS). WHEN THE WELDER SUGGEST THAT THERE IS A BETTER WAY TO DO IT THE ENGINEER TELLS HIM TO JUST FOLLOW THE PRINT AND LEAVES. NOTE NOTE THEY NEED BETTER COMMUNICATION

I FEEL THAT YOU NEED A ENGINEER'S OFFICE MOVED DOWN TO THE FLOOR TO WORK WITH THES PEOPLE. THIS WOULD HOPEFULLY OPEN UP A GOOD LINE OF COMMINUTION BETWEEN THE 2 DEPARTMENTS (RCC'S) THEY WILL ALSO GET A BETTER FEEL FOR THE SKILL LEVEL AND KNOWLEDGE OF EACH OTHER.

I ALSO FEEL THAT THE RESPONCE TIME SHOULD BE WITH IN 24 HR. AT MAX.

TIME THAT PAT AND HIS PEOPLE SPEND FIGURING OUT A NEW SET OF PRINTS.

$\left(\frac{2\ HRS}{JOB}\right)\left(\frac{7\ JOBS}{MO.}\right)\left(\frac{12\ MO}{YEAR}\right)\left(\frac{\$44.05}{HR}\right)$ $7400.40 / YEAR

IF IT IS NOT POSSIBLE TO MOVE AN ENGINEER OVER THEN A SET TIME FOR RESPONCES SHOULD BE ESTABLISHED

SOME OF THE THING THE WELDING SUPERVISOR WOULD LIKE CHANGED ARE

" TRAINED SKILLED PEOPE ARE THE AIR FORCES MOST VALUABLE ASSET. NO ONE KNOWS MORE WHAT IS NEEDED TO ACCOMPLISH A GIVEN TASK THAN THE PEOPE DOING THE JOB. PEOPLE NEED THE OPORTUNITY TO EXPRESS THEIR IDEAS TO HELP IMPROVE THE PROCESS, FLOW TIME. QUALITY, SAFTY AND ACCOUNTABILITY. IT ALSO HELPS THEM FEEL THAT THEY COUNT. BELONG AND ARE MORE WILLING TO PUT FORTH MORE EFFORT. IF WE ARE TO COMPETE WITH THE PRIVATE SECTOR, WE NEED THE ABILITIES TO ATTRACT AND KEEP, TRAINED. SKILLED, PROFESSIONAL PEOPLE.

MANAGEMENT IS THE VEHICLE TO OPEN THE AVENUES TO ACCOMPLISH TASKS AND OF CHANGES. IF MANAGEMENT ON THE FIRST LEVEL HAS THE FREEDOM TO SET THEIR OWN POLICIES, TEAM WORK CAN BE POSSIBLE ALSO BETTER MORALE AND WORKING RELATIONS. WHAT WORKS GOOD IN ONE AREA MAY NOT WORK GOOD AT ALL IN ANOTHER AREA.

THIS STATEMENT WAS MADE BY THE WELDING FOREMAN

NOTE

I SEE A COMMUNICATION PROBLEM. I FEEL THINGS WOULD RUN MUCH SMOOTHER IF PEOPE WOULD ~~THEN~~ TALK TO EACH OTHER

IN TALKING TO PAT COFFEY HE INFORMED ME THAT THE PLASMA TORCH I WELDING HAS THE ABILITY TO CUT UNDER WATER WITH THE CORRECT CUTTING HEAD. THE ADVANTAGE OF THIS IS THAT THE METAL WILL NOT WARP AND THEY CAN CUT TO TIGHTER TOLERANCES. THIS IN TURN MEANS LOWER MACHINING COST.

TALKING TO PATRICK BEESKEY I FOUND OUT THAT WHEN THEY WENT TO THE GENIC TYPE OF TORCH. THEY COULD ONLY USE 50% OF WHAT CAME IN. THE REST WAS GARBAGE. IT TAKES THEM 1½ HRS TO REPLACE THE UNIT. THE PEOPLE ON THE FLOOR MAINTAIN THEIR OWN TORCHES. NOTE THE PARTS ARE KEPT IN THE MIC. THERE IS A TAG ON ALL THE WELDER STATING THAT PREVENTIVE MAINTANCE IS NO LONGER REQUIRED. IT IS SIGNED BY JIM OBRIAN.
THEY ALSO FELT THAT THE MACHINES NEED TO HAVE THE BACK PANELS BE REMOVED AND HAVE THE DUST BLOWN OUT. THIS WOULD PROBABLY EXTEND THE LIFE OF THE MACHINE.

FOR THE WELDER

COST OF GENERIC TORCH VERSUS NAME BRAND TORCH

THE TORCHS ARE CHANGED EVERY 6 WEEKS 52:6 = 8.7 TIMES/YEAR

THERE ARE 12 WELDING MACHINES (12 MACH) C 8.7 TIMES/YR) = 104.4 YR

THE GENERIC TORCH COST 33.62 PER TORCH

NAME BRAND TORCH COST 54.67 PER TORCH

THE NAME BRAND LAST TWICE AS LONG AS THE GENERIC

(33.62)(2 TORCHES) = 67.24 COST OF 2 GENERIC TORCHES

WITH = 1 NAME BRAND TORCH

67.27 FOR THE TORCHES + INSULATION (COST

(1.5 HRS X 44.05) = 66.08

67.27 GENERIC TORCH

66.08 INSULATION } C FOR JUST 1 TORCH

$132.16

54.67 NAME BRAND TORCH (ITS JUST CANCELS TO OTHER TORCH INST

77.49 DIFFERENCE

(177.49 X 12 MACH)(8.7) = 7089.43

WITH THE NAME BRAND YOU WOULD ONLY HAVE TO CHANGE

THEM 1/2 AS MUCH AS GENERIC

(7089.43) ÷ 2 = $4044.72

ONE THIRD OF THE GENERIC TORCHS ON NO GOOD.

(33.62)(66.08) = 100.42. THEY MUST BE INSTALLED TO SEE

IF THE ARE GOOD OR NOT

(8.6 TIMES X 12 MACHINES) = 103 TORCHES USED / YEAR

(103) ÷ 3 = 34 BAD TORCHES PER YEAR

(34)(100.42) = $3414.28

4044.72

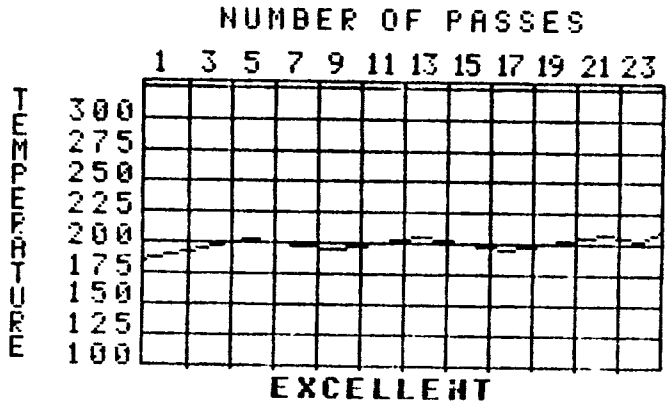
3414.28

745800 TOTAL DOLLARS SAVED

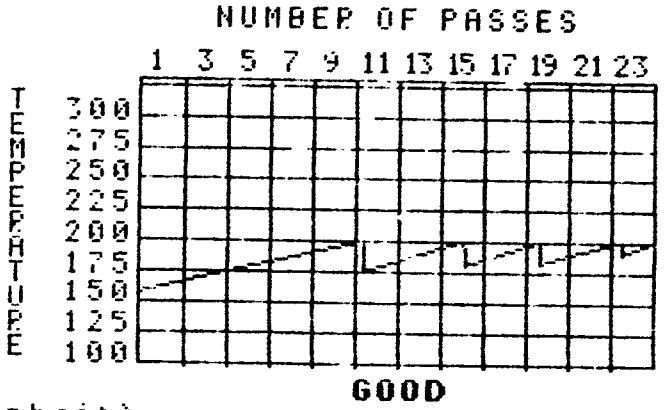
TEMPERATURE CONTROL

SPRAYED ON ALUMINUM PART

CONTRACT
EXPAND

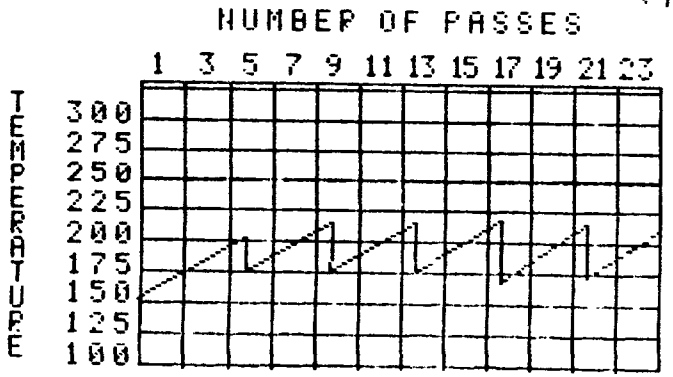


EXCELLENT

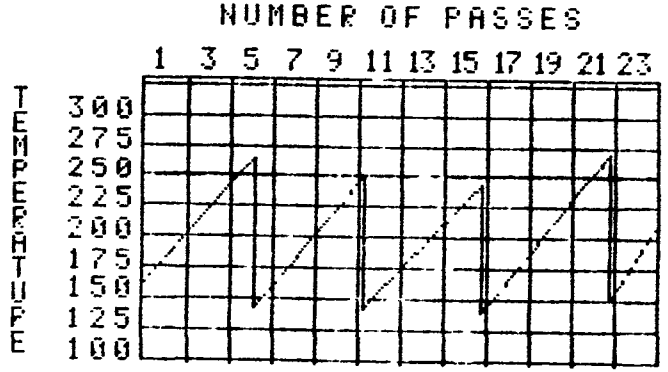


GOOD

(Temp in Farenheit)



FAIR



POOR
ALMOST SURE TO FAIL

Name. Curtis L Worden

Series/Grade WS-3703-10

Job title: Supervisor: Miscellaneous manufacture and repair section. Industrial products and landing gear Division.

Organization: ~~Flame Spray, Heat Treat~~ and Foundry shops. Building 507 and 511

Description of work requirements. Supervises thirteen to 20 employees from diverse skills such as Flame Spray, Heat treatment and Molding of metals. Makes job assignments, provides technical guidance, evaluates performance establishes training requirements, monitors safety and security procedures, insures that hazardous chemicals and materials are properly used, stored and disposed of. Visually monitors the quality of the product being worked. Works with planning, scheduling and manning personnel to insure labor standards, work schedules, process and procedures are in proper order.

Reason for Nomination. Mr Worden has a great deal of responsibility as a first line supervisor, overseeing the operation of three shops spread between two building. Each shop has a different skill series and requires a great deal of knowledge in these trades as to enable him to monitor the work being performed by his employees. Mr Worden put together the PTC requirements for each of these shops identifying training requirements as well as proper skill codes for each of the grade levels in each of the position series.

Mr. Worden has ~~bioenvironmental~~ surveys performed in each of these shops on an annual basis and must ensure all safety and health requirements are adhered to at all times. These three shops have 6 process orders providing guidance for safety and Quality of the personnel and product that need to be monitored at all times and often need revisions made to them, Mr. Worden is a key person to coordinate these revisions with Bioenvironmental, Safety, Quality and engineering personnel.

Mr. Worden has distinguished himself as a supervisor by maintaining a productive work force in each of these shops meeting all production schedules on time. He acts promptly to any change in work requirements. He is a active supervisor and shows superb leadership qualities. He spends every availabl moment with his employees promoting good working relationships and always finds time to listen to a problem or assist a co worker. He is truley a asset to the miscellaneous manufacture and repair section as well as the industrial products and landing Gear. ~~Division.~~

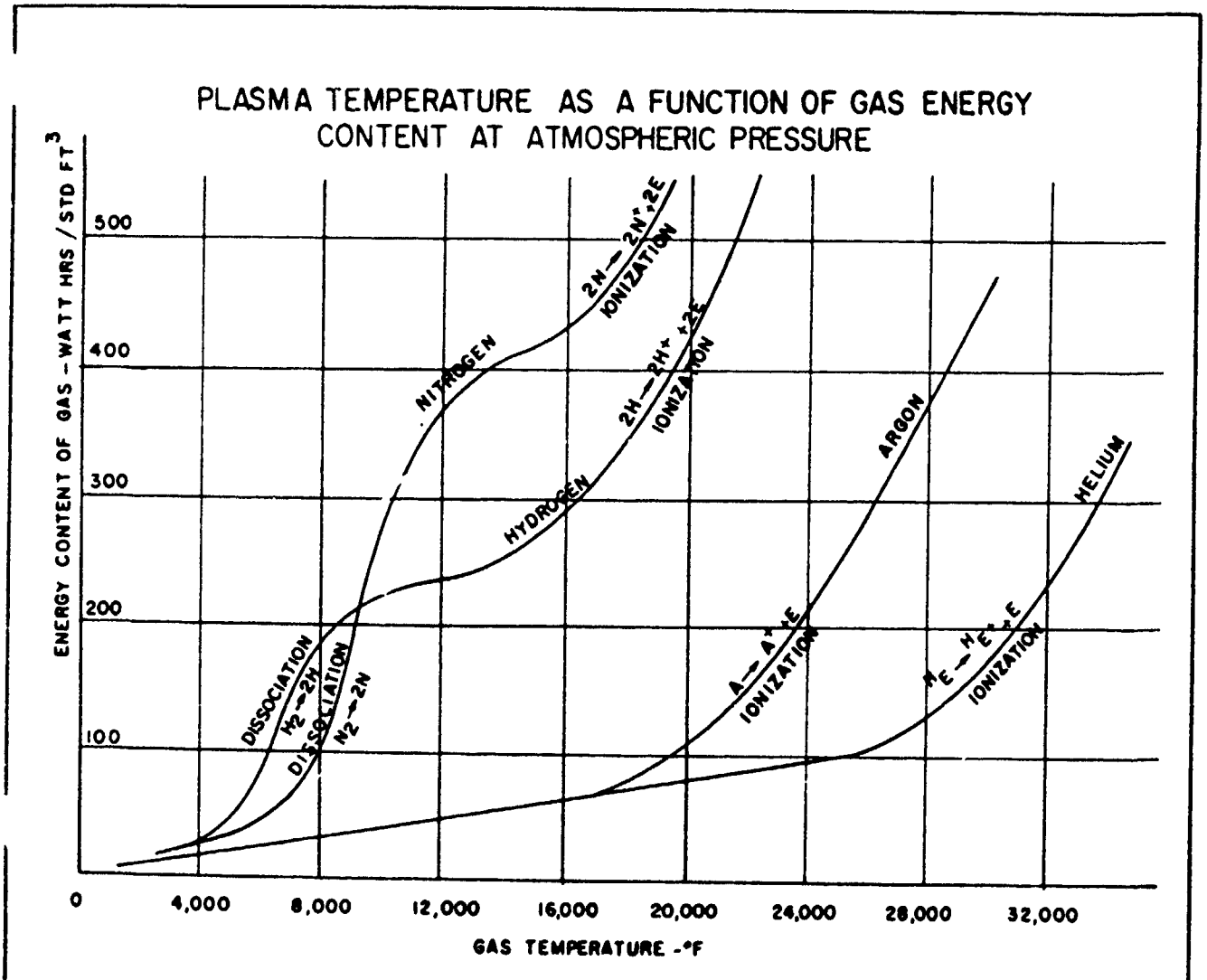
we reach the range of ionization. This the range where the atoms are being separated into electrical particles.

It is important to note that the diatomic gases in general, and nitrogen in particular, have more nearly vertical curves due to their disassociation than the mon-atomic gases. Hence, from the standpoint of state change energy, nitrogen, for instance, is far superior to argon.

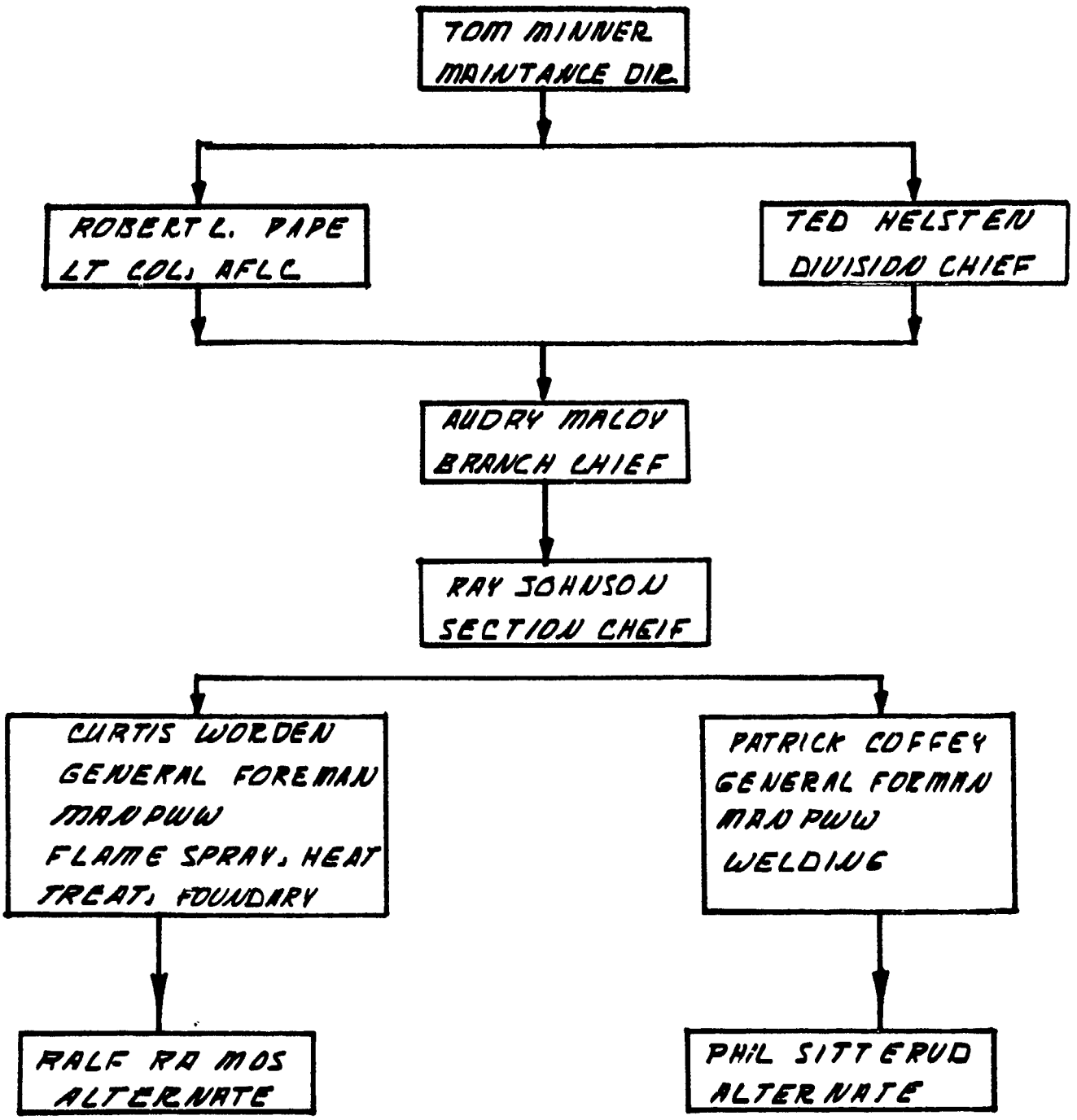
Now the practical question arises as to how we can produce a steady Plasma stream which is usable for Flame Spraying. This steady Plasma stream must have sufficient velocity to not only heat the particles but to convey them to the work with high impact velocity. Such a hot stream we call a *Flame*, and hence, when made of *Plasma*, a Plasma Flame.

