

DACUM Research Chart for Building Maintenance Technician*

DACUM Panel

Arbary Bables
Building Maintenance Manager,
2nd Shift

Jerry D. Brown
Building Maintenance Tech B –
Welding

David Farney
Senior Building Maintenance
Manager

Steven R. Fleming
Building Maintenance Tech A –
Sheet Metal

Kenny Gadbury
Engineer – Power Plant

Dennis Simmon
Building Maintenance Tech –
HVAC/R

Clint Whaley
Team Leader – Millwright

Mike Yockey
Building Maintenance Tech A –
Plumber

DACUM Facilitators

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Qualifying Statement

* This DACUM job analysis accurately reflects the six duties and the many tasks that were identified by the six crafts presented as common to the job of Building Maintenance Technician at Spirit AeroSystems, Inc. However, it reflects only a representative sample of the specific technical tasks that are performed by the six craftsmen represented. The Crafts represented on this July 25-26, 2006 panel were as follows: HVAC/R, Millwright, Plumbing, Power Plant, Sheet Metal and Welding.

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Duties		Tasks				
A	Assess Day's Building Maintenance Work Load	A-1 Review tie-ins (e.g., verbal, written & e-mail)	A-2 Check reactive work request	A-3 Consult planned work schedule	A-4 Check automated systems for alarms	A-5 Review outstanding work orders
B	Assess Building Maintenance Resource Requirements	B-1 Verify parts and materials availability	B-2 Verify equipment and tools availability	B-3 Verify number and availability of qualified crafts, people needed (e.g., regulatory, certified)		B-4 Evaluate whether advanced permits required
C	Coordinate Building Maintenance Work Activities	C-1 Negotiate customer window of opportunity	C-2 Obtain security access to job site	C-3 Notify required craftsmen of job start	C-4 Obtain parts and materials needed	C-5 Obtain tools and equipment needed
D	Perform HVAC/R Tasks	D-1 Maintain air moving equipment	D-2 Maintain control system hardware (e.g., pneumatic, electrical, electronic)		D-3 Diagnose basic refrigeration system operation	D-4 Repair basic refrigeration systems
		D-11 Maintain advanced HVAC/R electrical components (e.g., starters)		D-12 Maintain complex refine systems (e.g., cascade, test chamber, air dryer)		D-13 Rebuild large tonnage chillers (centrifugal crew)
E	Perform Millwright Tasks	E-1 Assemble ergonomic shop aids	E-2 Assemble manufacturing machinery	E-3 Direct crane operation (with hand signals)	E-4 Secure overhead load rigging	E-5 Layout machine foundation
		E-13 Perform mobile crane lifts	E-14 Deliver craftsman lifts			
F	Perform Plumbing Tasks	F-1 Install plumbing systems (e.g., water, air, gas, steam, SWV, chemical, fire protection)		F-2 Repair plumbing system (e.g., water, air)	F-3 Maintain gas fired manufacturing equipment (e.g., furnaces, oven, salt bath and autoclave)	
		F-10 Fabricate manufacturing process, machine, and production line hoses		F-11 Maintain lawn irrigation systems	F-12 Maintain open loop degreaser	F-13 Maintain closed loop degreaser
G	Perform Power Plant (Boiler House) Tasks	G-1 Monitor (operate) plant air compressors	G-2 Monitor (operate) air compressors	G-3 Monitor (operate) boilers (e.g., hot water, steam, fire tube)		G-4 Monitor (operate) cooling towers
		G-11 Maintain boilers	G-12 Maintain cooling towers	G-13 Maintain natural gas system	G-14 Maintain water treatment system (e.g., hot water, steam, chilled)	
H	Perform Sheet Metal (Tinner) Tasks	H-1 Repair collector duct work (e.g., dust collector, chip collector, silos)		H-2 Repair HVAC air duct (e.g., HVAC, exhaust, fume)	H-3 Repair roof assemblies (e.g., HVAC, exhaust, fume)	

A-6 Check with team leader for work assignments	A-7 Check weather for impact on job assignments	A-8 Respond to management's priorities	A-9 Respond to maintenance emergencies (e.g., phone, radio, walk-ins)		A-10 Prioritize work requests	
B-5 Evaluate window of opportunity (impact on production)		B-6 Evaluate security access needs				
C-6 Obtain on-site permits needed	C-7 Generate follow-up work order or tie-in	C-8 Provide equipment, vendors and contractor maintenance support				
D-5 Repair basic electrical system (as related to HVAC equipment)		D-6 Maintain small gas fire heaters	D-7 Handle HVAC/R refrigerants	D-8 Maintain liquid chillers	D-9 Maintain large gas fired heaters	D-10 Diagnose system problems via automated controls
D-14 Maintain computer room cooling system	D-15 Maintain production equipment cooling system	D-16 Correct indoor air quality issues	D-17 Perform air and water balance	D-18 Maintain HVAC/R automated control network		
E-6 Perform precision machine levelins	E-7 Assemble material handling equipment	E-8 Assemble low value assets (louvers, shelving)	E-9 Install ergonomic shop aids	E-10 Install anchoring systems	E-11 Excavate for underground systems work	E-12 Relocate equipment and materials
F-4 Maintain desiccant air dryers	F-5 Maintain refrigerated air dryers	F-6 Maintain breathing air equipment	F-7 Maintain facility restrooms fixtures (e.g., water coolers, faucets, fish valves)		F-8 Maintain backflow preventers	F-9 Maintain recovery wells
F-14 Maintain process tank lines	F-15 Repair manufacturing equipment	F-16 Handle hazardous materials	F-17 Dispose of hazardous materials			
G-5 Monitor (operate) natural gas delivery systems	G-6 Monitor (operate) nitrogen systems	G-7 Monitor (operate) domestic water systems	G-8 Monitor (operate) gas fire stokers	G-9 Maintain plant compressors (e.g., centrifugal, reciprocating, screw)		G-10 Maintain control air compressors
G-15 Maintain plant air distribution system	G-16 Maintain steam and return distribution system		G-17 Maintain cooling tower main distribution system	G-18 Maintain main nitrogen distribution system		
H-4 Install roof assemblies	H-5 Install HVAC air ducts	H-6 Install collector duct work	H-7 Repair building siding	H-8 Install building siding	H-9 Repair rain gutters and downspouts	H-10 Install rain gutters and downspouts

