

DACUM Research Chart for Electronic Technician

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Duties		Tasks				
A	Coordinate Project Work	A-1 Review work orders	A-2 Prioritize work orders	A-3 Communicate with affected personnel	A-4 Coordinate project work schedule	A-5 Initiate required paperwork (e.g., permits, work orders)
		B-1 Determine parts and supplies	B-2 Determine test equipment needed	B-3 Determine safety requirements	B-4 Determine available personnel/skills needed	
B	Assess Project Needs	C-1 Run system check	C-2 Identify equipment/system malfunction	C-3 Check standard measurements	C-4 Document instrument readings and results	C-5 Maintain clean work environment
		D-1 Analyze system problem (e.g., electrical, electronic, software)		D-2 Identify problem(s) severity	D-3 Determine location of problem	D-4 Review system documentation
C	Perform Equipment/System Operational Check	D-11 Perform Mega Ohm-meter test	D-12 Perform current test	D-13 Interpret infra red picture	D-14 conduct cable test	D-15 Conduct GPS alignment test
		E-1 Review repair/replacement procedures	E-2 Review safety procedures for component replacement		E-3 Determine if remote access is possible (e.g., reset, self analysis, check parameters)	
D	Troubleshoot Electronic Systems	E-10 Test elect/electronic part cables	E-11 Modify original design system	E-12 Climb towers (e.g., microwave, wind, radio)	E-13 Test system operation	E-14 Document repair completion
		F-1 Perform visual check (e.g., building and equipment)	F-2 Perform system analysis	F-3 Perform voltage checks	F-4 Perform calibration checks	F-5 Monitor electronic/electrical circuits
E	Perform Electronic Repair	F-12 Lubricate bearings/slip rings	F-13 Check cooling and ventilation systems	F-14 Change air and oil filters	F-15 Perform emergency response test	F-16 Re torque system hardware
		F-23 Perform remote building site check	F-24 Measure motor circuits	F-25 Perform circuit isolation test	F-26 Measure power output (e.g., electrical, RF, optical)	
F	Perform Preventive Maintenance	G-1 Collect equipment technical data	G-2 Obtain equipment and supplies	G-3 Review equipment schematics (e.g., amplifier, power supplies/distribution system, transforms, logic circuits)		
		G-8 Install equipment cabling (e.g., communication and power)	G-9 Install equipment software	G-10 Provision equipment software	G-11 Establish voltage polarity	
G	Install Electronic Equipment					

D-5 Interpret system diagrams and schematics	D-6 Select test equipment	D-7 Perform multi-meter tests	D-8 Conduct computer tests (e.g., ping, band width, connectivity)		D-9 Perform oscilloscope test (e.g., wave forms)	D-10 Conduct conductivity test
D-16 Locate defective component(s)	D-17 Perform root cause analysis	D-18 Document troubleshooting findings				
E-4 Analyze component condition	E-5 Clean elect/electronic component	E-6 Repair elect/electronic component	E-7 Obtain correct component (e.g., version, generic)		E-8 Replace elect/electronic component	E-9 Fabricate cables (e.g., RF, fiber cap 5, coax, serial)
F-6 Perform network communication tests	F-7 Perform onsite communication tests	F-8 Perform alarm testing (e.g., environmental, security, critical safety, interlock)		F-9 Perform analog alignment	F-10 Install software updates	F-11 Clean system components (e.g., electrical, mechanical, electronics)
F-17 Monitor regulatory compliance (e.g., FCC, USDA, packers/stockers, OSHA, EPA)		F-18 Perform infrared analysis test	F-19 Perform oil analysis test	F-20 Conduct vibration analysis	F-21 Perform ultrasound analysis	F-22 Measure optical output readings
F-27 Perform decibel tests	F-28 Calculate insertion and line losses	F-29 Document preventive maintenance completion				
G-4 Follow safety standards (e.g., electrical, PPE, OSHA, NFPA)		G-5 Install equipment hardware (e.g., rack panels, cabinets)		G-6 Isolate equipment hardware (e.g., frames, racks, power)		G-7 Install grounding equipment
G-12 Install alarm system	G-13 Perform operational test (s)	G-14 Perform phone line hot cuts (non service effecting)		G-15 Install microwave paths		