We can produce a Plasma with an ordinary open electric arc as illustrated in Fig. 1.8. Utilizing direct current, we have a permanent anode and cathode. These, of course, are called the electrodes of the arc. Usually we strike the arc by contacting the anode and cathode and actually make a Plasma from the electrode material such as in a carbon arc or an electric welding arc.

It is possible, however, to use materials for the cathode and anode which do not burn up when properly cooled. We call electrodes of this kind non-



CHAIN OF COMMAND



CHUCK CRAWFORD
INFO FROM DJ CLARK

Spraying a little saves AF a lot

by Gary R. Boulware
Directorate of Maintenance

It is no secret. In today's world the Department of Defense is looking for new ways to save America money.

The cost of just about everything is on the rise. Dollars and cents are being stretched to their limit, and all with no obvious signs of relief for the near future.

"Some people believe that just pulling another notch in the old belt and keeping a stiff upper lip will get us by," Curtis Wordon, flamespray supervisor, said. "However, others believe that education is a better alternative. And we want to educate others."

A new process, flamespray (otherwise known as Thermalspray), is a new way of doing business and education about the process may save the taxpayers a bundle of money.

Over the last 40 years, the flamespray process has saved taxpayers and the Air Force thousands of dollars.

The process

The metallizing process was invented around 1910 and became popular in the 1930s after its introduction to machine element work. It is used in spraying of hard metals to build up machine parts.

More developments were highly visible in the 1950s due to the increase of variety of materials and advances in technical improvements in the process.

Flamespray began its career at Hill AFB in the early 1960s, with its primary function to salvage aircraft landing gear and parts.

Today, there are more than 230 materials and mixtures that can be achieved and sprayed on almost anything, including paper.

"One great advantage in flamespraying buildup is that spraying is a cold process," Mr. Wordon said. "The spraying process does not heat up the part being sprayed, which eliminates warpage. To a machinist, this means less work and higher quality."

The flamespray shop, located in Bldg. 811, still plays a major role as a cost saver for the landing gear division.

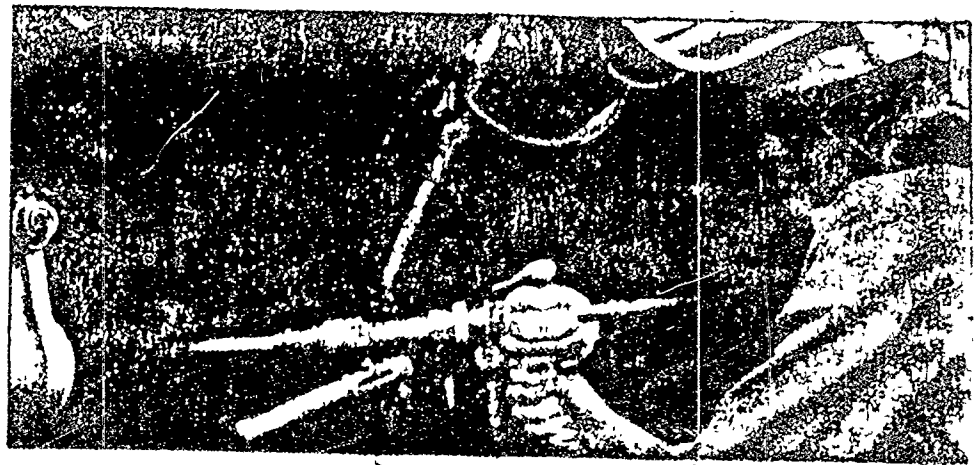
Big savings

Thirty-five items are currently being used in the process and the savings are tremendous. The main outer cylinder of a B-52 costs $11,789.16 new, but thanks to flamespraying, its repair cost is only $1,245.50. A KC-135 nose outer costs $19,431.19 when purchased new, and only $486.83 to repair. The Air Force saves more than $18,000 with each repair.

The main bogie beam on a C-141 costs more than $30,000 new. With Hill flamesprayers performing repairs, more than $29,000 is saved.

The landing gear division is flamespray's primary concern, however, according to Mr. Wordon, new areas of interest are always being explored.

Dennis Miller, a sheet-metal specialist, recently recognized a problem with the C-130 Hercules' paratroop door rail. He made a suggestion which saves 28 hours in repair time and a cost savings of $75 per door.



U.S. Air Force Photo by Ralph C. Hager

Flamespray

Delores Hendricks, a metallizing equipment operator's helper, flamesprays the surface on an F-16 Eagle nose support arm.

Blair Peterson, a flamespray technician, suggested a flamespray repair on the F-16 Fighting Falcon's speed brake. Until now, repair work consisted of removing the spent brake and completely replacing the old part. Each new brake costs about $4,600, and it takes four brakes per aircraft. Flamespraying and repairing the old part now costs the Air Force only $48 for each assembly.

"Flamespray can't do it all, but it sure has done a lot to save taxpayers money," Mr. Wordon said. "Education goes a long way. There are tons of savings when people realize the capability we have. We have an open door policy and want people to check out possible ideas we could help them with."



Flamespray
GARY R. BOULWARE
2 June 1989

Suggested Title:
Spray a little Save alot

It is no secret, that in today's world the Department of Defense is looking for new ways to save America money. The cost of just about everything is on the rise. Dollars and cents are being stretched to there limit, and all with no obvious signs of relief for the near future. Some people believe that just pulling another notch in the old belt and keeping that stiff upper lip will get us Americans by, however others believe that education is a much better alternative. Education is what this article is all about, to educate the federal work force about the process called Flamespray (other wise known as Thermalspray in the commercial world). Over the last 49 years the process Flamespray has saved taxpayers and the Air Force hundreds and thousands of dollars. What is Thermalspray, what is it used for, how does it save money, and how can it make you money? These are all questions that will briefly be answered and explored in this article.

The metallizing process called flamespray was first invented around 1910 in Switzerland by Max Ulrich Schoop. The use of flamespray became popular in the 1930's after it's introduction to machine element work, i.e., for the spraying of hard medals to build up machine parts. More developments in this process were highly visible in the 1950's due to the increase of variety of materials and advances in technical improvements in the flamespray processes. Flamespray could be defined as the process of melting materials in a heating zone and propelling them in a molten, or heat softened condition, onto a

target to form a coating. In common layman terms flamespray consist of: heating of a wire, a rod, or powder material to a molten state. Then spraying it onto a part by means of compressed air. Basically there are three types of spraying methods that utilize to basic forms of energy for melting materials to be sprayed. These basic forms are gas combustion and electric arc. The gas combustion process uses oxygen and acetylene as a heating source and operates at temperatures below 5000 degrees. There are ~~main~~ MANY materials which can be sprayed with this process. For temperatures above 5000 degrees the electrical arc heating process is used to melt and spray most materials, but one major advantage in the arc process is that different materials may be mixed together. It is the most economical procedure used today but it's major draw back limits itself to the spraying of outside surfaces only. The third type of process is called plasma spraying. Plasma basically works on the same principle as gas combustion and arc, however the heating process is quiet complicated and technical, just remember that plasma is known as the fourth state of matter. Plasma is a super excited state above the gaseous state. Plasma is expensive to operate, but has many advantages, such as: plasma insures a more uniform lamination, inside diameters can be sprayed with plasma, temperatures up to 32,000 degrees can achieved, little oxidation is found in plasma, and bonding strength up to 14,000 pounds has been successfully maintained.

Today, there are about 235 materials and mixtures that can be achieved and sprayed on almost anything including paper. Gold, platnum as well as other precious metals can also be sprayed. One great advantage in flamespraying build up is that spraying is a cold process. That is the spraying process does not heat up the part being sprayed, which eliminates warpage. To a machinist this means less work and higher quality.

Flamespray began its career at Hill Air Force Base in the early 1960's, with it's primary function to salvage aircraft landing gear and parts. The

flamespray shop is located at the east end of the base in Building 511, the shop is headed by supervisor Curtis Worden and maintained by seven qualified technicians. Today, flamespray still plays the major role of cost saver for the MAN Landing Gear Overhaul Facility. In order to give the reader a better understanding of cost savings obtained by flamespray, here is a list of five of the 35 items currently being salvaged by the flamespray facility. The following statistics were prepared by Industrial Engineer Techinician Mike Anderson (Thanks Mike).

	New Cost	Repair Cost	Net Savings
B-52 Main Outer Cylinder	$11,769.16	$1,245.50	$10,523.66
F-4 Main Piston	8,216.31	431.90	7,784.41
KC-135 Nose Outer	19,431.19	486.83	18,952.86
C-141 Main Bogie Beam	30,067.76	717.92	29,349.84
C-141 Main Drag Brace	5,533.16	267.88	5,265.28

NOTE: Repair cost includes time for first machining, flamespray, and second machining and grinding only.

The landing gear division is flamespray's primary concern, however according to Mr. Worden new area's of interest are always being explored. Sheet metal specialist Dennis Miller recently recognized a problem with the C-130 paratroop door rail. He made a suggestion which saved 28 man hours in repair time and a cost savings of seventy-five dollars per door. This results in savings for the Air Force and hopefully money in Mr. Miller's pocket. One of our own technician's Blake Peterson suggested a flamespray repair for the F-16 speed brake, up to this time the repair procedure was to remove and replace without little thought given to repair of the old part. At a cost of about $4,900 for one assembly, (it takes four assemblies per airplane) the cost savings can easily be seen when it cost forty eight dollars to spray each assemdbly, another area being explored is the repair of F-4 hook points. The

hook point is considered condemned when the inner surface of the hook point becomes worn beyond limits. According to the hook point item manager Brenda Robinson, the Air Force will be repairing 160 of these items per year. There is an 87 percent condemn rate on this item which cost the Air Force $2,152.00 new. Hook points are no longer being manufactured at this time and according to Robinson it could take possibly six years to receive a new part. With the arrival of the new 7-M sprayin gun the flamespray shop is ~~nbow~~ now able to repair this item for a substantial cost savings.

Worden said, "Flamespray can't do it all, but it sure has done alot to save taxpayers money". Yes, to Mr. Worden education goes along way to real money savings. The more people know about flamespray the better chances someone will discover a new cost saving way to incorporate it. If you think you may have an idea of how flamespray can help your shop feel free to stop by and ask. Mr. Worden always has an open door policy as well as an open mind.

15512N WORK CONTROL DOCUMENT (MEDS) | 1 DATE [illegible]3H | PAGE 9 OF ___ PAGES

2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7. PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	OUTER CYLINDER

15 DISPATCH STATION	16. PERF RCC/OP NO	17. WORK TO BE ACCOMPLISHED.	18 MECHANIC	19 "P"	20 "O"
25B	224 445 QC-M	GRIT BLAST COLLAR AREAS PRIOR TO FLAME SPRAY. *C/P MOVE		M	
25B	225 445 QC-M	FLAME SPRAY STEERING COLLAR AREA TO A THICKNESS TO ALLOW MACHINING BACK TO 7.118/7.120 OD 3.352/3.355 WIDTH METCO SPRAY MIL-STD-869 *C/P MOVE		M	
25B	220 445 QC-M	FLAME SPRAY TOWING COLLAR AREA TO A THICKNESS TO ALLOW MACHINING BACK TO 7.118/7.120 OD 2.228/2.230 WIDTH *C/P MOVE	ACCORDING TO CURTIS (FOREMAN) THEY PUT ON .020 .020 MORE THAN THE FINISH DIMENSION TO ALLOW FOR MACHINING THE EXTRA AMOUNT IS VARYS DEPENDING UPON THE OPERATOR.	M	
69	226 [illegible] QC-M	MACHINE STEERING COLLAR AREA 7.118/7.120 OD 3.352/3.355 WIDTH 63 RMS FINISH *C/P MOVE		M	
69	228 44 QC-M	MACHINE TOWING COLLAR AREA 7.118/7.120 OD 2.228/2.230 WIDTH 63 RMS FINISH *C/P MOVE		M	
26	230	ANODIZE OUTER CYLINDER TYPE II O.D. ONLY *C/P MOVE		M	
26	232 449 QC-M	ANODIZE OUTER CYL TYPE II COMPLETE ID & OD. *C/P MOVE		M	
8	234 44 QC-M	HONE UPPER SEAL BORE TO REMOVE TYPE II ANODIZE 32 RMS 5.522 MAX		M	
8	236 44 QC-M	POLISH UPPER SEAL BORE TO REMOVE TYPE II ANODIZE 32 RMS 5.522 MAX		M	

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	15512N
		B	D	

AFLC FORM 958 NOV. 80 PREVIOUS EDITION WILL BE USED

15512A

WORK CONTROL DOCUMENT (MEDS)

1 DATE [illegible] | PAGE __ OF __ PAGES

2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEQ RCC	5 DATE SCHED	6 DATE COMPLETED
17567A				

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
		889M627

10 MODEL/DESIGN SERIES	11 STOCK NUMBER	12 OPTIONAL
KC135 M056		

13 SERIAL NUMBER	14 NOUN
436637	OUTER CYLINDER

15 DISPATCH STATION	16 PERF RCC/OP NO	17. WORK TO BE ACCOMPLISHED	18 MECHANIC	19. "P"	20 "Q"
26	170	VAPOR DEGREASE *C/P MOVE			
26A	175	F.P.I. *C/P MOVE * * * * * * * NOTE * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT. *	M	K	26 APR 1989
26	180	SHOT PEEN OUTER CYLINDER REWORK AREAS .010/.014 *C/P MOVE	70552	M	APR 26 1989
26	183	SHOT-PEEN I.D. FOR ANODIZE .010/.014 INTENSITY *C/P MOVE	70552	M	APR 26 1989
26	186	SHOT-PEEN TRUNNION SOCKET HOLES I.D. 100% 2.250 HOLES *C/P MOVE*	70552	M	26 1989
26	190	CLEAN SHOT PEENED AREAS OF OUTER & SOCKET *C/P MOVE	70552		APR 26 1989
26	200	POLISH STEERING COLLAR AREAS TO REMOVE 70-80% OF SHOT *C/P MOVE	70093		26 APR 1989
26	210	POLISH TOW LUG AREA TO REMOVE 70-80% OF SHOT *C/P MOVE	70093		26 APR 1989
25B	212	VAPOR DEGREASE COLLAR AREAS OF OUTER CYLINDER TO FLAME SPRAY *C/P MOVE			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	15512M
		B	D	

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ORIGINAL LOST

21065N WORK CONTROL DOCUMENT - AFLC | DATE R9040 | PAGE 1 OF ___ PAGES

2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC-RCC	5 DATE SCHED	6 DATE COMPLETED
74652A	1ea	MNPGP	4 MAY 1989	

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
B-15576-1	16G3-2-80-3 4S-1-182 AND SUPPLEMENTS	343

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
C5A MAIN	NSL	ALL NECESSARY OPERATIONS HAVE BEEN COMPLETED TO THE BEST OF MY KNOWLEDGE B Hayden
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	MECHANIC	P	Q
		GOVERNING DIRECTIVES: AFLCR 66-51			
		BLAST IAW MIL-STD-1503			
		BAKE IAW 4S-1-182 MAO: 74-12			
		SHOTPEEN IAW MIL-S-13165			
		FPI IAW MIL-STD-6866			
		BRUSH PLATE IAW MIL-STD-865			
		EMPI IAW MIL-STD-1949 P/O N01561			
		GRIND IAW MIL-STD-865			
		FLAME SPRAY IAW MIL-STD-869			
		TEMPER ETCH IAW MIL-STD-867			
		CHROME PLATE IAW MIL-STD-1501 TYPE II CLASS III			
		STRIP IAW MIL-STD-871			
		********STEEL 298,000 *********			
		ALL PERSONNEL INVOLVED IN THE WORK PROCESSES SPECIFIED IN THIS DOCUMENT HAVE BEEN THOROUGHLY TRAINED AND ARE FAMILIAR WITH ALL PERTINENT SAFETY			
		PRACTICES AND HAZARDS CONTAINED IN THE BASIC TECHNICAL ORDER (T.O.) AND T.O. SUPPELMENTS REFERENCED IN BLOCK 8 OF THIS AFLC FORM 958. THE APPLIC			
		ABLE T.O.'S AND SUPPLEMENTS WILL ALWAYS BE USED IN CONJUNCTION WITH THIS DOCUMENT.			
		*COMPONENTS WILL BE THOROUGHLY			
		CLEANED & PROTECTED (C/P MOVE) FOR MOVES BETWEEN OPERATIONS/DISPATCH STATIONS.			
		****WARNING****			
		MANY OF THE FOLLOWING REPAIR PROCEDURES REQUIRE THE USE OF EQUIPMENT, PROCESSES & CHEMICALS WHICH ARE POTENTIALLY DANGEROUS TO			
		PERSONNEL. ADEQUATE SAFEGUARDS AND PRECAUTIONS MUST BE EMPLOYED TO PRECLUDE INJURIES.			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	
	MANE	7 FEB 1989 Ambe Andrews	08 FEB 1989 Roger Burrage	21065N
		B Feb. 7, 1989 Thyfe Jones	D 8 FEB 1989 Edward Chudek	

AFLC FORM 958 NOV. 80 — PREVIOUS EDITION WILL BE USED

65N WORK CONTROL DOCUMENT (MEDS) | 1 DATE 89040 | PAGE 2 OF _ PAGES

2 NO	3 QUANTITY	4 PRODUCTION SEQ REQ.	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	BALL SCREW

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
	001	B-15576-1			
34C5	005 *REQD*	DISASSEMBLE *C/P MOVE		M 24 MAY	
34C	007 *REQD*	CHEM CLEAN *C/P MOVE		M 24 MAY 1989	
34B	009 *REQD*	BLAST CLEAN *C/P MOVE		M 24 MAY 1989	
34B	011 *REQD*	BAKE 4 HRS AT 350/400F DATE IN_____TIME IN_____ DATE OUT_____TIME OUT_____ *C/P MOVE	577	24 MAY 1989	
34M	013 *REQD*	FMPI *C/P MOVE	577 QO-M	K 24 MAY 1989	
342	015	F.P.I. FOR CRACK VERIFICATION IF REQ'D *C/P MOVE	M	K	
34E	016 *REQD*	E AND I CROSS PIN HOLES 1.600/1.603/1.607 SERVICE O/S PIN HOLES 1.690/1.700 MAX UPPER END O.D. 3.747/3.748/3.745 SERVICE NOTE: A MINIMUM OF TWO FMPI'S (CONTINUED)	577 QO-M	24 MAY 1989	

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE	23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	21065N
		B	