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Duties		Tasks							
H	Perform Sheet Metal (Tinner) Tasks (cont.)	H-11 Repair equipment troughs	H-12 Install equipment troughs	H-13 Fabricate equipment guarding	H-14 Repair equipment guarding	H-15 Fabricate patters & templates (e.g., painters, welders)			
		H-16 Fabricate shop aids (e.g., tool boxes, cabinets and ergonomic devices)							
I	Perform Welding Tasks	I-1 Perform flame harding to metals	I-2 Fabricate piping systems (e.g., gas lines, steam lines, chemical lines)		I-3 Repair piping systems	I-4 Repair pressure vessels	I-5 Repair heat exchanges and coils		
		I-6 Fabricate chemical tanks	I-7 Repair chemical tanks	I-8 Fabricate work platforms (e.g., walking surface)		I-9 Repair metal building structures (e.g., interior, exterior, cranes)		I-10 Fabricate lifting baskets	
		I-11 Repair lifting baskets		I-12 Repair rolling stock (e.g., A-frames, flats, dollies)		I-13 Build rolling stock (e.g., A-frames, flats, dollies)		I-14 Repair production equipment	
		I-15 Manufacture metal guarding		I-16 Construct shop job aids and jigs (templates)		I-17 Modify metal structures		I-18 Fabricate vacuum hoses	
		J-1 Coordinate task completing with all crafts		J-2 Remove lockout/tag out devices		J-3 Remove temporary safety devices		J-4 Restore power or stored energy to equipment	
J	Restore Building & Equipment System Operation	J-6 Notify security confined space entry is complete		J-7 Clean up work area	J-8 Verify job completion with customer		J-9 Notify facilities management that job is complete		J-10 Return borrowed equipment
		K-1 Turn in completed lockout/tag out forms		K-2 Turn in completed confined space forms		K-3 Document man hours used		K-4 Verify receipt of orders materials	
K	Perform Administrative Tasks	K-6 Complete work order in CMMS system		K-7 Order depleted shop supplies		K-8 Complete regulatory reporting			
		L-1 Attend continuing education courses (e.g., maintain licenses, certifications)			L-2 Participate in vendor training		L-3 Complete company-required certification for evaluation		
L	Continue Education and Training	L-4 Attend craft specific trade shows		L-5 Attend craft specific workshops		L-6 Complete company-required training (diversity, ethic)			

NOTE: Carpentry, Cement Finishing, Grounds Support, IWTP (Industrial Water Treatment Plant), Laborer, & Painting were not represented on the DACUM panel. Therefore, tasks for these are not represented on this chart.

General Knowledge and Skills

Basic math (Shop Math) Craft spec skills
Blueprint reading Compute geometric values
Basic computer skills Basic trigonometry
Read tape measure and ruler
Fiberglass repair, plastic welding (e.g. soldering)
Knowledge of national and local regulator codes
Knowledge of "craft" specific codes
Safety procedures and certifications (e.g., lockout/tag out, confined
 space, respirators, forklift operation, etc.)
Use of precision measuring equipment, hand tools, power tools, etc.
Communication (verbal, written, interpersonal)
Craft specific certification
Driver's license
Victaulic grooving technique (plumbing)
Operation and programming of applicable software (e.g. for safety -
 HAZWOPER Hazardous Waste Operation and Emergency Response)
 TOSCA, First Responder
Translate blueprints to working drawings
Knowledge of different metals and appropriate use
Training required for skill set prior to application
Understanding of chemicals

Worker Behaviors

Team player Open-minded
Positive attitude Flexible
Resourceful Willingness to
 Respectful change
Accommodating Outgoing
Honest Knowledgeable
Patient Punctual
Concern for customer Reliable
Ambitious Consistent
Self-starter Willingness to share
Motivated Loyal
Responsible Conscientious
Communicator Cost conscious
Sense of humor Teachable
Ethical

Tools, Equipment, Supplies and Materials

Leak detectors Scooters/vehicles
Lasers Power wash equipment
Pagers Man lifts
2-way radios Optic leveling devices
Shop phones
Mobile crane load charts
Manuals required by craft
Hand tools required by craft
Computers and related equipment
Shop equipment required by crafts
Confined space monitors
Code books (building, mechanical, plumbing)
Personal protective equipment
Resource materials (internet, manuals, blueprints)
Room/space to do the work
Power tools required by craft

Future Trends and Concerns

Outsourcing
Aging work force
Ever advancing technology
Lack of awareness and training re: advancing technology
Loss of skilled and knowledgeable workers and replacing them
Aging equipment
Aging building structure
Changing environmental laws and regulations
New, exotic chemicals
Communicating with a more diverse workforce
Ownership of company – potential for change in ownership
Job security
Company ability to stay competitive
Leadership and their direction (where will that take us?)

Acronyms

HVAC/R Heating, Ventilation, Air Conditioning, Refrigeration
BMT Building Maintenance Technician
CMMS Computerized Maintenance Management System
DWV Drain Waste & Vent
Leads Team Leader or another Building Maintenance Technician
NESHAP National Emissions Standards for Air Pollutants
POW Plan Of the scheduled Week
PPE Personal Protective Equipment
Window Production shut down time period