

APPENDIX A

AMTEC Duties and Tasks from Original Turbo-DACUM Session

A		MECHANICAL EQUIPMENT
	1	Troubleshoot/repair/replace brakes & clutches (electromechanical and mechanical)
	2	Troubleshoot/repair/replace gears
	3	Troubleshoot/replace belts, sheaves/pulley
	4	Troubleshoot/maintain chains and sprockets
	5	Troubleshoot/repair/replace cams
	6	Troubleshoot/repair/replace seals and o-rings
	7	Troubleshoot/repair/replace bearings and bushings
	8	Troubleshoot/repair/replace shafts
	9	Perform alignment and balancing
	10	Troubleshoot/repair/replace motors (AC and DC)
	11	Maintain couplings
	12	Maintain fans
	13	Install/maintain valves (cut-off, pressure relief...)
B		PNEUMATIC/HYDRAULIC EQUIPMENT
	14	Troubleshoot/repair/replace pneumatic/hydraulic valves
	15	Troubleshoot/repair/replace cylinders and intensifiers
	16	Troubleshoot/repair/replace hoses and tubing
	17	Adjust pressures and flows mechanically and electronically
	18	Maintain fluid levels for hydraulic systems
	19	Replace filters on hydraulic/pneumatic systems
	20	Troubleshoot/repair/replace gauges
	21	Troubleshoot/repair/replace pneumatic/hydraulic pumps
	22	Troubleshoot/replace accumulators
	23	Troubleshoot/repair/replace air motors
	24	Maintain vacuum system on pneumatic equipment
	25	Maintain filtration systems
	26	Adjust switches and controls on hydraulic/pneumatic system
	27	Install/design hydraulic/pneumatic components to upgrade/enhance systems
C.		STEAM SYSTEM
	28	Maintain steam traps
	29	Maintain steam regulators
	30	Maintain heat exchanger
	31	Maintain pipe insulation systems

D.		PREDICTIVE/CORRECTIVE MAINTENANCE
	32	Perform route-based vibration analysis
	33	Collect oil samples for analysis
	34	Interpret and take action on oil analysis
	35	Perform alignment (laser system)
	36	Perform balancing
	37	Perform online motor current analysis
	38	Perform off-line motor current analysis
	39	Perform infrared thermography
	40	Perform ultrasonic maintenance
E		BLUEPRINT READING/SCHEMATICS
	41	Interpret mechanical drawings
	42	Interpret pneumatic and hydraulic drawings
	43	Interpret electrical schematics
	44	Interpret piping and instrumentation diagram (P&ID)
	45	Operate basic drafting software (AutoCAD or Visio)
F		EQUIPMENT CONTROLS AND SENSORS
	46	Troubleshoot/replace/install circuit boards
	47	Install/maintain/troubleshoot photo eyes
	48	Install/maintain/troubleshoot servo motors
	49	Install/maintain/troubleshoot VFD drives (Variable Frequency Drive)
	50	Install/maintain/troubleshoot limit and proximity switches
	51	Troubleshoot/calibrate/adjust and replace sensors and input devices
	52	Calibrate process control loop (PID)
	53	Troubleshoot/replace transducers
G		ELECTRICAL EQUIPMENT
	54	Install/replace wire
	55	Install/maintain solenoid valve
	56	Install/maintain relays
	57	Install/repair/replace motor starters
	58	Install/replace fuses and circuit breakers
	59	Operate electrical/electronic test equipment
H		ELECTRONIC EQUIPMENT
	60	Maintain/install fiber optics
	61	Troubleshoot/repair/replace vision systems
	62	Install/maintain/troubleshoot bar code readers
	63	Troubleshoot/maintain (single rail transport) SRT monorail
	64	Maintain and calibrate quality touch center system (MARPOS)
I		NETWORKING
	65	Use DeviceNet protocol
	66	Use Data Highway protocol
	67	Use TCP/IP protocol
	68	Use ControlNet protocol (Allen Bradley)
	69	Use FL net protocol
J		PLC EQUIPMENT
	70	Create/modify/monitor PLC programs
	71	Program/maintain operator interface software
	72	Troubleshoot communication systems in PLC
	73	Replace PLC processor
	74	Perform backups of PLC software programs
	75	Install/maintain PCL hardware
	76	Edit/Program PLC
	77	Program/maintain operator interface software
K.		MAINTAIN NC/CNC EQUIPMENT