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21065N WORK CONTROL DOCUMENT (MEDS) | 1 DATE 80040 | PAGE 3 OF _ PAGES

2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SCHED	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
		ARE REQUIRED ON THIS PART. *C/P MOVE			
26	018	VAPOR DEGREASE *C/P MOVE			
26	019	STRIP CHROME FROM UPPER END ONLY IF REQUIRED. *C/P MOVE			
69	021	MACHINE CENTER ON SMALL INTERNAL DIA AT UPPER END .060 X 60 DEG. *C/P MOVE			
69	022	POLISH BALL GROOVE AREA TO REMOVE ROUGH AND SCORED AREAS. *C/P MOVE			
8	025	GRIND UPPER END OF SHAFT TO 3.733MIN FOR CHROME PLATE IF IT DOES NOT CLEAN UP , GO TO OPERATION 030 & INITIATE ALL APPLICABLE OPERATIONS *C/P MOVE			
8	030	[redacted] 3.707			
69	035	MACHINE AS REQUIRED TO REMOVE FLAME SPRAY NOT TO EXCEED 3.705 MINIMUM. [redacted]			
69	040	MACHINE CROSS BOLT HOLES OVERSIZE TO 1.690/1.700 TO CLEANUP *NOTE REMOVE ONLY ENOUGH MAT'L TO CLEAN UP (CONTINUED) 11904			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

AFLC FORM 958 NOV. 80 PREVIOUS EDITION WILL BE USED

65N WORK CONTROL DOCUMENT (MEDS) | 1 DATE 89040 | PAGE 4 OF ___ PAGES

1 NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL

13 SERIAL NUMBER	14 NOUN
	BALL SCREW

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19. P	20 Q
		*C/P MOVE			
26	060	NITAL ETCH 25 MAY 1989 TIME OUT 0130 DATE OUT ____ *C/P MOVE	M	K	
		* * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *			
26B	070	BAKE 4 HRS AT 350/400F WITHIN 8 HRS OF ETCH DATE IN ____ TIME IN 0200 DATE OUT MAY 25 1989 TIME OUT 1000 *C/P MOVE	25 MAY 71110 MAY 25 1989		
8A	080	FMPI *C/P MOVE * * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *	26 MAY 1989		
26	08[illegible]	[illegible] *C/P MOVE	26 MAY 1989		
26	090	SHOTPEEN REWORKED AREAS .012/.016 *C/P MOVE Hand & Cross pin holes	70110 MAY 30 1989	70110 H	
26	096	PREPARE [illegible] FOR CHROME PLATE [illegible] (CONTINUED)			

21. FINAL DESTINATION DISPATCH	FUNCTIONAL CODE	22. COORDINATION/INITIATING RCC SIGNATURE/DATE A	C	23. DOCUMENT/SN
				21065N
		B	D	

AFLC FORM 958 NOV. 80 PREVIOUS EDITION WILL BE USED

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2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16. PERF RCC/OP NO	17. WORK TO BE ACCOMPLISHED	18 MECHANIC	19. P	20 Q
		*MECHANIC SIGN OFF REQUIRED--------> *C/P MOVE			
26	098	PREPARE O.D. FOR CHROME PLATE, GRIT BLAST *C/P MOVE		M	
26	100	CHROME PLATE O.D. TYPE II CLASS 3 SUFFICIENT TO GRIND BACK TO 3.748 . DATE OUT TIME OUT		M	
		*MECHANIC SIGN OFF REQUIRED--------> *C/P MOVE			
26B	110	BAKE 23 HRS AT 350/400F WITHIN 4 HRS OF CHROME DATE IN_____TIME IN_____			
		DATE OUT_____TIME OUT_____ *C/P MOVE			
8	120	FINISH GRIND TO 3.747/3.748 WITH 32 RMS *C/P MOVE		M	
26B	130	BAKE 4 HRS AT 350/400F DATE IN_____TIME IN_____			
		DATE OUT_____TIME OUT_____ *C/P MOVE			
8A	140	FMPI *C/P MOVE	M	K	
		* * * * * * * N O T E * * * * * * * (CONTINUED)			

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

AFLC FORM 958 NOV. [illegible] PREVIOUS EDITION WILL BE USED

21065N WORK CONTROL DOCUMENT (MEDS)

1 DATE 89040 | PAGE 7 OF 7 PAGES

2 JOB ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO

10 MODEL DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
13 SERIAL NUMBER	14 NOUN	
	BALL SCREW	

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
		*C/P MOVE			
69	179	MACHINE CROSS PIN BUSHING P/N 66C33001-107ST		M	
69	180	INSTALL CROSS PIN BUSHINGS P/N 66C33001-107ST INTERFERENCE FIT.003/.004 *C/P MOVE		M	
69	190	MACHINE FINISH BUSHINGS TO 1.600/1.603 I.D. *C/P MOVE		M	
34P	200	PRE-PAINT I.D. OF BALL SCREW *C/P MOVE			
34C5	210 *REQD*	FINAL ACCEPTANCE OF WORK CONTROL DOCUMENT FOR COMPLETENESS & ACCURACY OF ALL PRECEDING OPERATIONS THIS 95[illegible]		M	
34C5	220 *REQD*	FINAL PRODUCT VISUAL INSPECTION *C/P MOVE		M	

21. FINAL DESTINATION		22 COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

DPN 958 NOV. 80 PREVIOUS EDITION WILL BE USED

21065N

065N WORK CONTROL DOCUMENT (MEDS)

1 DATE 89040 | PAGE 6 OF ___ PAGES

2 ORDER NO	3 QUANTITY	4 PRODUCTION SEC/RCC	5 DATE SCHED	6 DATE COMPLETED
74652A	1			

7 PART NUMBER	8 TECH DATA	9 ITEM SERIAL NO
B-155761		343

10 MODEL-DESIGN-SERIES	11 STOCK NUMBER	12 OPTIONAL
C5A Main		

13 SERIAL NUMBER	14 NOUN
	BALL SCREW

15. DISPATCH STATION	16 PERF RCC/OP NO	17 WORK TO BE ACCOMPLISHED	18 MECHANIC	19 P	20 Q
		IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *			
26	145	VAPOR DEGREASE *C/P MOVE			
26A	150	FPI *C/P MOVE * * * * * * * N O T E * * * * * * * IF LAST NDI OPERATION IS COMPLETED* HERE, TAKE PRODUCTION COUNT *	M	K	
25B	160	FLAME SPRAY .004/.007 USING METCO 405 BOND COAT & BUILDUP WITH METCO #5 STAINLESS AS REQUIRED TO MACHINE BACK TO 3.765 *C/P MOVE		M	
69	170	ROUGH MACHINE FLAME SPRAY TO 3.765 *C/P MOVE		M	
69	173	CLEAN UP CROSS PIN HOLES AFTER FLAME SPRAY *C/P MOVE		M	
8	175	FINISH GRIND FLAMESPRAY 3.747/3.748 MAINTAIN 64RMS FINISH AFTER GRIND. BLEND TAPERED AREA TO MAINTAIN 1.50 RAD. CHAMFER TOP END 20DEG. BY .200 *C/P MOVE		M	
69	178	BRUSH LHE CAD CHROME/FLAME SPRAY FADE OUT AREA (TAPERED END) IF REQUIRED. (CONTINUED)		M	

21. FINAL DESTINATION		22. COORDINATION/INITIATING RCC SIGNATURE/DATE		23. DOCUMENT/SN
DISPATCH	FUNCTIONAL CODE	A	C	21065N
		B	D	

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CURTIS SAID THAT THEY HAVE A BIG PUSH ON EFFECTIVENESS. THERE FOR HE DOES NOT FILL OPENINGS UNTILL HE HAS THE WORKLOAD TO JUSTIFY THE EXTRA MAN POWER. NOTE I FEEL THAT IS A VERY GOOD IDEA. THE NEW PEOPLE WOULD BE BROUGHT IN AT A LOWER SKILL LEVEL WHICH DOES CAUSE CURTIS A PROBLEM.
THEIR SCHEDULER IS NANCY HARTMAN.

HEAT TREAT.
IN HEAT TREAT THEY HAVE A STORAGE PROBLEM. THE WELDING DEPARTMENTS MATERIALS SEEM TO CONSTANTLY END UP IN THE HEAT TREAT AREA. THIS IS A HAZARD TO THE WORKERS IN HEAT TREAT. NOTE I FEEL THAT THEY SHOULD HAVE A STORAGE AREA FOR THEIR MATERIALS CONSTRUCTED OUT SIDE OF THE BUILDING WITH A COVER OVER IT. THE MATERIAL COULD BE BETTER ORGANIZED AND THIS WOULD MAKE IT EASIER FOR THEM TO FIND WHAT THEY NEED. NOTE IF THE METAL IS LEFT OUTSIDE IT WILL RUST THUS CAUSING THE WELDER EXCESS WORK.

1 THE WORKLOAD VARIES. IT HAS SLIGHT FLUCTUATIONS PER QUARTER. THE IS MORE WORK EARLIER IN THE FISAL YEAR. THEY BARROW PEOPLE AS REQUIRED FOR THE LOAD.

2 AS FOR CONDEMNING PARTS WE DONT THEY ARE CONDEMNED BE FOR THEY GET HERE. BY E AS FOR EACH PRODUCT LINE THE PROCESS STAYS THE THE SAME FOR THAT LINE.

3 WE ARE STAFFED ADEQUATELY WE HAVE WG 01 THROUGH WG 11, AS FOR TRAINING MOST OF THE TRAINING IS ON THE JOB TRAINING. I WOULD LIKE TO SEND THEM OUT FOR MORE TRAINING LIKE TO A TECHNICAL SCHOOL TO LEARN THE PRINCIPALS OF THE PROCESSES AND NOT JUST HANDS ON EXPERIENCE.

PROCESS ORDERS
MANPWW

CURTIS WORDEN
7-3485
HEAT TREAT
BLDG. 507
FILE #25

MAN PROCESS ORDERS
INDEX

- N22771 Vapor Degreaser Operation and Maintenance.
- N50063 Gas Carburizing
- N71791 Hardness Conversion for Wrought Aluminum, 356 cast Aluminum.
- N72131 Foundry Procedure for Sand Castings.
- N72201 Safety in Processing Beryllium Brake Carriers.
- N82541 Foundry Procedure for Plaster Castings.

25	PROCESS ORDER 24 JUN 1989	1. PAGE 1 OF 5 PAGES
2. TITLE FOUNDRY PROCEDURE FOR PLASTER CASTINGS		3. P.O. NUMBER N82541
TYPE, MODEL, SERIES A	5. USING ORGN. MANE	6. DATE EFFECTIVE 30 JUNE 89
PART NO AND AFSC NO. N/A	8. REFERENCED PUBLICATIONS SEE PARAGRAPH 2	9. DATE RESCINDED
10. NAME OF ASSIGNED PROJECT AND PROJECT NO. N/A		

11. INSTRUCTIONS

This process order establishes operation standards for Class I and Class II (per MIL STD-2175) aircraft castings and minimum requirements for their production of aluminnum and copper alloy castings in the Foundry Unit (MANPWW) of Industrial Products and Landing Gear Division (MAN).

1. DEFINITIONS:

a. Melt - One furnace charge or crucible of metal alloy.

b. Production Melt - Melt containing only previously analyzed ingots from which castings are poured.

c. Reclaiming Melt - Melt containing gates, risers, and other reclaimed scrap.

d. Virgin Ingots -- Ingots which is purchased and will meet the chemical composition of the designated alloy.

e. Remelt Ingot - Ingot poured in the foundry from melting gates, risers, and scrap.

f. Investment Casting: This method uses a mold that has been produced by surrounding an expendable pattern with a refractory slurry at room temperature. The pattern (usually of wax or plastic) is then melted or burned out, leaving the mold cavity. Investment casting is also known as the 'lost-wax process' and as 'precision casting'.

2. GENERAL REQUIREMENTS:

a. Plaster casting will be used for aluminum and copper alloys only. Do not pour magnesium alloys into plaster casts because of the danger of an explosion caused by any remaining moisture in the plaster casting.

b. All metal will be stored according to alloy designation. All metal will be properly identified by alloy number. Metals of doubtful composition will not be used until the composition is determined by the Metallurgical Sciences Laboratory (MAQCM).

SUPERSEDES PO N82541, 26 MAY 88
OPR: MANE
DISTRIBUTION: MAQCM-1, MAQN-3, MANPW-5, MANEL-1, SEG-1, SGB-10, MANEP-5, MAQST-1,

12. INITIATOR(SIGNATURE, ORGN, PHONE NO. AND DATE) Stan Okborow Stanley B. Okborrow, MAQCM/72874/22 June 89	13. APPROVAL(SIGNATURE, ORGN, PHONE NO. AND DATE) MANE 7/7/92

AFLC FORM JAN 78 561 PREVIOUS EDITION WILL BE USED.

c. All work in the foundry will be identified by work order numbers.

d. Applicable specifications include the following:

(1) QQ-A-601 Aluminum Alloy Sand Castings.

(2) Mil STD-2175 Castings, Classification and Inspections of (for Aeronautical Applications).

(3) Federal Test Method Standard 151.

3. MELTING AND POURING PRACTICE:

a. Equipment:

(1) Furnace: A stationary or tilting pot type furnace will be used to melt metals for casting purposes. The furnace will be electric or gas fired and the crucible will be covered whenever practical so that a minimum amount of combustion gases will come in contact with the molten aluminum. It is not necessary for the copper alloys to be sealed off from the combustion chamber. Care should be taken to eliminate gas absorption in all molten metals.

(2) Temperature Control: Accurate furnace controls and/or pyrometers will be provided in order to maintain the molten metal at a desired temperature. Thermocouples used in the melting pots will be enclosed in a cast iron tube. A fast-acting, accurate pyrometer can be used for checking the temperature of the metal in the pouring ladle. The thermocouples and pyrometers will be calibrated at regular intervals by the Precision Measurement Metrology Branch (MAKL) in accordance with applicable military specifications. Reference MAQOI 66-148, App 1, paragraph 6.

(3) Crucibles: The crucibles will be standard silicon carbide, steel or cast iron type. When in use, the cast iron and steel crucibles will be scraped and cleaned after each melt. The cast iron crucibles will be sprayed with a suitable coating compound such as Terra Paint #55M or equivalent.

(4) Tools and equipment: All ladles, gas fluxing tubes, skimmers, thermocouple shields, etc., which came in contact with the molten metal will be cleaned and sprayed periodically with a suitable crucible coating compound, such as Terra Paint #55M or equivalent. Pouring ladles will be used for one alloy only until they are cleaned and sprayed.

(5) Patterns: Each pattern will be tagged with the following information:

(a) Part Number

(b) Name

(c) X-Ray and foundry control (when required).

b. Melting:

(1) Charges: All metal charges to a furnace will be clean and dry. The chemical composition must be known. All metals in the same work order will contain the same proportion of virgin ingot and reclaimed ingot. Metal charged to a hot pot must be preheated first.

(2) Melts: Melts which are held in the molten condition for over one hour or which reach a temperature of 300° F above the pouring temperature will be poured off into ingots. Such ingots will be classified as reclaimed melt and must be analyzed by MAQCM prior to pouring into aircraft castings. Addition of alloying elements will be done under the direction of MAQCM.

(3) Temperature Control: When the entire charge is molten, a thermocouple or pyrometer will be used to determine the temperature of the molten bath. The temperature of the molten metal will be checked at intervals so that the maximum allowable temperature is not exceeded.

c. Drying of Plaster Molds:

(1) Plaster molds shall be dried at 375° F to 500° F.

(2) If equal weights of water and hydroperm cement are used, then the dried plaster mold should weigh 47.7% of the wet weight. This will yield anhydrous calcium sulfate free of both 'free' and 'combined' water.

(3) The plaster mold should be maintained at 275° F or higher until the molten metal is poured into it. Usage of a drying and hot storage oven in the foundry unit is recommended.

d. Pouring:

(1) Preparation for pouring:

(a) Temperature: Just prior to pouring the metal into the mold, the temperature will agree with the predetermined pouring temperature.

(b) Fluxing: The proper fluxing will be completed shortly before pouring.

(c) Ladles: All ladles will be preheated or dipped into the molten metal before being filled with hot metal.

(2) Dipping: The edge of the ladle opposite the pouring lip will be immersed first into the molten metal bath, and the ladle turned in a semicircular motion. This procedure allows taking metal from the crucible without agitating the molten metal unnecessarily. Pouring metal into the ladles from a tilting furnace is also permissible.

(3) Pouring Molds: Several molds may be poured from one ladle of metal. The molten metal temperature in the ladle will agree with the predetermined pouring temperature. Ladles used for aircraft castings must be large enough so that all the mold will be poured with one continuous stream of metal.

4. INSPECTION PROCEDURES: All aircraft castings will be identified by the part number on the casting in the form of raised letters and numbers when this is practical, otherwise, they will be tagged for identification. These numbers will be located so as to remain on the casting after machining. Groups of the same casting will be identified by work order number.

b. Inspection Methods:

(1) Hot Inspection: All castings will be visually inspected immediately after shake-out for misruns, cold shuts, shrinkage, cracks, blows, shift, drop, and other defects.

(2) Chemical Analyses: A sample will be taken from each separate lot of ingots for chemical compositional analyses. Chemical analyses will be made by MAQC personnel.

(3) Fluorescent Penetrant: All castings in Class 1A and 1B low stress and high stress and Class 11A high stress and low stress will be inspected by fluorescent penetrant technique by MANPW for defects in accordance with MIL STD-2175.

(4) Radiography: Castings will be inspected by X-ray as outlined in Mil STD-175. Casting quality will be determined by MAQCM.

(5) Physical Test: Two test bars will be cast from each melt that will be used for Class 1A, 1B, and 11A castings. These test bars will accompany the castings they represent through heat treatment. Test bars will then be tested for ultimate strength, yield strength, and percent elongation according to Federal Test Method Standard 151.

5. SAFETY PROCEDURES:

a. The supervisor will ensure:

(1) The sequence and method of handling materials will be planned in advance of any pouring operation.

(2) Protective clothing/equipment required while working with molten metal is readily available and used. Such items will consist of high-top safety shoes with built-in instep (metatarsal) protection (if such foot wear is not available, slip-on type metal instep guards will be provided), thigh-length aluminized leggings that strap underneath the shoe, 40 inch aluminized coat for body protection, hand pads, leather mitts or gloves preferably studded with steel (unless hot metal is to be handled), for protection against heat, hand and arm protectors will be of a heat resistant cloth or wool (leather can be used too, but will not with stand a temperature over 150° F) aprons, safety glasses or safety goggles, safety shield, and cloth welder's cap. Hard hats will be worn as required.

(3) Personnel are properly fitted with the required respirator by SGB, and ..ined in its use, care, and storage. A proper respirator cleaning facility will be designated for use by employees.

(4) Signs are posted at each entrance to prevent visitors from entering the area during operations.

(5) The ventilation system is functioning for pouring operations.

(6) Employees are thoroughly trained to be aware of the following:

(a) For fire prevention, the floor within 10 feet of the pouring area shall be free of water or dampness, oil, grease, paper, wood, electric cords, and any other material that could be explosive or combustible on contact with molten metal. The floor shall be coated in the pouring area with sand to reduce splattering of hot metal in case of a spill.