Duties

Tasks

H Participate in Continuing Education

H-1 Attend seminars and workshops	H-2 Participate in in-house training	H-3 Participate in vendor training	H-4 Complete class classes (e.g., online, on campus)	H-5 Read professional literature
H-6 Maintain CPR certification	H-7 Maintain first aid certification	H-8 Complete RF radiation safety training	H-9 Complete lock out/tag out training	H-10 Complete blood born pathogen training
H-11 Complete security training	H-12 Complete hazmat/hazcom training	H-13 Complete emergency procedure training		H-14 Complete personal protective equipment training
H-15 Complete confined space training	H-16 Complete specialized equipment training		H-17 Complete fire extinguisher training	

General Knowledge and Skills

Time management
Soldering skills
Splicing skills
Meter reading
Computer literacy
Electrical safety
AC motors/generators (3 phase)
DC motors
Troubleshooting skills
Communication skills (writing, reading, telephone, interpersonal)
Electronic theory (AC/DC and digital, optical)
Technical interpretation skills
Cable fabrication skills
Pneumatics and hydraulics skills
Communications equipment

Prioritizing
Basic math skills
Analytical skills
Quality assurance
Fabrication skills
Component ID
Ladder logic
SLC/PLC systems
OSHA regulations
Electrical codes
Basic test equipment
Delta and Y wiring
Problem solving skills
Basic office equipment
Rigging skills
Grounding theory
Schematics reading

Worker Behaviors

Punctual
Self-motivated
Positive attitude
Trustworthy
Self-disciplined
Physically fit
Dependable
Knowledgeable
Articulate
Cooperative
Friendly
Careful
Obedient
Patient
Drug free

Open minded
Sense of humor
Responsible
Common sense
Leader
Good hygiene
Dedicated
Creative
Quick wit
Team player
Kind
Loyal
Analytical
Courteous

Acronyms

AC = Alternating Current
DC = Direct Current
RF = Radio Frequency (Energy)
GPS = Global Positioning System
FCC = Federal Communications Commission
PPE = Personal Protection Equipment
EPA = Environmental Protection Agency
TDR = Time Domain Reflectometer (copper)
PLC = Programmable Logic Controllers
SLC = Simple Logic Controllers

MCC = Motor Control Center
DACS = Digital Access Cross Connect System
ATM = Asynchronous Transfer Mode
OSHA = Occupational Safety & Health Association
NFPA = National Fire Protection Agency
USDA = United States Dept. of Agriculture
TMDE = Test, Measurement, Diagnostic, Equipment
POTS = Plain Old Telephone Service
OTDR = Optical Time Domain Reflectometer (fiber)

Tools, Equipment, Supplies and Materials

Test equipment
Basic hand tools
Safety equipment
Technical data
Communication equipment (e.g., cell phone, 2-way radio, fiber phone, test set)
Basic office supplies/equipment
Laser alignment tool kit
Label maker
Maps
Vehicle
Power converters
Forklifts
Bucket trucks
Computer
GPS receiver
Chemicals/lubricants
Spare parts
Ultrasonic gun
Soldering iron
Fiber locator
Alkitronics gun
Cables
Cable locator

Mechanical Equipment

PLC and SLC
Transformers
Power supply
575/480 3-phase
Motors/AC generators
Contactors
Relays
Electrical safety circuits
Proxy sensors
MCC construction
Ground fields/grid

Communication Equipment

Fiber optic equipment
Special circuit carrier
Microwave radio
Multiplexers
Switches
Powerbase/rectifiers
DACS
Jack Fields
Routers
ATM
Ground fields/grid
Patch panels
POTS carrier

Mechanical Tests

Motor circuit analyzer
Mobile anemometer
Vibration analysis
Flow rate meter
Chart recorders
Decibel meter
Oil analyzer

Communication Tests

OTDR
Fiber fusion set
TDR
Optic power meter
Laser source
T-bead
Frequency meters
Fiber identifier
Twatcher
Photodyne
Spectrum analyzer

Future Trends and Concerns

Advances in technology
Keeping employee skills up-to-date
Voice over I.P (Interact Protocol)
Fiber to the Homes/Businesses (FTTH/FTTB)
Video from telephone companies
Optical radios
Expanding cellular communications
High speed internet
Increase band width

Robotics electro mechanics
Converged networking
Telecommuting
Satellite communications
Alternate energy sources
Green energy expanding (e.g., solar, wind)
Wireless technology advances
Biomedical electronic devices
Shortage of trained workforce