	78	Setup CNC equipment
	79	Troubleshoot tooling/quality problem
	80	Modify programming language
	81	Replace components on NC/CNC equipment
	82	Modify system parameters
L.		ROBOTS
	83	Install/Maintain robot systems
	84	Program/edit robot software
M		RESISTANCE WELDING
	85	Perform visual inspection of resistance welding equipment operation
	86	Align components in resistance welding equipment
	87	Repair/replace failed components in resistance welding equipment
	88	Maintain and troubleshoot gun servos
	89	Perform parameter adjustments (weld conditions) on resistance and stud welding
	90	Troubleshoot/repair/replace location pins and datum surfaces
	91	Maintain cooling system in resistance welding equipment
	92	Perform resistance checks (resistance of cable and condition of insulators)
N		ROBOTIC GMAW WELDING
	93	Perform visual inspection of Robotic-GMAW welding equipment operation
	94	Replace weld controller in Auto-mig welding equipment
	95	Maintain torch/brazing equipment
	96	Maintain welding gas regulating systems
O		FABRICATE
	97	Perform pipefitting tasks
	98	Operate machining equipment
	99	Operate welding equipment for fabrication
P		COMPUTER LITERACY
	100	Use operating systems
	101	Use computer software
	102	Use Maintenance Database System (LMS, MAXIMO, PeopleSoft, etc.)
	103	Use Internet and Intranet
	104	Use laptop for troubleshooting and installation
	105	Perform computer/workstation hardware repair or installations
Q		PREVENTATIVE MAINTENANCE
	106	Perform general housekeeping
	107	Perform visual inspection of equipment
	108	Change filters
	109	Maintain oil and grease levels
	110	Perform equipment checks
	111	Monitor floor management development system (FMDS)
R		DUST AND MIST COLLECTORS
	112	Maintain dust collector (dry and wet filter systems)
	113	Maintain mist collector
S		UTILITIES
	114	Maintain boilers, deaerators and condensate return system
	115	Troubleshoot/maintain reverse osmosis [RO] system
	116	Troubleshoot waste water, pH and sewer systems
	117	Troubleshoot/maintain cooling tower
	118	Troubleshoot/maintain air compressors
	119	Perform inspection of fire and sprinkler system
	120	Maintain HVAC system
	121	Maintain evaporative cooler system

	122	Maintain lighting (including emergency)
	123	Maintain/repair vents and exhaust system
	124	Maintain/repair security/gate access system
	125	Maintain communication system
	126	Perform electronic board repair
	127	Maintain production functional inspection equipment
	128	Maintain buildings and grounds
	129	Maintain plant water supply system (potable and non-potable)
	130	Maintain production bulk supply tank farm
	131	Maintain plant environmental control system
T		POWER DISTRIBUTION
	132	Maintain/repair switch gear
	133	Maintain/repair emergency generating equipment
	134	Maintain ground fault detection systems
	135	Repair/replace overhead buss systems
	136	Maintain/repair capacitors
	137	Install/maintain/troubleshoot transformers
	138	Install/maintain/troubleshoot fuses and breakers
U		SPECIALIZED MACHINERY
	139	Operate hoist and cranes
	140	Perform rigging
	141	Operate mobile equipment
V		METROLOGY
	142	Operate precision measuring equipment (digital, dial, manual, Metric and SAE)
	143	Determine panel quality (end quality)
	144	Maintain specialty tools and equipment
W		SAFETY AND DOCUMENTATION
	145	Demonstrate knowledge of basic safety principles
	146	Maintain inventory for parts supply
	147	Perform pre-shift inspections
X		LASER ETCHER
	148	Perform startup and shut down
	149	Troubleshoot Marking Problems
	150	Change laser bulb
	151	Perform Laser Etcher PM
Y		AUTOMATIC WELDER
	152	Maintain/troubleshoot power supply
	153	Perform PM's
	154	Set power supply parameters
	155	Adjust frequency and other parameters
	156	Troubleshoot electrodes and torch body problems
	157	Maintain robotic/cam rotation parameters
	158	Maintain cooling and quenching systems
Z		SPECIALIZED EQUIPMENT
	159	Troubleshoot and maintain induction heating systems
	160	Maintain induction hardeners
	161	Maintain electro-chemical deburring machine
	162	Maintain impregnation machine
	163	Maintain chip centrifuge units
	164	Maintain Andon system
	165	Maintain crank fillet rolling machine
	166	Maintain laser welders
	167	Maintain double blank analyzers in stamping

	168	Maintain laser skin measuring machine in plastics
	169	Maintain helium leak detector system
	170	Maintain gas mixing equipment for GMAW welding