(b) The foundry floor will be cleaned frequently and kept in good condition. Worn spots, holes, or other defects will be reported for immediate repairs.

(c) Clear aisleways shall be maintained to all exits.

(d) To prevent spattering or explosion of the molten metal within the furnace and/or ladle, all metals, deoxidizers and tools must be preheated and thoroughly dried before being placed in contact with molten metal. Molds sands must also be kept dry.

(7) Only operators who are properly trained to pour molten metal are allowed to ladle hot casting materials. The number of worker in the pouring area during a pour shall not exceed the maximum number of workers required for the pouring operation.

(8) The use of compressed air too blow sand or dust off clothing, new castings and patterns in the removal of parting compounds and other light materials is prohibited. Vacuum methods shall be used for cleaning molds.

(9) Loads suspended from cranes or other means shall not be carried over the heads of workers.

(10) Casting personnel will keep orderly storage piles and bins in accordance with approved regulations.

(11) Procedures for safe-guarding mechanical devices shall be developed, implemented, and followed.

(12) Employees shall be instructed in safe casting operations to include manual and mechanical handling of equipment and materials and the hazards involved.

b. Employees must understand that they are responsible for their own safety, for the safety of those around them, and for their equipment.

25	**PROCESS ORDER** 13 SEP 1989	1. PAGE 1 OF 6 PAGES

2. TITLE: Safety in Processing Beryllium Brake Carriers		3. P.O. NUMBER: M72201
4. TYPE, MODEL, SERIES	5. USING ORGN.: MANP	6. DATE EFFECTIVE: 31 Aug 1989
7. PART NO AND AFSC NO.	8. REFERENCED PUBLICATIONS: T.O. 4B1-2-1063, AFOSH STD 127-32	9. DATE RESCINDED
10. NAME OF ASSIGNED PROJECT AND PROJECT NO.		

11. INSTRUCTIONS

This process order defines safety and processing precautions to be used while handling beryllium brake carriers.

1. SAFETY:

a. BERYLLIUM DUST AND BERYLLIUM SALTS ARE HIGHLY TOXIC WHEN INHALED. Inhalation may cause chronic or acute respiratory complications. Beryllium metal is safe to handle, however, the normal hygienic practice of washing one's hands must be followed. Wash before breaks, lunch, smoking, and at the end of the shift. Smoking or eating is prohibited in any beryllium area.

b. Beryllium dust and salts may be handled safely by following these mandatory precautions to avoid toxic effects:

(1) Wear the protective clothing and equipment specified in paragraph 1d.

(2) Personnel selected to work in this area are required to have an initial physical examination prior to assignment and, if determined necessary by SGB and SGPO, a yearly physical examination thereafter.

(3) The beryllium process areas shall be washed and cleaned on the following schedule. Cleaning instructions are contained in paragraph 1k.

(a) Bldg 507, Rm 138, (Fig 1): Two times per week while parts are being processed and at the end of the process if the cycle is to be interrupted for more than one week.

(b) Bldg 507, heat treat: Clean the furnaces and racks after each run. A run is defined as an essentially continuous series of individual loads. The end of the run would normally occur when all beryllium on hand has been completed and the heat treat furnaces are converted to

Supersedes: P.O. M72201, 6 Jan 1988

DISTRIBUTION: MAQCC, MAN Safety, MANPG, MAQM, SGB, MMMRM, MANSM, MANPW, SEG, MANEP, MAQV, DRMO-YOA

12. INITIATOR SIGNATURE, ORGN, PHONE NO. AND DATE	13. APPROVAL SIGNATURE, ORGN, PHONE NO. AND DATE
Robert W. Carter 25 Aug 89 RODNEY W. CARTER/MANEP/71467	29 Aug 89 MANE 73192

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other workloads. If one or more loads of material other than beryllium are sandwiched between loads of beryllium during the run and the furnaces have not been cleaned, the respirator requirements in paragraph 1d will apply. Clean the area approximately 20 feet surrounding the furnaces, the furnace exterior and all equipment within that area once per quarter. If no beryllium is processed in the quarter, the area need not be cleaned provided it has been cleaned since the last beryllium was processed.

(4) Brake components shall be kept covered when not being processed prior to cleaning, and during any transportation prior to being cleaned. Cleaned beryllium components may be handled freely without any unusual precautions and need not be covered.

(5) All equipment (especially the vapor hone) must be maintained in proper condition to prevent the spread of beryllium dust into the working area.

(6) Keep assemblies wet during removal of the brake pad from the carrier to prevent dust generation.

c. The operations in Bldg 507, Room 138, shall be accomplished as follows:

NOTE: The change/restroom in room 138 is only for use of personnel actually working beryllium. It will not be used by any other personnel. It will not be used when the beryllium operation is not active. The door will be kept locked and the keys controlled.

(1) All doors shall be kept closed at all times except when being used.

(2) At no time will both the interior and exterior doors to the entry port and the hallway be open at the same time.

(3) Beryllium materials shall not be stored outside of Room 138 prior to cleaning.

(4) Smoking or eating is not allowed anywhere in Room 138, including the change room.

(5) Employees performing the disassembly and cleaning operation will not wear street clothing under their personal protective equipment (PPE). Undergarments will be provided.

(a) Change into clean PPE in the change room before entering the receiving or disassembly and cleaning area.

(b) Do not wear contaminated PPE into the hallway or the change room. When leaving the disassembly, cleaning or receiving areas, remove all PPE except respirator at the entrance to the hallway (the cross-hatched area shown on figure 1). Discard PPE in a drum adjacent to the hallway door. Leave respirator on until inside the change room.

(c) When entering the change room to use the restroom facilities remove PPE per paragraph 1c(5)(b) above and wash hands, forearms and face prior to such use. Damp wipe the respirator on removal. Don clean PPE before re-entering the receiving or cleaning and disassembly area.

(d) When entering the change room/hallway with the intent of leaving room 138, remove PPE per paragraph 1c(5)(b) above. Remove undergarments and shoes in the change room and store separate from street clothes. Leave undergarments and safety shoes in room 138. Shower and wash respirator before changing into street clothes. Wash undergarments after each day's use. Place respirator cartridges in a plastic bag and seal or tie closed. Place in the drum referenced in 1c(5)(b) above the next time the employee suits up to enter the facility.

(6) The change room and hallway will be cleaned at least twice per week when the facility is in use.

(7) After removal from the foam lined cardboard cartons, beryllium carriers shall be kept in plastic bags until they are inside the cleaning/disassembly area.

d. Protective equipment to include safety glasses, gloves, hair covering, and coveralls shall be worn. A half mask facepiece respirator with high efficiency filter cartridges shall be worn by employees working with beryllium or during cleanup or maintenance operations in room 138 (disassembly/cleaning) and during removal of beryllium components from the heat treat furnaces. Cloth gloves may be used except for chemical cleaning in which case rubber gloves will be worn. Chemical goggles or face shield shall be worn during all chemical cleaning operations in Bldg 507, Rm 138. If chemical goggles or face shield will not fit over the half mask respirator, a full face respirator will be required. All protective clothing and equipment used in beryllium operations shall remain in the work area where beryllium is being handled and shall be properly stored in the same area. Disposable coveralls shall be changed daily or more often if necessary.

NOTE: These protective equipment requirements apply to ANY person entering the cleaning facility, Bldg 507, Room 138, unless exempted by SGB.

e. All respirators and filters shall be approved in writing by SGE. Approval shall include respirator make and part number, filter make and part number, and NIOSH approval number. Workers shall complete respirator training by SGPM, medical qualification by SGPO, and fit-testing by SGB, all on an annual basis. The area supervisor must maintain a respiratory protection operating instruction specific to the beryllium room.

f. The rust stripper in the cleaning line in Bldg 507, Rm 138 is a proprietary base and contains sodium hydroxide. It is corrosive, irritating, and can cause burns if not handled safely. Use the safety equipment provided.

g. Safety eye wash and shower in Bldg 507, Rm 138, shall be easily accessible. They shall be checked at least monthly for proper operation. A record of these checks shall be maintained. (AFOSH STD 127-32)

h. No part shall be left in an active solution longer than the time specified in the overhaul TO (4B1-2-1063).

i. All unnecessary movable equipment should be removed from the heat treat area.

j. Cool beryllium components to at least 250° F before removal from the oven. If such cooling cannot be accomplished, cool components in area away from drafts and include this area and the surrounding 20 feet in the cleaning requirement of paragraph 1b(3).

k. Clean up procedures:

(1) These procedures are to be used in the beryllium facility (Bldg 507, Rm 138), and the heat treating furnaces (Bldg 507).

(2) Use the safety equipment specified in paragraph 1d.

(3) Regular cleanup is mandatory as specified in paragraph 1b(3).

(4) DO NOT DRY SWEEP A BERYLLIUM CONTAMINATED AREA. DO NOT USE A DRY DUST RAG IN A BERYLLIUM CONTAMINATED AREA.

(5) Use a vacuum that has a filtering system that includes a High Efficiency Particulate Air (HEPA) filter to clean all areas where dust may accumulate. In circumstances when a wet cleaning method is appropriate, precautions must be taken to assure that beryllium contaminated mists are not created, and that sludges do not dry and recontaminate in the air. Until a HEPA filter vacuum can be purchased, use a wet vacuum.

(6) All equipment and tools removed from Room 138, Building 507, must be thoroughly rinsed with water before removal.

(7) Wash down water can be discharged to the industrial sewer.

(8) IT CANNOT BE OVER-EMPHASIZED THAT GOOD HOUSEKEEPING IS ONE OF THE MOST IMPORTANT ASPECTS OF SAFE HANDLING OF BERYLLIUM.

2. DISPOSAL OF BERYLLIUM CONTAMINATED MATERIALS:

a. PROCESSING SOLUTIONS AND VAPOR HONE MEDIA WILL NOT BE DUMPED DOWN ANY DRAIN. This does not include rinse waters which may be discharged to the industrial sewer. Vapor hone supernate may be discharged to the industrial sewer provided adequate settling basins are available to collect particulate matter.

(1) The shop shall not dump processing solutions without prior approval from the Chemical Laboratory Section (MAQC).

(2) MAQC shall provide the shop with the chemical name and a warning that the solution contains beryllium. The information shall be placed on the waste container.

b. Condemned beryllium carriers shall be disposed of as follows:

(1) Remove the brake pads from the carriers.

(2) Using the cleaning process in TO 4B1-2-1063, remove beryllium dust and oxide from the metal surface.

(3) Clean, dust free, condemned carriers shall be held in 30 or 55 gallon drums. No other waste will be placed in these drums. When full, the drums shall be securely fastened. Drums shall be tagged with NSN, quantity and weight on each container. Drums shall be sent to the Defense Reutilization and Marketing Office (DRMO). Contact DRMO, extension 77422 prior to shipment.

c. The following materials which are contaminated with low concentrations of beryllium will be turned in to the Hazardous Waste Control Facility, Building 514, for disposal:

(1) Wet blasting grit: Residue from cleanup operations, and any wet honing residues will be placed in 30-gallon DOT specification 17H or 5E drums separate from all other residues or materials.

(2) Respirator cartridges, rags, polyethylene liners, and protective clothing used in Building 507, Room 138, and brake pads will be placed in 30-gallon DOT specification 17E or 5B drums. These materials may be mixed together.

(3) Use label or stencil with the words 'Nonhazardous Waste' in green. The following information should be included in the contents section of the label:

(a) Blast Media:

'Contains Water and Glass Beads.
Less than 0.1% Beryllium'

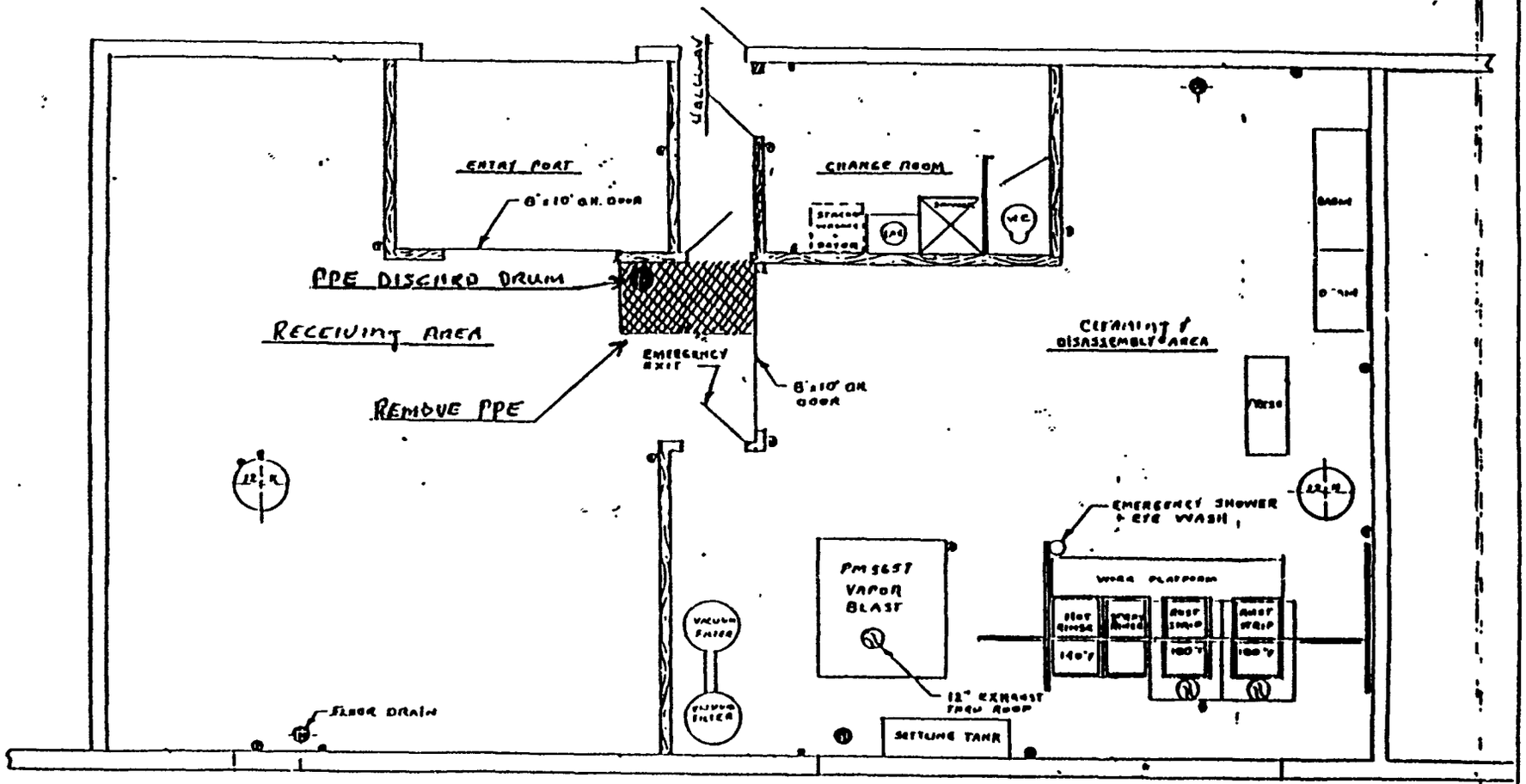
(b) Brake Pads:

'Discarded Steel Brake Pads,
NSN 1630-00-150-8944, Misc. Wastes
Less than 0.1% Beryllium'

d. Wet vacuum the inside of all shipping cartons/boxes and wet wipe the outside of all cardboard containers. Remove and discard all polyethylene liners. Package and send cleaned containers to supply. Stencil each pallet load with the notation: 'Wet vacuumed and wiped.'

3. Refer any questions regarding this process order or the use and handling of beryllium or beryllium contaminated waste to MAQV, extension 70816, or MANEP, extension 72558.

FIGURE 1. FLOOR PLAN, BLDG 507, RM 138



PROCESS ORDER		1. PAGE 1 OF 6 PAGES
2. TITLE: Vapor Degreaser Operation and Maintenance		3. P.O. NUMBER: N22771
4. TYPE, MODEL, SERIES	5. USING ORGN.: MANP	6. DATE EFFECTIVE: 13 Feb 89
7. PART NO AND AFSC NO.	8. REFERENCED PUBLICATIONS: TO 42C2-1-7, MIL-S-5002	9. DATE RESCINDED
10. NAME OF ASSIGNED PROJECT AND PROJECT NO.		

11. INSTRUCTIONS

This instruction outlines the operation and operator maintenance requirements for vapor degreasers in the Industrial Products and Landing Gear Division. It is applicable to all degreasers in the division. The following list identifies those currently in service:

RCC	Bldg	Degreaser Number or Location
MANPR	505	CR-33
	505	CR-72
	505	CA-12
	505	CA-25
	505	AN-3
	505	AN-25
MANPG	507	B-52 Disassembly
MANPG	507	Struts Disassembly
	507	Resin impregnation
	507	NDI
	507	Struts assembly
MANPW	507	Welding
MANPC	1915	Hydraulic repair
MANPS	265	Honeycomb Bonding
	265	Tubing Shop
MANPW	511	Flame Spray
MANPB	509	
MANPC	1913	

1. SAFETY:

a. DO NOT enter a degreaser without approval of MAN Safety. Normally degreasers should not be entered by personnel. Should entry be required to remove sludge following shutdown and draining, the tank will be ventilated and those entering will use safety harness, lifeline, supplied air breathing apparatus, and have an observer present. Both

Supersedes P.O. N22771, 22 January 1988
DISTRIBUTION: MANPR, MANPG, MANPW, MANPB, MANPS, MAN Safety, SGB, SEB, MAQCC, MADN, MANEP, MAQQI, MANPN, MANPC, MAQVE, MADPM

12. INITIATOR SIGNATURE, ORGN, PHONE NO. AND DATE	13. APPROVAL SIGNATURE, ORGN, PHONE NO. AND DATE
RODNEY W. CARTER, MANEP, 72558	

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the person entering the tank and the observer will wear eye protection, rubber gloves, jacket, pants and boots. The observer will also have a supplied air respirator.

b. Do not smoke while operating or working near a degreaser.

c. Wear chemical goggles when using the degreaser. Do not wear contact lenses. If solvent is splashed in the eyes, flood with water for at least 15 minutes, lifting eyelids occasionally, and seek medical attention at the Civilian Dispensary, Bldg 249 during day shift or the base hospital during swing or graveyard shifts. Wash thoroughly if body contact occurs. Launder contaminated clothing before reuse.

d. Do not allow direct draft, either from a fan, open door, or window, to blow across the tank.

2. RESPONSIBILITIES: The shop foreman will:

a. The shop foreman will:

(1) Assure that a copy of this instruction is posted on or near each degreaser, and assure compliance.

(2) Maintain a checklist of operator maintenance items.

(3) Submit weekly samples of solvent from the degreasers in Bldgs 1913, 1915, and 509 to the laboratory for an acid check per MIL-S-5002. MAQCC will sample the remaining degreasers.

(4) Instruct employees in running hoists to meet the 11 foot per minute maximum requirement of paragraph 3.g. This applies to those areas that have hoists that exceed 11 feet per minute.

(5) Request additions of solvent to maintain the depth as required in paragraph 4b.

(6) Request MADPM make additions of butylene oxide and accomplish change-out of solvent only as required by MAQCC. The form submitted by MAQCC as identified in P.O. N81041 will be authorization for these requests. Sign the forms and return them to MAQCC when the action is completed.

b. MAQCC will:

(1) Analyze the solvent and request additions of butylene oxide or solvent change-out in accordance with P.O. N81041.

(2) Request solvent change-out based on any solvent related problems that cannot be resolved (such as excessive use of butylene oxide, volatile oil contamination, degreaser clean out, lack of vapor, or excessive boiling temperature).

(2) Request solvent change-out based on any solvent related problems that cannot be resolved (such as excessive use of butylene oxide, volatile oil contamination, degreaser clean out, lack of vapor, or excessive boiling temperature.

(3) Make request for addition of butylene oxide or solvent change-out to the production foreman who will then contact MADPM.

c. MADPM will:

(1) Accomplish maintenance on the degreasers.

(2) Notify MAQCC personnel, Building 505, extension 72505, when solvent additions are made and how much.

(3) Obtain small quantities of butylene oxide from MAQVE when requested to add butylene oxide to the degreasers. The butylene oxide will be premeasured and mixed with 1, 1, 1 trichloroethane in safety cans by MAQVE. The entire contents of the can will be added to the degreaser.

(4) Return the safety can to MAQVE (Building 514) immediately after making the addition.

d. MAQVE will:

(1) Procure and store the butylene oxide for additions to the degreasers.

(2) Prepare a mixture of butylene oxide and 1, 1, 1 trichloroethane in safety cans to be given to MADPM for addition to the degreaser.

3. DEGREASER OPERATION:

a. Turn on condensing water. Check for proper flow.

b. Turn on heat supply. Steam pressure for 1,1,1-trichloroethane should not exceed 5 psi. There are no steam heated perchloroethylene degreasers.

(1) For the perchloroethylene vapor degreaser in building 507, turn the refrigerated chiller on. Set the chiller thermostat (west thermostat) to 0 degrees F and the defrost thermostat (east thermostat) to 45 degrees F.

(2) If the chiller is not working as evidenced by the absence of a layer of frost on the cooling coils during the refrigeration cycle, shut the degreaser off until the chiller is operational.

c. Allow degreaser to reach operating temperature, evidenced by solvent condensing on water coils (should never exceed one hour).

d. Check temperature of solvent and record on the daily checklist. The recommended temperature ranges are:

SOLVENT	MINIMUM (New Solvent)	MAXIMUM
1,1,1-Trichloroethane	155 degrees F	165 degrees F
Perchloroethylene	239 degrees F	249 degrees F

The minimum temperatures may vary 1-2 degrees depending on barometric pressure and solvent condition. Calibration of the temperature gage is not practical nor is it necessary if solvent temperature records are kept. The listed approximate minimum boiling point for new solvent is an excellent indicator of gage condition. The temperature should gradually climb from that starting point. Significant deviations from the initial boiling temperature or large jumps in operating temperature indicate possible gage problems.

e. Check condenser water discharge temperature. It must not exceed 110 degrees F.

f. Remove all paper, cardboard, fabric, or plastic wrapping material. Place work in baskets or suspended from hooks so that solvent will drain from recesses and pockets.

CAUTION: Work must be dry. Moisture causes solvent decomposition.

g. Start work through degreaser. The rate of entry and removal of work must not exceed 11 feet per minute. This may require work to be inched in and out of degreasers which have hoists with speeds greater than 11 feet per minute. Upon removal, parts must remain in freeboard zone until dry.

CAUTION: Entry too fast causes vapor to rise out of tank.
Removal too fast causes parts to be wet with solvent and drags vapors out of the tank.

h. Work must remain in the vapor zone long enough to raise the temperature of the work to that of the vapor. Too short a time in the vapor results in poor cleaning and unnecessary loss of solvent.

i. Spraying:

Work must be sprayed within the vapor zone (below water coils) to minimize vapor disturbance. Direct spray to prevent solvent from escaping from the tank.

j. Size of Work Load:

Machines are designed with sufficient heat capacity to generate the solvent vapor necessary to clean specified load-pounds per hour. Vapor drop should not exceed 3 to 4 inches upon entry of work. Work loads exceeding the design maximum result in vapor level fluctuations

which cause poor cleaning and increase solvent consumption. Work loads that result in excessive vapor drop should enter the vapor zone slowly enough to keep it from dropping more than 4 inches. This may require large or massive parts to be lowered stepwise, allowing time for vapor recovery between steps.

k. Vapor degreasers will be kept covered when not in use.

l. To shut down a degreaser turn the heat supply off. After heat supply has been turned off, the vapors have dropped well below the condenser coils, and the condenser water temperature has dropped to approximately 80 degrees F, turn the condenser water off. Make sure the degreaser is covered.

4. DAILY OPERATOR MAINTENANCE:

a. Insure grate is in place.

b. Check solvent level to insure fluid is at least 2" above the heating elements.

NOTE: If the level is low and the boiling temperature has not reached the maximum listed in paragraph 3d, simply add fresh solvent. The solvent need not be changed until the maximum temperature is reached. The grate is about 4" above the heating element. Solvent should be kept at or near the level of the grate. DO NOT over-fill tank!

c. Check for leaks in the system. Both solvent and water should be checked for leaks. Leaking cooling coils are evidenced by water droplets on the coils or by water floating on the solvent in the condensate trough. A very dense white fog in the vapor zone may be evidence of excessive water contamination.

d. Check temperature gages and pressure gages for compliance with paragraphs 3.b, d, and e.

e. Check spray lance and pump for proper operation. Solvent from spray lance should be free of excessive color and sediment.

f. Check for flow of cooling water through condensing coils. Check cooling coils for damage that may cause leakage or restrict water flow.

g. Check vapor level. Vapor level should be in the lower half of the condensing coil.

h. Insure condensate trough is not plugged. Condensate must flow through water separator and not be allowed to over-flow directly back into degreaser.

i. Check for broken or inoperative gages.

j. Problems with any item above should be reported to your supervisor and if necessary a trouble call made.

5. MONTHLY OPERATOR MAINTENANCE:

All vapor degreasers must be equipped with a freeboard thermostat. Most of the steam heated degreasers also have a temperature sensor that modulates the steam pressure. If so equipped, this sensor will be located diagonally across the cooling coils. Check the operation of these units as follows:

a. With the degreaser operating, shut off the cooling water.

b. Watch the vapors as they start to rise. If the degreaser is equipped with the steam pressure modulator, the steam pressure will gradually decrease as the vapors rise. The vapors should not override the cooling coils. If the vapors do rise into the freeboard zone, the freeboard safety thermostat should shut the degreaser off. It should then require manual restart when the vapors drop.

c. If either of these devices do not function as described, shut the degreaser down and report the trouble. Do not use the degreaser until it is repaired.

d. Make sure cooling water is turned back on when testing is complete.

PROCESS ORDER 05 OCT	1. PAGE 1 OF 4 PAGES

2. TITLE		7. P.O. NUMBER
GAS CARBURIZING		N50063
4. TYPE, MODEL, SERIES	5. REQUESTING ORGN.	6. DATE EFFECTIVE
/A	MANE	26 Sept 89
3. PART NO AND AFSC NO.	8. REFERENCED PUBLICATIONS	9. DATE RESCINDED
N/A	SEE BLOCK 11	

10. NAME OF ASSIGNED PROJECT AND PROJECT NO.

N/A

11. INSTRUCTIONS

This process order describes the procedure for gas carburizing of SAE 1020 and 4130 steels.

1. BACKGROUND: Through strict controls, the depth of carburization and the carbon content at the surface can be controlled. SAE 4130 steel is covered in this PO, even though it is not a carburizing grade of steel, because it is used when other grades cannot be obtained.

2. DEFINITIONS:

a. Carburization - A process that introduces carbon into a solid ferrous alloy by heating the metal in contact with a carbonaceous materiel to temperature above the transformation range and holding at the temperature.

b. Case - The surface layer that can be made substantially harder than the interior (core).

3. APPLICABLE DOCUMENTS:

a. MIL-H-6875, Heat treatment of steels.

b. MIL-S-6090, Steel used in Aircraft Carburizing and Nitriding, Process for.

c. TO 1-1A-1, General Manual for Structural Repair.

d. TO 1-1A-9, Engineering Series for Aircraft Repair.

4. EQUIPMENT:

a. Furnaces: The furnaces shall be of a suitable type and design for the intended purpose and shall be capable of maintaining within the working zone a temperature varying not more than ± 25°F from the desired value.

b. Pyrometers: Pyrometers shall be of the automatic controlling and recording type and preferably of the potentiometer type.

c. Atmosphere Generating Equipment: A Hyen Endothermic gas generator, or comparable equipment capable of producing the following atmosphere is to be used:

Supersedes: PO N50063, 20 July 1987

Distribution: MANEL MANPS MANPR MANPW MANQNS MANEP MAQST

INITIATOR(SIGNATURE, ORGN, PHONE NO. AND DATE)	13. APPROVAL(SIGNATURE, ORGN, PHONE NO. AND DATE)
Stan Oxborrow STAN OXBORROW, MAQCM, 72874	27 Sep 89 MANE 73172

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7. Warning. Gases used and produced for and during the carburizing process are potentially deadly. Conduct the carburizing process only when adequate ventilation is available. Do not breathe the atmosphere discharged by the gas generator of furnace.

TABLE 1

1020 * (Carburized at 1650'F)

Total Case Depth (Inch)	Rc 50 Effective Case Depth (Inch)	Carburizing Time (Hours)	Diffusion Time (Min.)
.009 - .016	.007 - .013	1/2	25
.016 - .024	.013 - .021	1	30
.024 - .033	.021 - .028	2	35
.033 - .042	.028 - .035	3	40
.024 - .048	.035 - .040	4	55
.048 - .052	.040 - .044	5	65
.052 - .058	.044 - .048	6	80
.058 - .062	.048 - .052	7	100
.062 - .067	.052 - .056	8	115

*1020 Steel Quenched in Water From 1500'F

TABLE 2

4130 ** (Carburized at 1650'F)

Total Case Depth (Inch)	Rc 50 Effective Case Depth (Inch)	Carburizing Time (Hours)	Diffusion Time (Min)
.009 - .012	.007 - .010	1/2	25
.012 - .018	.010 - .015	1	30
.018 - .025	.015 - .021	2	40
.025 - .031	.021 - .026	3	50
.031 - .036	.026 - .030	4	65
.036 - .042	.030 - .035	5	75
.042 - .047	.035 - .039	6	90
.047 - .052	.039 - .043	7	110
.052 - .056	.043 - .047	8	130

** 4130 Steel Quenched in Water From 1525'F

PROCESS ORDER 01 AUG 1989	1. PAGE 1 OF 6 PAGES
2. TITLE: HARDNESS CONVERSION FOR WROUGHT ALUMINUM, 356 CAST ALUMINUM	3. P.O. NUMBER: N71791
4. TYPE, MODEL, SERIES: AZ63 AND AZ91 CAST MAGNESIUM ALLOY	5. REQUESTING ORGN.: MANE
	6. DATE EFFECTIVE: 30 JUNE 89
7. PART NO AND AFSC NO.: N/A	8. REFERENCED PUBLICATIONS: SEE PARAGRAPH 2
	9. DATE RESCINDED
10. NAME OF ASSIGNED PROJECT AND PROJECT NO.	

11. INSTRUCTIONS

The purpose of this process order is to establish correlation between acceptable tensile strengths and Rockwell hardness tests.

1. APPLICATION: When tensile specimens are not supplied with lots to be heat treated, a hardness test is necessary to determine if parts have been heat treated to minimum hardness. It is preferable that parts be heat treated with tensile specimens.

2. APPLICABLE DOCUMENTS:

a. MIL-H-6088, Heat Treatment of Aluminum Alloys

b. MIL-M-6857, Heat Treatment of Magnesium Alloy Castings

c. QQ-A-601, Aluminum Alloy Sand Castings

d. QQ-M-56, Magnesium Alloy Sand Castings

3. PROCEDURE: When heat treatment is accomplished and no tensile specimens are included, hardness tests must be performed on the finished parts. Table 1 lists minimum acceptable hardness values for wrought aluminum alloys and 356 cast aluminum. Table 2 lists minimum acceptable hardness values for AZ63 and AZ91 magnesium castings.

a. Parts made from natural aging aluminum alloys (2014, 2024, etc.), or a sample piece from the part, must be held in the shop for a minimum of 24 hours after heat treatment before hardness tests are performed.

b. There is no reliable hardness test for clad materials. It is, therefore, mandatory to submit unclad specimens of the same material as that to be heat treated. These specimens can then be tested to determine if minimum tensile strength has been achieved.

c. Care must be taken when hardness tests are performed on thin sections not to use the 1/16" ball. At no time should the hardness indication show through on the opposite side of the test piece.

Supersedes PO N71791, 22 May 1988
OPR: MANE
DISTRIBUTION: MAQCM-5, MANPS-8, MAQN-2, MANPWW-5, MANEP-5, MAQST-1

12. INITIATOR(SIGNATURE, ORGN, PHONE NO. AND DATE)	13. APPROVAL(SIGNATURE, ORGN, PHONE NO. AND DATE)
Stan Oxborrow Stanley B. Oxborrow Ch, MAQCM/72874	MANE 73192 19 Jan 89

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d. Parts which fail to achieve minimum hardness values may be reheated according to specified limitations. A scond failure would indicate improper heat treatment or misidentification of material. Hardness variations equal to no more than minus one point Rockwell hardness from the minimum is acceptable. Parts which fail to meet miniumum hardness tolerances as specified herein are not acceptable.

TABLE 1

APPROXIMATE ROCKWELL HARDNESS OF WROUGHT ALUMINUM ALLOYS

Material, Form, and Temper	Thickness (inches)	Minimum U.T.S (lbs/sq in)	Hardness RB Min	Hardness Re Min
Rolled, drawn or cold finished bar, rod, and shapes.				
2014-0	Up to 8.0	35,000 Max	---	74.5 Max
2014-T4	Up to 8.0	55,000	64.0	96.0
2014-T6	Up to 8.0	65,000	75.5	101.0
Extruded bar, rod, and shapes.				
2014-0	All	30,000 Max	---	66.0
2014-T4	All	50,000	56.0	91.5
2014-T6	Up to .499	60,000	67.0	98.0
	.500 to .749	64,000	74.5	100.5
	.750 & over	68,000	78.5	1[illegible].5
Die Forgings				
2014-T4	Up to 4.0	55,000	64.0	96.0
2014-T6	Up to 4.0	64,000	74.5	100.5
Sheet and Plate				
2014-T4	.020 to .039	55,000	64.0	96.0
	.040 to .249	57,000	67.0	97.0
2014-T6	.020 to .039	63,000	73.5	99.7
	.040 to .249	64,000	74.5	100.5
Rolled, drawn, or cold finished bar, rod, and shapes				
2017-0	Up to 8.0	35,000	---	74.5 Max
2017-T4	Up to 8.0	55,000	64.0	96.0
Rolled, drawn, or cold finished bar, and shapes				
2024.0	Up to 8.0	35,000	---	74.5 Max
2024-T4	Up to 6.5	62,000	69.0	99.0
2024-T6	Up to 6.5	62,000	69.0	99.0

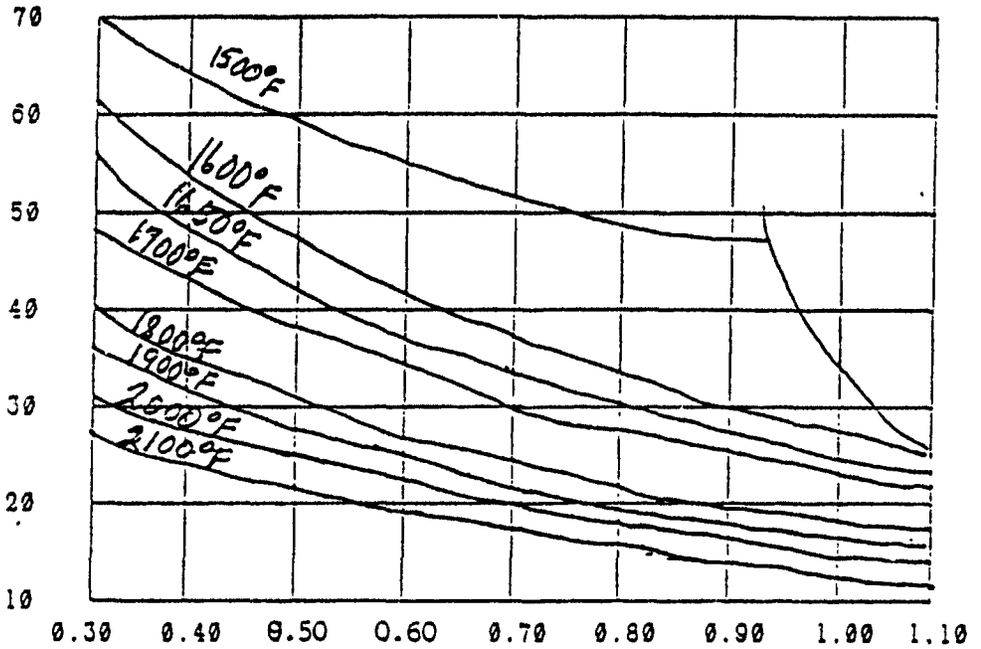
ate and Sheet				
/079-0	.040 to .249	40,000	32.0 Max	81.0 Max
7079-T6	.040 to .249	72,000	81.5	104.0
7079-T6 and T651	.250 to 2.50	73,000	82.0	104.5
	2.501 to 3.00	71,000	81.0	103.5
	3.01 to 4.00	70,000	80.5	103.5
	4.01 to 5.00	68,000	78.5	102.5
	5.01 to 5.50	67,000	77.5	102.0
	5.501 to 6.00	66.000	76.5	101.5
Die Forging				
7079-T6	Up to 6.0	70,000	80.0	103.5
Extruded bar, rod, and shapes				
7178-0	All	40,000 Max	32.0 Max	81.0 Max
7178-T6	0 to .249	85,000	90.5	108.0
	.250 to 1.49	88,000	92.0	109.0
	1.50 to 2.99	86,000	91.0	108.5
Plate and Sheet				
7178-0	All	40,000 Max	32.0 Max	81.0 Max
7178-T6	.015 to .044	83,000	89.0	107.5
	.045 to 1.500	84,000	90.0	108.0
	1.501 to 2.00	80,000	87.0	107.0
7178-T651	.250 to 1.500	84,000	90.0	108.0
	1.501 to 2.00	80,000	87.0	107.0
7178-T76	.045 to .249	75,000	84.0	105.0
7178-T7651	.250 to .499	74,000	83.0	104.5
356 Castings				
356-T4	All	25,000	---	71.0
356-T5	All	23,000	---	68.0
356-T6	All	30,000	---	79.0

TABLE 2

APPROXIMATE ROCKWELL HARDNESS OF CAST MAGNESSIUM ALLOYS

Material and Temper	Minimum U.T.S (lbs/sq in)	RE Min Hardness
AZ63A-T4	34,000	76.0
AZ63A-T6	34,000	76.0
AZ91C-T4	34,000	81.0
AZ91C-T6	34,000	81.0

TABLE 3



PERCENT CARBON IN STEEL

TABLE 4

COLUMN A STEEL	COLUMN B QUENCHING TEMPERATURE FOR CORE REFINEMENT	COLUMN C QUENCHING TEMPERATURE FOR CASE
1020	1575 - 1650	1375 - 1425
4130	1550 - 1625	1425 - 1475

H - 40%
CO - 20%
N - 39%
Hydrocarbons - 1%

Generator dew point temperature is to be maintained between + 45'F.

5. PROCEDURE:

a. Cleaning: All parts to be carburized shall be thoroughly cleaned of oils, wax, dirt, etc. Scale shall be removed because it inhibits absorption of carbon.

b. Carburizing: Most parts to be carburized can be charged at the carburizing temperature and allowed to soak one hour per inch of thickness in the endothermic atmosphere. After the parts have soaked out, 8-10% natural gas should be added to the furnace. This initiates the carburizing cycle. If soot appears on the parts, the natural gas would be decreased. Parts should be carburized according to TABLE one or two. Ten percent natural gas at 1650'F will result in a suitable carburizing atmosphere.

c. Diffusion: During diffusion, the natural gas should be cut back to yield a dew point that will give the desired carbon content at the surface. A surface carbon content of .8 to .9 will minimize retained austenite in the microstructure. Time of diffusion should be in accordance with Table one or two. Table three is the equilibrium relationship between dew point and percent carbon at various carburizing temperatures. For example: at 1650'F, a dew point of + 25'F will yield a .9 carbon content at the surface of the part being carburized.

d. Quenching: Both 1020 and 4130 steels can be quenched in water. If high core strengths are desired, the temperature should be dropped to just above the critical at the beginning of the diffusion cycle (1475'F-1500'F for 1020 and 1500'F-1525'F for 4130). The parts should be quenched from these temperatures at the end of the diffusion cycle. If a softer core is desired, the quenching temperature, the dew point temperature during diffusion must be maintained to yield the desired carbon content at the surface (see Table 3). Oil quenching shall be used on parts with thin sections which may crack or distort when quenched in water.

NOTE: The core treatment (Column B) refines the grain of the core while the case treatment refines the grain of the case and hardens it. If high core strength is desired, the treatment in Column C should be omitted.

f. Tempering: All carburized parts should be double tempered at 400'F to remove quenching strains and eliminate retained austenite.

6. CASE DEPTH DETERMINATION: Persons desiring parts to be carburized must submit a sample specimen of the same materiel as the parts to be carburized. This sample will be carburized with the parts and subsequently cross sectioned and examined to determine depth of case. Parts to be carburized should be requested to be cased to either an effective case depth or an overall case depth. For example: 'Case harden to RC 50 effective case of .040 inch' or case harden to overall depth of .060 inch'. Core hardness may also be specified if applicable.

PROCESS ORDER	1. PAGE OF PAGES
2. TITLE: FOUNDRY PROCEDURE FOR SAND CASTINGS	3. P.O. NUMBER: N72131
4. TYPE, MODEL, SERIES: N/A	5. REQUESTING ORGN.: MANE / 6. DATE EFFECTIVE: 22 MAY 88
7. PART NO AND AFSC NO.: N/A	8. REFERENCED PUBLICATIONS: SEE PARAGRAPH 2 / 9. DATE RESCINDED:
10. NAME OF ASSIGNED PROJECT AND PROJECT NO.: N/A	

11. INSTRUCTIONS

This process order establishes operation standards for Class I and Class II aircraft castings and minumum requirements for the porduction of aluminum, magnesium, and copper alloy castings in the Foundry Unit (MANPWW) of the Industrial Products and Landing Gear Divison (MAN).

1. DEFINITIONS:

a. Melt - One furnace charge or crucible of metal alloy.

b. Production Melt - Melt contaning only previously analyzed ingots from with castings are poured.

c. Reclaiming Melt - Melt containing gates, risers, and other reclaimed scrap.

d. Virgin Ingot - Ingot which is purchased and will meet the chemical composition of the designated alloy.

e. Remelt Ingot - Ingot poured in the foundry from melting gates, risers, and scrap.

2. GENERAL REQUIREMENTS:

a. All metal will be stored according to alloy designation. All metal will be properly identified by alloy number. Metals of doubtful composition will not be used until the composition is determined by the Metallurgical, and Nondistructive Test Laboratory, (MAQCM).

b. All work in the foundry will be identified by work order numbers.

c. Peridoic checks will be made on the molding sand and core sand mixture by MANPWW.

d. Applicable specifications include the following:

(1) QQ-A-601 (Amend 3) Aluminum Alloy Sand Casting.

Supersedes PO N72131, 10 July 1986
OPR: MANE
DISTRIBUTION: MAQCM-5; MANEL-1; MANPS-8; MANPR-5; MANPW-5; MANQNS-3; MANEP-5; MAQST-1

12. INITIATOR(SIGNATURE, ORGN, PHONE NO. AND DATE)	13. APPROVAL(SIGNATURE, ORGN, PHONE NO. AND DATE)
Stanley B. Oxborrow 26 May 88 STANLEY B. OXBORROW Ch, MAQCM/72874	John C. Fuller

AFLC FORM JAN 64 561

AFLC-WPAFB-FEB 73 6M

(2) MIL-C-6021 Castings, Classification and inspections of (for Aeronautical Applications).

(3) Federal Test Method Standard 151.

3. MELTING AND POURING PRACTICE:

a. Equipment.

(1) Furnace. A stationary or tilting pot type furnace will be used to melt metals for casting purposes. The furnace will be electric or gas fired and the metals for casting purposes. The furnace will be electric or gas fired and the crucible will be covered whenever practical so that a minimum amount of combustion gases will come in contact with the molten magnesium or aluminum used for aircraft parts. It is not necessary for the copper alloys to be sealed off from the combustion chamber. Care should be taken to eliminate gas absorption in all molten metal.

(2) Temperature control. Accurate pyrometric controls and/or ladle pyrometers will be provided for the melting furnaces in order to maintain the molten metal at a desired temperature. Thermocouples used in the melting pots will be enclosed in a cast iron tube. A Fast-acting, accurate ladle pyrometer can be used for checking the temperature of the metal in the pouring ladle. The thermocouples and pyrometers will be checked at regular intervals by the Precision Measurement Metrology Section (MAKSV) in accordance with applicable military specifications. Reference MAOI 66-148, Appl, paragraph 6.

(3) Crucibles. The crucibles will be the standard silicon carbide, steel or cast iron type. When in use, the cast iron and steel crucibles will be scraped and cleaned after each melt. The cast will be sprayed with a suitable crucible coating compound, such as Terra Paint #55M or equivalent.

(4) Tools and other equipment. All ladles, gas fluxing tubes, skimmers, thermocouple shields, etc., which come in contact with the molten metal will be cleaned and sprayed periodically with a suitable crucible coating compound such as Terra Paint #55M or equivalent. Pouring ladles will be used for one alloy only until they are cleaned and sprayed.

(5) Patterns: Each pattern will be tagged with the following information:

(a) Part number

(b) Name

(c) X-Ray and foundry control (when required).

b. Melting:

(1) Charges: All metal charges in furnace will be clean, dry, and the chemical composition known. All melts in the same work order will contain the same proportion of virgin ingot and reclaimed ingot. Metal charged to a

pot must be preheated first.

(2) Melts: Melts which are held in the molten condition for over one hour or which reach a temperature of 300'F above the pouring temperature will be poured off into ingots. Such ingots will be classified as reclaiming melts and must be analyzed by MAQCM prior to pouring into aircraft castings. Addition of alloying elements will be done under the direction of MAQCM.

(3) Thermocouples: When the entire charge is molten, a thermocouple or pyrometer will be inserted into the molten bath. The temperature of the molten metal will be checked at intervals so that the maximum temperature is not exceeded.

c. Pouring:

(1) Preparation for Pouring:

(a) Temperature: Just prior to pouring the metal into the mold, the temperature will agree with the predetermined pouring temperature.

(b) Fluxing: The proper fluxing will be completed shortly before pouring.

(c) Ladles: All ladles will be preheated before being filled with hot metal or dipped into the molten alloy.

(2) Dipping: The edge of the ladle opposite the pouring lip will be immersed first into the molten metal bath, and the ladle turned in a semi-circular motion, thus virtually cutting the ladle full of metal from the crucible without agitating the molten metal unnecessarily. Pouring metal into the ladles from a tilting furnace is also permissible.

(3) Pouring Molds: Several molds may be poured from one ladle of metal. The molten metal temperature in the ladle will agree with the predetermined pouring temperature. Ladles used for aircraft casting must be large enough so that all the mold will be poured with one continuous stream of metal.

4. INSPECTION-PROCEDURES:

a. Casting Identification: All aircraft castings will be identified by the part number on the casting in the form of raised letters and numbers when this is practical; otherwise, they will be tagged for identification. These numbers will be located so as to remain on the casting after machining. Groups of the same castings will be identified by work order number.

b. INSPECTION METHODS:

(1) Hot inspection: All castings will be visually inspected immediately after shake out for misruns, cold shuts, shrinkage, cracks, blows, drop, and other defects.

(2) Chemical analysis of metal for all missile and aircraft parts. A sample will be taken from each separate lot of ingots for chemical analysis. Chemical analysis will be made by MAQCC.

(3) Fluorescent penetrant: All castings in class IA and IB low stress and high stress and class IIA high stress and low stress will be inspected by the fluorescent penetrant technique by MANPW for defects in accordance with MIL-C-6021.

(4) Radiography: Castings will be inspected by X-rays as outlined in MIL-C-6021. Radiography standards will be determined by inspection and the X-ray Laboratory in MAQCM.

5. SAFETY PROCEDURES:

a. The supervisor will ensure:

(1) The sequence and method of handling materials to eliminate unnecessary handling is planned in advance of any pouring operations.

(2) Protective clothing/equipment required while working with molten metal is readily available and used. Such items will consist of high-top safety shoes with built-in instep (metatarsal) protection (if such foot wear is not available, slip-on type metal instep guards will be provided), thigh-length aluminized leggings that strap underneath the shoes, 40 inch aluminized coat for body protection, hand pads, leather mitts or gloves preferably studded with steel (unless hot metal is to be handled), for protection against heat, hand and arm protectors will be of the heat resistant cloth or wool (leather can be used too, but will not stand a temperature over 150 F), aprons, safety glasses or safety goggles, safety shield, and cloth welder's cap, or heat resistant clothing.

(3) Personnel are properly fitted with the required respirator by SGB, and trained in its use, and storage. A proper respirator facility will be designated for use by employees.

(4) During pouring of manganese bronze, each person present wears a respirator as required by SGB.

(5) Signs are posted at each entrance to prevent visitors from entering the area during operations.

(6) The ventilation system is functioning for pouring operations.

(7) Employees are thoroughly trained to be aware:

(a) For fire prevention, the floor within 10 feet of the pouring area shall be free of water or dampness, all combustible material such as oil, grease, paper, excess wood, electric cords, and any other material that could be explosive or combustible on contact with molten metal.

(b) The foundry floor will be cleaned frequently and kept in good

condition. worn spots, holes, or other defects will be reported for immediate repairs.

(c) Clear aisle ways must be maintained to all exits.

(d) To prevent spattering or explosion of the molten metal within the furnace and/or ladle, all metal deoxidizers, tools, and pyrometers must be preheated and thoroughly dried before being placed in contract with molten metal. Pouring mold sands must also be kept dry.

(8) Only operators who are properly trained to pour molten metal are allowed to ladle hot casting materials. The number of workers in the pouring area during a pour shall not exceed the maximum number of workers required for the pouring operation.

(9) The use of compressed air to blow sand or dust off clothing, new castings, and patterns in the removal of parting compounds and other light materials is prohibited. Vacuum methods shall be used for cleaning molds.

(10) Loads suspended from cranes or other means are not carried over the heads of workers.

(11) Casting personnel will keep orderly storage piles and bins in accordance with approved regulations.

(12) Procedures for safe-guarding mechanical devices and inspection are developed, implemented, and followed.

(13) Employees are instructed in the safe casting operations to include manual and mechanical handling of equipment and materials used, and hazards involved.

b. Employees must understand that they are responsible for their own safety, for the safety of those around them, and their equipment.

4-10-89

1. 80-20 List. On 31 of march we decided that we would live with it.
- 99 pc. yielded 1030 WCDS.
Bilka
2- Boeka this down into family's
The breaks are on page 3 of the handout

3. Landing gear. page 4.

They were broken into sub div. to alum or steel. and time makes.

4 C-5 NLG MLG + Bogie.

5- Proposed wheel groupings. the are 4 groups listed in the handout

6- We have ex engineer on board. board. and happy with all of the.

7- Ask see chart

8. Improved communication weekly TI interface meeting at 1300 hr. every monday.

9. Dan stated that if he comes something on a flow chart we need to check into it and make sure it is right

10- Dandy stated that the weekly report does not always give them the status or where we are.

11- Dan. on. comments that we make we need to have better input on what we were thinking and who we talked to and there position

12) when to get good back up to support our data.

13) if you go through an interview and you get a good idea run it by Dee a Board. Dee stated he is ~~~~. available

14) Run our ~~~~. VIEWS PAST DEE + GRANT. To get ERRORS OUT. Let the people that we INTERVIEW. read our. NOTES + make ~~~~ comment.

15 - Break out Process (operator). to VISABILITY. Break out in Quick Fix at Focus. ~~~~ STOPS.

16. Dee will go down. with up to ~~~~ help make elevation

17 - Lift plan needs to be routed around the area. If we have and idea write it down and. on note if it is in future plan

18 - Have some one survey the second shift.

19 - Check and see if the people have. better ideas. and what they are.

(20) Have a chit chat with Andy and the J.L. group once a week.

(21) P. R. between TI + Public relation.

(22) Tried to come up with original ideas.

(23) Don't Be soft on them Eng. if production is not doing what they should be ~~tell~~ it.

(24) → ~~the~~ week. meeting with all of us.

(25) NDI - we agreed that if they do not do any thing that coincide with the the parts being studied we will not study it.

(26) ~~Goo~~ GOOGLMPC Oct 82 - JAN 31, 1983,

MANEGP MANPGW MANDRA MANPNA MANPRB MANPRC ~~MANPNC~~

T 5%

M-
PDM 20/80 %
MISTER 216 PCN

How do come up with 96% of the work was for the plating shop. It picked up some additional work for the 7 RCC which were not in the ogjinl 20/80 list.

Some of the out side Items are ARMENT, HYD. Temp. MCG. BMR

PLATING Shop

95.51 TOTAL
- 1.35 TEMP
2.74 MFG
4.39 PDM
4.18 ARM
3.88 HYL
78.95 (WHEEL Brk. .265)

73.16% Of the total work HR is made up By W.B. + LCs.

To get it up to 80% we will have to include some work load that is not part of the assigned work load

- Usually A T Job is related to the field some how.

- IT NEEDS TO BE NOTED that we are going to just going make that data will be generated by just the work load taken that pertains to the area agreed on by Randy Curry & Trish Brown.

We need to find out why we centralized the NDI into one group and not under the ~~same~~ each foreman.

Mag. Pipe we need to be aware of.

~~Pipe~~ + need as if you are having any problems and projects that are in the study

FY 89 Approved Rates
From: Dale Casper 1007

MANPGP Base $42.92 w/o direct material
Direct material $.37

PNA	42.97	
PGW	47.33	
PRA	42.77	
PRB	49.22	
PRC	48.64	→ + .35
PWW	44.05	→
	$3.41	

A- PDP- TEMP work Load stay as in Lo

NDI - Do Just the parts from 507

PN #- Cartize down power as a model.
4- work station

ARC- Carbide Nomal

Flame Spray work with the other pieces to get the work Load.

Andy wants to talk Flame spray

PGP- go back and look at T Jobs.

WE NEED TO DOCUMENT all that we are doing.

THEY ARE LOOKING FOR N.C. SERC.

TIME PLANNERS HELPED MAKE THIS PRINT OUT FOR THE Family Break down.

Plating is close enough. per Andy C.

PRB is close enough. per Andy C.

If the parts are going into PWB and they are compete for [illegible] just forget about waiting and study what they actually use.

Some Spray-

1 Equipment wheels brakes & LGS.
2. MP. MAN POWER
3. Other EQ. , dummy work control Doc. will be put in to the model. for time.)

A Look at moving [illegible] to 507
B. how many use ~~isolated~~ to (W. B. & LGS.)

Do they still they of early - Observe the parts AND SEE IF THE LEZ THEM SEZ AROUND. expecially IF THE HANDS MADE THE QUOTA. the will wait till the next quarter.

S

OO-ALC

10 MAY 1989

- IMPROVED ALC/MDMSC COMMUNICATION
  - DEDICATED POINT-OF-CONTACT (EACH RCC)
  - ANDY CURRIE GETS:
    - COPY OF WEEKLY STATUS REPORT FOR ST. LOUIS
    - COPY OF ENGINEERING NOTES MONTHLY
    - COPY OF RCC PROCESS FLOW CHARTS
- ALL PROCESS FLOW CHARTS ARE REVIEWED BY PLANNING PERSONNEL AS WELL AS THE RCC POINT OF CONTACT PRIOR TO SUBMITTAL TO ST. LOUIS
- WEEKLY TI COORDINATION MEETINGS OO-ALC/MDMSC
- OO-ALC SUPPORT TO MDMSC HAS BEEN OUTSTANDING

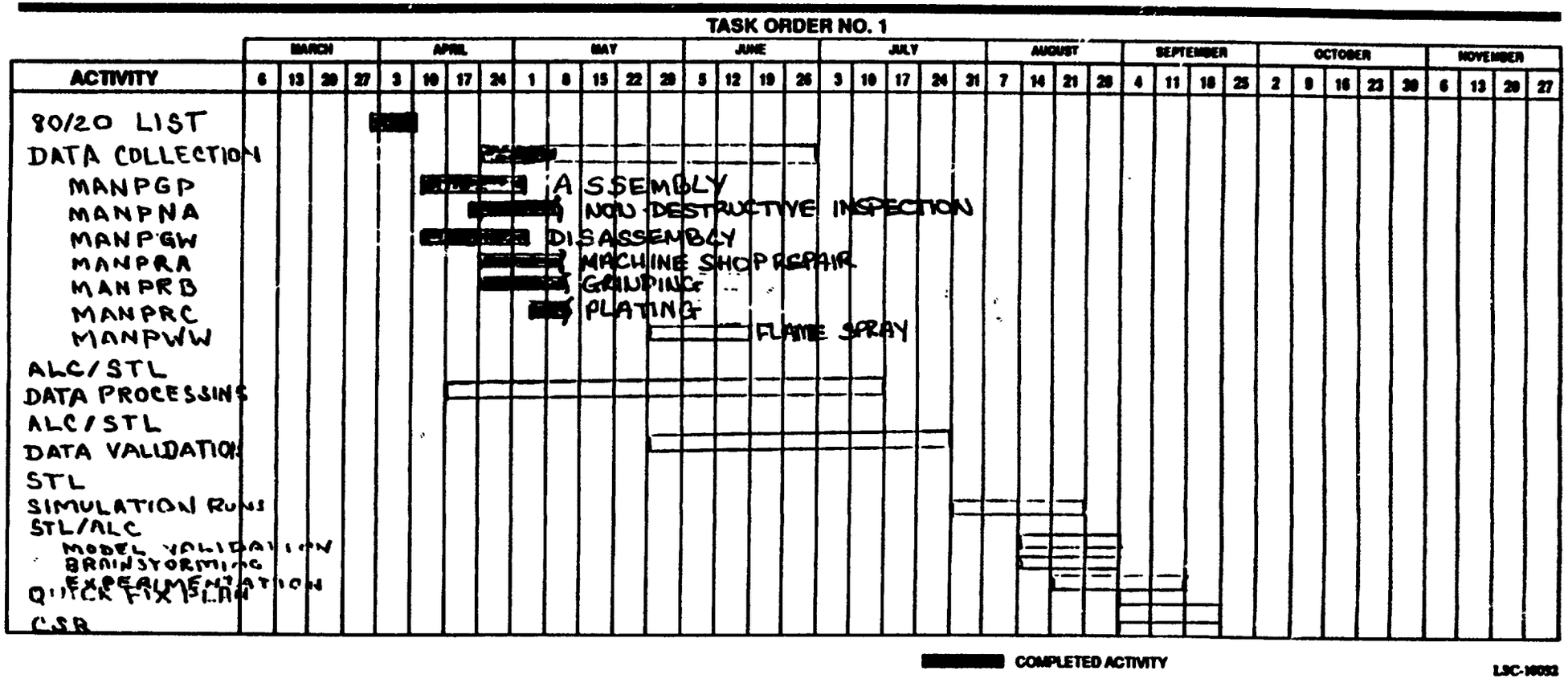
SCHEDULE STATUS

10 MAY 1989

Revision B 4/29/89

OO-ALC

TECHNOLOGY INSERTION PROCESS CHARACTERIZATION



AFLC/MDC

10 MARCH 1989

MANPOWER STATUS

OO-ALC

10 MAY 1989

- SIX (6) ENGINEERS HIRED (ALL LOCAL)

- SIX (6) ENGINEERS TRAINED

  - RCC PROFILE OVERVIEW

  - SIMULATION MODEL DATA GATHERING

WHEEL GROUPINGS TO BE PROCESS CHARACTERIZED

FAMILY NO.	FAMILY CHARACTERISTICS	AIRCRAFT	STD. HRS. (MANPGP)
1	MAGNESIUM	KC-135N	2.67
2	ALUMINUM - LARGE	B-52M	2.47
3	ALUMINUM - MEDIUM (MAIN WHEELS)	"KC-135M" A-10M, C-5M C-130M, C-141M E-34M, F-4M F-5M, F-15M F-16M, F-100M F-106M, F-111M FB-111M	2.75
4	ALUMINUM - SMALL	"T-38N" A-10N, C-5N A-7N, C-130N E-3AN, F-4N	2.09

NOTES: (1) FOREMAN IS BOB BURGER ALTERNATE IS CHARLES POWERS.
(2) ALL OF THE MAIN WHEELS ARE VERY SIMILIAR IN SIZE AND PROCESS TIMES EXCEPT THE B-52 MAIN WHEEL
(3) ALL OF THE NOSE WHEELS ARE SIMILIAR EXCEPT THE KC-135N WHICH IS MADE OF MAGNESIUM.

PROPOSED WHEEL GROUPINGS

FAMILY NO.	FAMILY CHARACTERISTICS	AIRCRAFT
1	MAGNESIUM	KC-135N
2	ALUMINUM - LARGE	B-52M
3	ALUMINUM - MEDIUM	KC-135M
4	ALUMINUM - SMALL	T-38N
5	ALUMINUM - LARGE - SPECIAL BORES	C-5M
6	ALUMINUM - SMALL - SPECIAL BORES	C-5N

LANDING GEAR GROUPINGS TO BE PROCESS CHARACTERIZED

FAMILY NO	FAMILY CHARACTERISTICS	AIRCRAFT
7	C-5 MLG STRUT ASSY	C-5
8	C-5 MLG BOGIE ASSY	C-5
9	C-5 NLG	C-5

LANDING GEAR GROUPINGS TO BE PROCESS CHARACTERIZED

FAMILY NO.	FAMILY CHARACTERISTICS	AIRCRAFT	STD. HRS. (MANPGP)
1	STEEL/STEEL	"F-15 MLG" C-14-1	11.60
2	STEEL/STEEL	"~~C-191~~ NLG"	8.03
3	STEEL/STEEL	"KC-135 MLG"	6.09
		F-4 NLG	5.44
		C-130 NLG	4.81
		C-130 MLG	3.29
		F-111 MLG	5.29
		A-7 MLG	3.35
		F-4 MLG	4.75
4	ALUM/STEEL	"F-15 NLG"	4.35
		F-16 NLG	3.84
		A-7 NLG	4.92
		T-38 MLG	3.40
		T-38 NLG	4.67
5	ALUM/STEEL	"KC-135 NLG"	6.66
		C-141 NLG	6.66
		A-10 MLG	7.75
		F-111 NLG	5.75
		A-10 NLG	7.75
6	ALUM/STEEL	B-52 MLG	11.20
		B-52 TIP	12.00

PROPOSED LANDING GEAR GROUPINGS

ALUMINUM OUTER/STEEL INNER

NLG	MLG
* KC-135	
* C-141	
+F-111	
+F-15	
+F-16	+F-16
* B-52 TIP	* B-52
+A-10	* A-10
+A-7	
+T-38	+T-38

STEEL OUTER/STEEL INNER

NLG	MLG
* C-130	* C-130
* F-4	+F-4
	* C-141
	* KC-135
	+F-111
	+F-15
	+A-7

C-5 M.L.G. & N.L.G. GROUPING

C-5 M.L.G. STRUT ASSY
C-5 M.L.G. BOGIE ASSY
C-5 N.L.G.

ALUMINUM/STEEL

KC-135 NLG
C-141 NLG
B-52 TIP
B-52 MLG
A-10 MLG

ALUMINUM/STEEL

F-111 NLG
F-15 NLG
F-15 NLG
A-10 NLG
A-7 NLG
T-38 NLG

STEEL/STEEL

C-130 NLG
F-4 NLG
KC-135 NLG
C-141 NLG
C-130 MLG

STEEL/STEEL

F-111 MLG
F-15 MLG
A-7 MLG
F-4 MLG

BRAKE GROUPINGS TO BE PROCESS CHARACTERIZED

FAMILY NO.	FAMILY CHARACTERISTICS	AIRCRAFT	STD. HRS. (MANPGP)
1	MAGNESIUM HOUSING - STEEL BRAKE	"B-52" A-37, F-106 T-33, F-100	6.59 6.20
2	ALUMINUM HOUSING - STEEL BRAKE	"KC-135" A-7D, T-38 T-39, F-111 F-5, A-10 C-130, C-141 E-3A	6.69 4.78 6.65, 6.41 5.68, 4.38 6.63
3	ALUMINUM HOUSING - BERYLLIUM BRAKE	"C-5A"	13.41
4	ALUMINUM HOUSING - CARBON BRAKE	"C-5B" F-15	13.41
5	ALUMINUM HOUSING - CARBON BRAKE - SPECIAL ASSEMBLY CHARACTERISTICS	"F-16"	7.16
6	ALUMINUM HOUSING - STEEL BRAKE, SINGLE ROTOR	"C-130"	6.63

PROPOSED BRAKE GROUPINGS

FAMILY NO	FAMILY CHARACTERISTICS	AIRCRAFT
1	MAGNESIUM HOUSING - STEEL BRAKE	"B-52" A-37, F-106 T-33, F-100
2	ALUMINUM HOUSING - STEEL BRAKE	"KC-135" A-7D, T-38, T-39, F-111, F-5, A-10, C-130, C-141, E-3A
3	ALUMINUM HOUSING - BERYLLIUM BRAKE	C-5A
4	ALUMINUM HOUSING - CARBON BRAKE	C-5B, F-15, F-16

STATUS

OO-ALC

10 MAY 1989

- 80/20 LIST PROVIDED 31 MARCH 1989
  - CONTAINED 216 PRODUCTION CONTROL NUMBER
  - FIRST 99 PCNs YIELDED 1030 WORK CONTROL DOCUMENTS

- LANDING GEARS, BRAKES, AND WHEELS
  - PRIMARY ASSEMBLIES FOR REPAIR AT OO-ALC
  - CAN BE GROUPED IN FAMILIES OF SIMILAR LANDING GEARS, WHEELS AND BRAKES
  - OPERATION PROFILE TYPICAL ASSEMBLY FROM EACH FAMILY

N-12-07

INCH - POUND

MIL-STD-868C (USAF)

October 20, 1984

SUPERSEDES
MIL-STD-868B (USAF)
1 September 1982

MILITARY STANDARD

FLAME SPRAYING

AMSC NO. N/A

AREA MFFP

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THIS DOCUMENT CONTAINS 13 PAGES.

114-00-1842

FOREWORD

1. This Military Standard is approved for use by OO-ALC (Code 70), Department of the Air Force, and is available for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: OO-ALC/MMEDA, Hill AFB UT 84406-5889 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 Scope. This standard covers the materials, procedures, and equipment for flame spraying of parts.

1.2 Purpose. Flame spraying is defined as the process of melting materials in a heating zone and propelling them in the molten state onto a part to form a coating. This process can be applied to build up worn areas on parts, for abrasion resistance and/or corrosion protection. It is not intended to rebuild damage by nicks, gouges, etc., without building an entire area.

1.3 Types. The four types of flame spraying covered in this standard are as follows:

Type I	Wire System: Spraying materials in a wire form using Oxygen-Acetylene/Hydrogen/Propane, etc.
Type II	Powder: Thermo process, spraying powder using Oxygen, Acetylene or Hydrogen.
Type III	Powder: Plasma process for spraying materials in a powder form utilizing a non-transferable electric arc with Nitrogen, Argon or Helium with or without Hydrogen as the secondary gas.
Type IV	Wire Arc Spraying Process Arc spraying system, simultaneously and continuously feeds two metalizing wires at a uniform rate of speed through electrically charged contact blocks.

2. APPLICABLE DOCUMENTS

2.1 Government Documents.

2.1.1 Specifications, Standards, and Handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS
FEDERAL

BB-A-106	Acetylene, Technical, Dissolved
BB-H-886	Hydrogen
BB-O-925	Oxygen, Technical, Gas and Liquid

STANDARDS
MILITARY

MIL-STD-868	Grinding of Chrome Plated Steel and Steel Parts Heat Treated to 180,000 PSI or over.

Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Naval Publications and Forms Center, (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia PA 19120-5099.

3. DEFINITIONS (Not Applicable)

4. GENERAL REQUIREMENTS

4.1 Materials and Equipment.

4.1.1 Wire/Flame Spray System. The wire system shall include either a compress Air Powder Gun or an electronically controlled gun. Necessary air filtering shall be capable of delivering oil free and moisture free air. Gas and Oxygen regulators shall be two stage regulators. Fuel gas flow meters and regulators must be equipped with flash back valves. Air pressure regulators shall be an OSHA approved type. Hoses, wire control and straightening units shall complete the system.

4.1.2 Thermo Spray System-Powder. The powder spray system shall include a spray gun that is capable of delivering flow rate. Regulators shall be of the two stage type. Fuel gas regulators and flow meters must be equipped with flash back valves. Air regulators shall be OSHA approved. Hoses and optional equipment shall complete the system.

4.1.3 Plasma Spray System-Powder. The plasma system shall include a plasma spray gun capable of operating on Nitrogen, Argon or Helium primary gases with or without Hydrogen as the secondary gas. The gun may be either a hand held or machine mounted type.

a. The plasma gun shall be capable of spraying coatings of powdered materials that have been

heated to a plastic or molten state by a highly ionized gas stream passing through a non-transferable electric arc capable of reaching temperatures of 30,000°F or higher and producing coatings with bond strengths of 4,000 to 12,000 PSI or higher.

b. The power supply unit shall not be less than 40 (KW) capacity at 100% duty cycle.

c. The powder feeder unit shall be capable of supplying a metered and constant flow of powdered material to the gun.

d. Extension equipment capable of spraying at a 90° angle for shall holes may be incorporated as a component part.

e. Control unit, heat exchanger, approved gauges, flow meters, hoses, power cables, and cooling devices shall complete the system.

4.1.4 Wire/Arc Spray System. The arc spray system shall consist of a gun capable of simultaneously feeding two wires at a controlled rate of speed, and delivering a fine atomized spray on a prepared surface. The gun shall be capable of producing coatings with a bond strength of not less than 4,000 PSI.

a. The gun shall be hand held or machine mounted and be capable of controlling wire feed rate. The gun shall also be capable of operating solely on compressed air and/or electrical current.

b. The power supply unit shall be capable of delivering amperage and voltage at 100% duty cycle.

c. The control unit shall be compatible with automatic traverse equipment, and include air, amperage and voltage controls and monitors.

d. Wire control units shall include wire straighteners.

e. Hoses, lines and cables will comprise the balance of the system.

4.1.5 Abrasive Blasting Equipment. Abrasive blasting equipment is required to roughen areas to be flame sprayed.

Parts should be previously cleaned. Particular care should be taken to keep abrasive grit from contaminating surrounding area. Blasting equipment should be used solely for preparing parts for flame spray. Manufacturer's recommended procedures should be followed.

4.1.6 Flame Spray Wire. Only wires specifically manufactured for flame spray shall be used otherwise specified by the responsible engineering authority. The chemical composition of the material to be used shall be specified in the contract or purchase order for the materials. See manufacturer's handbook and current technical bulletins.

4.1.7 Flame Spray Powders. Powders used for flame spraying shall be designed specifically for flame spraying and the powder supplier shall so specify and certify that:

a. The material has been inspected for size and that the size is in accordance with the size range spelled out in the purchase order.

b. All material meets the chemical composition requirements as specified in the purchase order.

c. The material has been spray tested with Oxygen-acetylene, Oxygen-Hydrogen combustion flame, and plasma flame spray equipment, whichever is applicable. Insure that coatings can be produced that are smooth, uniform, and free from cracks and voids, with required bond strength.

d. Material meets requirements of engineering and industry standards.

4.1.8 Gases. The following gases shall be used in flame spraying:

Gas	Specification	Type
Oxygen	BB-O-925	Commercial
Acetylene	BB-A-106	Commercial
Propane	--------	Commercial
Hydrogen	BB-H-886	Commercial

4.1.8.1 Gases for Plasma Flame Spraying. Gases for the plasma flame spraying process shall be as follows:

Gas	Specifications
Hydrogen	Pre-Purified 99.5% Max-Oxygen Content 0.05% Max-Dewpoint -76° Fahrenheit (F) (-60° Celsius (C))
Nitrogen	Pre-Purified Max-Oxygen content 0.002% Max-Dewpoint -76°F (-60°C)
Argon	High Purity

4.2 Bond Strength. Flame sprayed coatings have bond strengths ranging from 3,000 to a maximum 12,000 PSI. Coatings should only be used where the bond strength of the coating is approved for a specific application by engineering authority.

4.3 Coating Material. The coating material must be specified by the responsible authority. Metalurgical laboratory testing may be required where deemed necessary.

4.4 Spraying Parameters. Air, fuel gas, primary and secondary pressures and flow settings for the spraying of each material shall be in accordance with those recommended by the equipment manufacturer's instruction manuals for each process. Gun to work distance shall be established from the instruction manuals or bulletins, or by testing and analysis.

4.5 Cooling While Spraying. Part and coating temperatures must be controlled to prevent warpage of the substrate and failure of the coating. The maximum substrate temperature is:

350°F (176.6°C) for Steel
225°F (107.2°C) for Aluminum

The time at this temperature is not to exceed one hour.

4.6 Selected Areas. If selected areas are to be flame sprayed, the surrounding areas must be masked with available tapes or masking compounds. Keyways and oil holes may be masked with carbon plugs or polished metal inserts or silicone rubber.

4.7 Coating Thickness. Some coatings have thickness limitations. Coating thicknesses shall be specified by applicable documents, if thickness is not specified then the finish machine coating shall not exceed 0.030 inch.

a. A minimum of 0.010 inch over final dimension shall be allowed for grinding. Follow manufacturer's recommendations.

b. For corrosion protection, a minimum coating thickness of 0.003 to 0.005 inch is required.

3. DETAILED REQUIREMENTS

3.1 Procedure.

a. All parts must be machined and cleaned if required prior to flame spray.

b. High tensile Steel and high strength Aluminum parts which have been pre-machined must be stress relieved by shot peening areas to be flame sprayed.

c. Areas to be flame sprayed which have been plated shall have these finishes removed from area to be sprayed by either chemical or mechanical means. Blasting is not an acceptable method of removal.

3.1.1 Vapor Degreasing. All parts shall be vapor degreased prior to surface preparation unless otherwise specified by engineering.

3.1.2 Masking. Mask all areas not to be abrasive blasted or coated.

3.1.3 Abrasive Blast. Abrasive blast areas to be coated for the removal of oxidation, following manufacturer's recommended procedure and bulletins, unless otherwise specified by engineering.

3.1.4 Preheat. Preheat before spraying to remove all moisture and provide expansion. Manufacturer's bulletin should be followed regarding substrates and material to be sprayed. Temperature control may be accomplished using temp stick or pyrometers.

3.1.5 Spraying. Spray the area to be coated using the gun to work distance recommended by the equipment manufacturer's for the material being sprayed. The direction of the metal spray should be as close to 90° as possible with the surface being coated and never less than 45°. The coating shall be allied in multiple passes. Complete area coverage must be made with each pass before the next pass is started. Spraying will continue until the coating thickness plus finishing allowance have been completed.

3.1.6 Remove Masking. Remove masking material.

6.1.7 Sealing Sprayed Coatings. All flame sprayed parts should be sealed unless intended as a bearing surface or as otherwise specified by engineering. Only quality commercial sealers shall be used. The type of sealer used depends on the type of environment parts will be subjected to.

6.1.8 Finish Machining and Grinding. Remove the overspray and flash spray material buildup to prevent cracks from extending into main coating immediately after spraying. Finish machine or grind in accordance with MIL-STD-868 and/or updated manufacturer's bulletins to the dimension specified or as shown on the blueprint.

6.2 Quality Control.

6.2.1 Workmanship. The sprayed coating shall present a uniform appearance with a fine-to-medium granular finish. Surface defects of the coating shall be limited to shall nodules not to exceed 0.045 in diameter and shall not exceed 0.025 in above the surrounding sprayed surface. The following shall be cause for rejection:

a. Blisters
b. Cracks
c. Chips or loosely adhering particles
d. Oil or other internal contaminants that bleed out through the finished coating.
e. Pits that expose the undercoating or base metal.
f. Chips, cracks or tears of the coating after final machining.

6.2.2 Testing. The most reliable test for any flame-sprayed coating is satisfactory performance in service and/or simulated service testing. Whenever service testing cannot be performed, the following tests shall be used as methods of controlling the quality of the flame-spray coatings.

6.2.2.1 Test for Bond Tensile Strength. From the same material as the production item was made, make the two specimens shown in figure 1. Drill and tap on one end of each specimen approximately 1.2 inch deep and thread 3.8 inch, either 18 or 24 threads per inch. The tapped hole must be centered,, and parallel with the specimen axis; flat-faced ends must be surface ground perpendicular to the axis. Blast the flat face and evenly apply 0.018 inch or more of the coating material to one specimen (see figure 1). After surface grinding or hand sanding the coated specimen flat within two mils, cement the coated specimen to the plain specimen with epoxy adhesive and oven-cure. Assemble the threaded pull rods and pull the specimens apart on an accurate tension tester. The minimum strength standard shall be established by the applicable engineering department for each application.

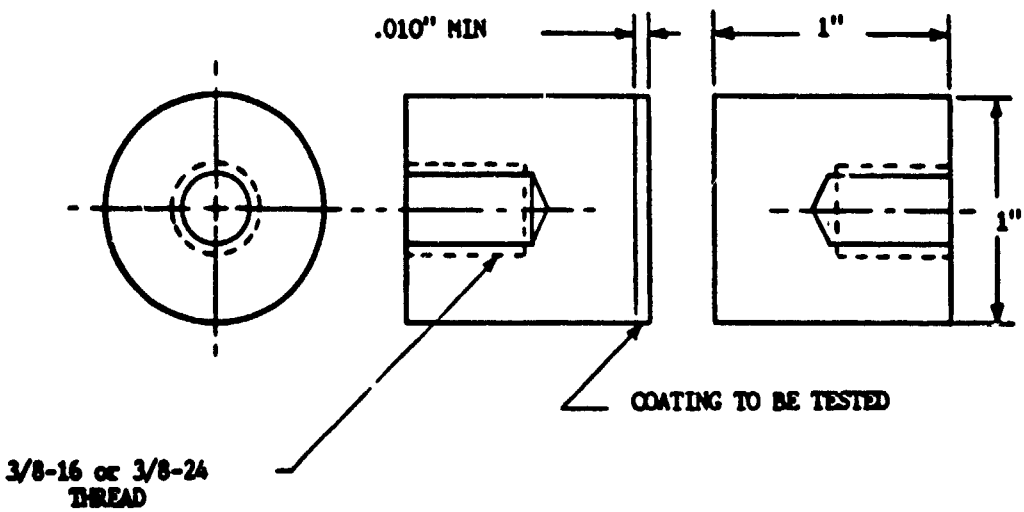


FIGURE 1. TENSILE BOND TEST SPECIMENS

6.2.2.2 Hardness Test. The hardness test is performed on a Rockwell hardness tester using the A, B, or D scales. The prepared test samples (2" x 3" x .065") must have the following minimum coating thickness:

A Scale - 0.030 inch
B Scale - 0.050 inch
D Scale - 0.045 inch

Coatings should have at least 100 micro-inch finish when using the Rockwell A, B, or D scales. Hardness values of the coating materials shall be specified by the applicable engineering department.

6.2.2.3 Metallographic Examination. Representative test panels approximately 3 x 2 x 0.050 inches shall be coated on one side to the same thickness as the production item. Metallographic examination of the coating shall show the constituents to be uniformly distributed and free from cracks, massive porosity, included material and excess oxides. The coating-substrate interface shall also be free from contamination. Frequency of this test shall be determined by the applicable engineering department. Porosity and oxide limits shall also be specified by the applicable engineering department.

6.2.3 Certification of Operators. Each operator must be trained and certified. A hardness test along with a bond strength test is required in accordance with local directives prior to being permitted to spray production parts.

6.2.4 Qualification of Operators. Operators performing work under this standard shall be certified as qualified operators by the Quality Control department. Certification shall be conferred on trained operators who successfully demonstrate a knowledge of the process and their ability to produce satisfactory coatings per this standard.

6. NOTES (Not Applicable)

Custodian:
Air Force - 99

Preparing Activity:
Air Force - 76

Project No. MFFP-F408

ENGINEERING SUPPORT FOR WELDING

PAT COFFEY THE FOREMAN INFORMED ME THAT

1. THE ENGINEERS DO NOT SUPPLY ENOUGH INFORMATION ON THE BLUE PRINTS! WE END UP SPENDING EXCESSIVE AMOUNT OF TIME FIGURING OUT INFORMATION THAT THEY SHOULD SUPPLY.

2. WHEN QUESTIONS ARE ASKED OR THEIR PRESENCES IS REQUESTED WE WAIT FOR DAYS FOR THEIR RESPONCE.

3 THE ENGINEERS WILL NOT GIVE THE SHOP PERSONAL CREDIT FOR THEIR VAST WORKING KNOWLEDGE THAT WE HAVE.

NOTE

I FEEL THAT YOU NEED A ENGINEER'S OFFICE MOVED DOWN TO THE FLOOR TO WORK WITH THIS PEOPLE. THIS WOULD HOPEFULLY OPEN UP A GOOD LINE OF COMMUNICATION BETWEEN THE 2 DEPARTMENTS (RCC'S) THEY WILL ALSO GET A BETTER FEEL FOR THE SKILL LEVEL AND KNOWLEDGE OF EACH OTHER.

I ALSO FEEL THAT THE RESPONCE TIME SHOULD BE WITH IN 24 HR. AT MAX.

WELDING

STAFFING

PAT STATED THAT THEY WERE UNDER STAFFED WITH THE WORK LOAD WHICH IS COMMING IN HE NEEDS BETWEEN 8 TO 10 MORE WELDERS. TO KEEP UP WITH IT. ALSO TWO (2) EQUAL FOREMAN WS-10's TO MANAGE THE CREW'S.

TRAINING

THE GOVERMENT HAS A DEAL WORKED OUT WITH DAVIS COUNTY VOCATIONAL CENTER WHERE THEY WILL TEACH PATS NEW PEOPLE ARC, TIG AND MIG WELDING. THIS IS ADEQUATE FOR NEW WELDERS. WHEN THEY HAVE COMPLETED THIS WE TRAIN THEM TO OUR SYSTEM.

I WOULD LIKE TO BE ABLE TO SEND MY JOURNEYMEN WELDERS (GRADE 10 AND ABOVE) BACK TO LINCOLN FOR ADVANCE TRAINING AND TO KEEP UP WITH THE NEW PROCESSES.

WE NEED MORE TRAINING ON DIMENSIONING TOLERANCING AND BLUE PRINT READING. WE ALSO NEED MORE AND BETTER TRAINING ON THE CNC PLASMA CUTTING MACHINE.

NOTE

PAT IS ONE OF THE TWO PEOPLE WHO IS QUALIFIED TO OPERATE THIS PIECE OF EQUIPMENT. AS SOPHISTICATED AS THIS PIECE OF EQUIPMENT IS YOU REALLY NEED QUALIFIED PEOPE TO OPERATE IT.

PAT FEEL THE REASON WHY EFFECTIVENESS IN DOWN IS.

1 MORAL

2 POOR ATTITUDE

(THE WORKED FOR A DICTATOR FOR THE LAST FOUR OR FIVE YEARS)

MORAL IS A VERY BIG PROBLEM.
PAT HELD A MEETING WITH HIS PEOPE TO SEE WHAT COULD BE DONE TO CHANGE THIS SITUATION.

1 THEY DISCUSED MORAL

2 QUALITY

3 ATTITUDE

4 SELF MOTIVATION

HOPEFULLY NEW MANAGEMENT CAN TURN THIS SHOP AROUND.

NOTE

I FEEL AS A PAST WELDER, THAT IF PAT IS GIVEN THE OPPORTUNITY HE CAN TURN THIS GROUP AROUND. ALL THE OPERATORS I MET SEEM TO TO LIKE AND RESPECT HIM. HE KNOWS THEIR PROBLEMS, HE HAS BEEN WORKING IN THIS AREA AS A WELDER FOR MANY YEARS. HE HAS ALL READY ADDRESSED PART OF THEIR PROBLEMS IN THE SPECIAL MEETING HE CALLED. I WOULD STRONGLY SUGGEST THAT HE IS GIVEN THE CHANCE TO TRY AND TURN THIS UNIT AROUND. IF HE CAN YOU WILL HAVE A VERY GOOD WELDING SHOP!

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS OGDEN AIR LOGISTICS CENTER (AFLC)
HILL AIR FORCE BASE, UTAH 84056

REPLY TO ATTN OF: MAW

AUG 2 1988

SUBJECT: FY89 Approved Resource Control Center (RCC) Rates

TO: MAB MAK MAN MAQ MAR MAS

1. The attached list of FY89 RCC rates has been approved by Headquarters AFLC/MAJ and will be used in the G004L system for pricing all temporary work orders.

2. These rates may be used in estimating the cost of new requirements. An actual bill of material (BOM) may be used for direct expense material instead of the rate; this will provide more equitable pricing. Other direct costs for temporary travel duty (TDY) will have to be added to obtain the total cost.

3. Any questions relating to these rates should be directed to Mrs Daphne Gale, MAWFB, extension 72452/3.

THOMAS H. BROWNING
Dep Ch, Resources Management Division
Directorate of Maintenance

1 Atch
FY89 RCC Rates

UNITED STATES AIR FORCE

SEPTEMBER 18, 1947

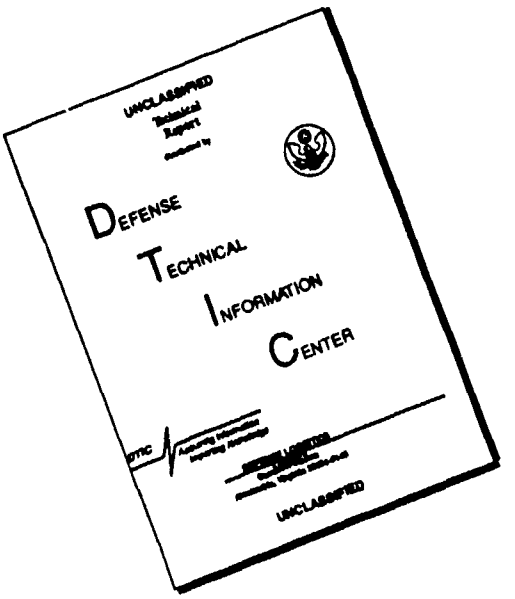
FY89 APPROVED RATES

RCC	DIRECT LABOR	OPER OVHD	GEN & ADMIN	TOTAL BASE RT	DIR MATRL	TOTAL RATE
MBPAA	$18.93	$12.69	$8.32	$39.94	$10.88	$50.82
MBPAB	$18.78	$13.05	$8.32	$40.15	$11.18	$51.33
MBPAC	$18.97	$12.88	$8.32	$40.17	$11.79	$51.96
MBPAE	$19.51	$12.46	$8.32	$40.29	$0.00	$40.29
MBPAH	$18.93	$13.03	$8.32	$40.28	$14.81	$55.09
MBPAS	$19.11	$13.12	$8.32	$40.55	$0.00	$40.55
MBPBC	$18.05	$13.50	$8.32	$39.87	$3.80	$43.67
MBPDA	$20.75	$14.96	$8.30	$44.01	$1.79	$45.80
MBPDB	$21.40	$16.90	$8.30	$46.60	$1.39	$47.99
MBPDC	$20.82	$10.99	$8.00	$39.81	$1.33	$41.14
MBPMA	$0.00	$5.07	$5.29	$10.36	$5.31	$15.67
MBPMB	$0.00	$8.28	$8.32	$16.60	$5.92	$22.52
MBPMC	$0.00	$22.97	$9.94	$32.91	$0.00	$32.91
MBPSA	$17.43	$10.48	$7.86	$35.77	$0.00	$35.77
MBPSB	$16.64	$11.16	$8.14	$35.94	$0.00	$35.94
MBPSC	$18.47	$10.70	$8.14	$37.31	$0.00	$37.31
MBPSD	$19.97	$14.60	$7.86	$42.43	$0.00	$42.43
MBPSE	$18.18	$18.00	$7.93	$44.11	$0.00	$44.11
MBPSK	$17.16	$10.64	$7.93	$35.73	$0.00	$35.73
MBPSM	$16.99	$10.50	$7.93	$35.42	$0.00	$35.42
MBPSP	$20.43	$10.96	$7.93	$39.32	$0.00	$39.32
MBPSS	$17.99	$11.21	$7.93	$37.13	$0.00	$37.13
MKLAA	$19.73	$11.17	$8.24	$39.14	$2.91	$42.05
MKLBB	$19.26	$27.71	$8.24	$55.21	$0.00	$55.21
MKLCC	$20.65	$9.65	$8.24	$38.54	$3.63	$42.17
MKLDD	$19.38	$47.26	$8.23	$74.87	$0.00	$74.87
MKLEE	$19.59	$12.42	$8.24	$40.25	$6.06	$46.31
MKLFF	$18.90	$15.18	$8.24	$42.32	$8.25	$50.57
MKLGG	$20.49	$26.70	$8.24	$55.43	$0.00	$55.43
MKPAA	$19.20	$20.28	$8.23	$47.71	$2.11	$49.82
MKPAC	$19.30	$21.03	$8.32	$48.65	$8.05	$56.70
MKPCA	$18.85	$28.60	$8.30	$55.75	$13.51	$69.26
MKPCD	$20.40	$48.25	$8.28	$76.93	$10.51	$87.44
MKPCF	$18.81	$26.05	$8.27	$53.13	$18.91	$72.04
MKPDA	$2.16	$7.10	$8.22	$17.48	$3.00	$20.48
MKPDB	$19.44	$5.50	$8.15	$33.09	$0.00	$33.09
MKPEA	$19.00	$12.84	$8.24	$40.08	$10.81	$50.89
MKPEB	$18.60	$12.40	$8.24	$39.24	$3.86	$43.10
MKPGB	$20.91	$6.98	$8.08	$35.97	$0.09	$36.06
MKPIA	$19.63	$26.12	$8.31	$54.06	$9.08	$63.14
MKPIB	$18.84	$13.76	$8.31	$40.91	$26.82	$67.73
MKPIC	$19.79	$10.91	$8.23	$38.93	$6.87	$45.80
MKPKA	$19.40	$43.39	$8.31	$71.10	$17.36	$88.46
MKPKB	$19.79	$10.91	$8.23	$38.93	$6.87	$45.80
MKPKE	$21.01	$38.43	$8.29	$67.73	$19.18	$86.91

MKPNC	$19.40	$43.39	$8.31	$71.10	$17.36	$88.46
MKPND	$20.06	$13.03	$8.32	$41.41	$9.83	$51.24
MKPNE	$19.49	$12.06	$8.31	$39.86	$25.70	$65.56
MKPNN	$20.23	$16.82	$8.23	$45.28	$27.77	$73.05
MKPPP	$20.06	$30.41	$13.24	$63.71	$0.00	$63.71
MKPRA	$19.49	$12.06	$11.57	$43.12	$31.50	$74.62
MKPRF	$17.30	$11.74	$8.32	$37.36	$9.49	$46.85
MKPRS	$20.23	$16.82	$8.24	$45.29	$8.50	$53.79
MKPRW	$19.24	$15.10	$7.88	$42.22	$21.00	$63.22
MKPWA	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWB	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWC	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWD	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWE	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MKPWF	$17.54	$24.70	$8.03	$50.27	$0.00	$50.27
MNPBA	$19.25	$17.07	$8.43	$44.75	$15.99	$60.74
MNPBB	$18.58	$14.52	$8.43	$41.53	$19.84	$61.37
MNPCB	$17.59	$17.13	$8.22	$42.94	$29.74	$72.68
MNPCD	$18.38	$14.36	$8.31	$41.05	$9.40	$50.45
MNPCK	$17.76	$16.14	$8.29	$42.19	$13.82	$56.01
MNPCL	$17.76	$15.44	$8.25	$41.45	$38.25	$79.70
MNPCR	$18.01	$18.71	$8.33	$45.05	$3.22	$48.27
MNPCT	$18.23	$15.84	$8.39	$42.46	$14.35	$56.81
MNPGN	$18.51	$16.09	$8.37	$42.97	$0.00	$42.97
MNPGP	$18.53	$16.04	$8.35	$42.92	$0.37	$43.29
MNPGW	$16.90	$22.07	$8.36	$47.33	$0.00	$47.33
MNPME	$19.69	$18.11	$8.29	$46.09	$2.29	$48.38
MNPMG	$21.50	$25.48	$8.19	$55.17	$3.53	$58.70
MNPMK	$19.55	$16.31	$8.36	$44.22	$0.00	$44.22
MNPMN	$18.74	$21.05	$8.41	$48.20	$5.56	$53.76
MNPNA	$18.51	$16.09	$8.37	$42.97	$0.00	$42.97
MNPRA	$17.82	$16.67	$8.28	$42.77	$0.00	$42.77
MNPRB	$18.50	$22.46	$8.26	$49.22	$0.00	$49.22
MNPRC	$17.97	$22.43	$8.24	$48.64	$0.35	$48.99
MNPSA	$17.79	$21.23	$8.42	$47.44	$10.54	$57.98
MNPSE	$17.90	$16.46	$8.43	$42.79	$20.16	$62.95
MNPSQ	$17.65	$15.23	$8.34	$41.22	$10.35	$51.57
MNPWA	$19.59	$14.51	$8.39	$42.49	$0.17	$42.66
MNPWB	$23.11	$19.26	$9.63	$52.00	$0.00	$52.00
MNPWE	$18.43	$15.75	$8.07	$42.25	$8.09	$50.34
MNPWW	$19.13	$16.69	$8.23	$44.05	$3.41	$47.46
MQCCC	$22.36	$14.62	$8.14	$45.12	$0.00	$45.12
MQCMM	$22.31	$21.57	$8.14	$52.02	$0.00	$52.02
MQQVC	$20.72	$11.91	$7.95	$40.58	$0.00	$40.58
MRAEC	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEE	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEH	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23
MRAEN	$28.32	$22.97	$9.94	$61.23	$0.00	$61.23

MSAAA	$22.41	$11.12	$8.20	$41.73	$0.52	$42.25
MSABB	$23.89	$10.60	$8.20	$42.69	$1.38	$44.07
MSACC	$23.06	$9.96	$8.20	$41.22	$0.00	$41.22
MSADD	$22.44	$10.79	$8.20	$41.43	$1.60	$43.03
MSFAA	$21.36	$12.29	$8.44	$42.09	$0.00	$42.09
MSFBB	$17.95	$11.34	$8.44	$37.73	$0.00	$37.73
MSFCC	$23.03	$11.06	$8.19	$42.28	$0.00	$42.28
MSFDD	$23.03	$11.06	$8.19	$42.28	$0.00	$42.28
MSFEE	$21.36	$12.29	$8.44	$42.09	$0.00	$42.09
MSMAA	$21.69	$12.29	$8.20	$42.18	$1.29	$43.47
MSMBB	$22.44	$10.79	$8.20	$41.43	$1.60	$43.03
MSMCC	$23.03	$11.06	$8.19	$42.28	$0.00	$42.28

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