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**Job Description**

The *Communications Technician* tests new telecommunications equipment before it is installed into the system, connects new customers to the telecommunications system based on the documentation provided, maintains service to customers by troubleshooting interruptions in service, identifying problems, and replacing or reconnecting components, as needed. The technician must be able to use test equipment, to use tools with connecting wires, to obtain information and provide information using the computer, and to read technical manuals and schematic drawings.

**CONCEPT: Ohm's Law**

Okay, I'll go back like to some of our fundamentals of basic electronics, Ohm's Law and things like that. They really come into play even though you're using it and not knowing it. The reason for that I'm saying is because we do what we call cross-connects, and we use wire. So Ohm's Law comes into play.

Okay, resistance--in our environment--we do physical wiring cross-connects. We have to take resistance into consideration with what we call the gauge of a wire, the thickness. It's a certain gauge, so we can only go a certain distance with that wire to comply, to provide clearer communication. If we go any further than that, it's going to lose. The resistance is going to get higher and the transmission or the quality is going to get less-- unless some form of amplification is used. In our case we use amplifying repeaters, when doing cross connects, considering the length and gauge of wire used to do a cross-connect.

**CONCEPT: Electricity and electronics**

An understanding of basic electronics is necessary to comprehend how some facilities (telecommunications paths) are engineered.

We have to learn how to use our anti-static straps because we know that electricity from our fingers, our bodies, can short-circuit a circuit pack and when we're talking about circuit packs, we're talking about thousands of dollars worth of equipment there --so you're talking understanding static electricity.

You've got to have certain voltages, five volts from a 24 volt supply to DC. You have to understand that it's what voltage is there required to make it work. If the voltage is not there to work -- to make it work, then you're not going to get anyplace --You have to consider length of cable in the back plane, also, from cable to cable, from one location to the other within the same piece of equipment, also. Resistance again.

Your circuit packs, your transistors, what makes them work? You go back into your schematics again and you read them, you follow a flow of that schematic drawing. It goes through a certain integrated circuit. It goes through a path. It follows this and if it comes out to be another path, you may have to go to another pack that's causing the problem instead of this one particular one. So you have to know basic electronics. Yes, say I'll follow the current flow or a path. So that's where it comes in handy.

**CONCEPT: Fiber optics**

We have to change our mode of thinking from what we used to be, electrical, to optical. It's just a new area that we have to venture in and thanks to the schools that are providing it, we really have to say, what are we looking at now? We're going to have to change our thinking to go with a new generation or we're going to be left behind.

[Fiber optics is the science of transmitting data, voice, and images by the passage of light through thin, transparent fibers.] Fiber optic communication is more—as I said, more concentrated. You may have triple that in optical serving more customers in the smaller area, more compressed area. So one [fiber optic] cable may have 1,000 customers compared to one cable over here, electrical, may serve 100. So there's a lot more to it.

The probability of its working better is there, also, because it is clearer and it's more definite and it's -- we also supply or provide backup routes in case there's a failure. So there's a lot of good pluses in going optical.

### **WORK SKILLS: Troubleshooting**

Troubleshooting means locating trouble and identifying problems that cause them, such as equipment problems. First of all: don't panic. All right. You might look at the worst scenario. Get your information together. What is the problem? What is it that's causing the failure?

So, well, instead of panicking and start looking everywhere, not any particular way, I try to set up a process of elimination. I go step by step by step process and don't take shortcuts. Shortcuts can kill you. So even though it might take you a little longer, but you're going to go without having to go back and do it twice again. So the thing is, don't panic. Get the problem. Think about what you're going to do . . . follow a procedure. If you have to, sit down and take a deep breath and then consider what you're going to do. Otherwise—just don't rush into it, in other words.

Here's an example of a procedure, or process of elimination, that I might use in troubleshooting. Suppose a tester called in an "open" circuit, indication of a loss of service. I would ask for the facility name if available. [A "facility" is a telecommunications path.] If the engineering document is not available, I would access the AT&T network database for the document and print up a copy. I would then proceed to the designated location where the actual cross-connect wiring is done. Using a test unit that we call the T-BRD [pronounced T-bird], which is a test unit used not only to monitor an incoming signal but also to transmit a signal if needed, I would insert a test cord into the monitor jack—at the originating and terminating points—to determine if there is an incoming signal.

Once I have determined there is an incoming signal, from either side, I have initially cleared our office. But if I have determined there is a problem within our office, I would verify all the equipment using terminals that access that equipment. If all the options [equipment] proved okay, I would then patch over the wiring, using some of our patch cords, which in turn replaces the actual wiring; this will prove the wiring good or bad.

If the wiring is proven good, I switch to an alternate equivalent backup circuit pack. That puts the facility (communication path) on a back-up circuit pack. Then I would replace any circuit packs, if needed, or rewire the circuit, eliminating any defective wiring. If the circuit involved one of our DACS frames and the tester could not access the frame, I would then access it using some of the input commands to determine the state of the npc (network process card) which carries the facility. If it indicated out-of-service, I would input a command to restore it to service.

### **WORK SKILLS: Taking notes**

So I always take notes and like some of the equipment that I have been working with and some of these people have not had the opportunity to work with, I will make notes in a process how to access it, what to look for, how it works, and what is it you're looking for. I in turn would relay that message to them. I'll make copies and send it out to everybody. And then they come back and ask me, how does it really work? Then I'll have to look at my notes again, again reinforcing, because I can't remember everything.

Like I said, I can't remember everything, so I take notes and I write up some processes that I can think will help me through on certain piece of equipment, and I've been fortunate enough to draw up some processes for certain pieces of equipment that other people don't know, and I in turn give it to them. Hey, in case you run into trouble, here's what you should follow, and here's some steps that may help you. If you've got any questions, I'll help you as best I can. If I don't know it, we'll call someone that does.

### **WORK SKILLS: Sharing information**

It's important to share what you know because you may be asking these other fellow technicians or some of your friends for information. If you don't share, they probably won't share with you, but by sharing and relaying what you know to others, you know, reinforcing what you already know also, and then you find out, hey, they are going to tell me something else that I didn't know, and I can add that to my library.

So it's good to share because some people come up with some things that you might have missed, some little simple basic stuff because sometimes you try to get too technical.

### **WORK SKILLS: Asking for help**

Don't be ashamed to ask for help. Boy, if you don't ask for help, remember, you don't know everything. But ask for help. That's -- because then you'll know what the other person knows plus what you know, so that's advancing you, and keep notes.

So you're only stupid if you don't ask. You're going to stay stupid, more so if you don't ask, because you find out later, "man, I should have asked." I knew this guy knew or this person knew the answer, and I didn't ask. And so, like they say, if you don't ask, you're going to be left behind.

### **WORK SKILLS: Reading schematics, manuals**

But for those out there, it takes a lot of self-initiative. If you want to get to a point where you can feel self-confident, it takes a lot of initiative. You have to do some work on your own. You're going to have to really dig through some of the books or manuals. And what I've done before, I've actually sat in front of a piece of equipment with a manual and page by page maybe looked and read, what does that do? Okay, I read on it and compare and maybe run little tests if I don't interfere with service and just actually sit in front of it and work with it with a manual and compare so I can understand what I'm reading. Sometimes a picture's worth a thousand words.

### **WORK SKILLS: Working with tools**

Tools. We have what we call little spudgers, little picks for getting into hard-to-get areas where wiring is concentrated, real concentrated. We use wire wrappers to do our connections to our designated locations. We use unwrappers when we have, say disconnects for the service no longer available for the customers or he's changed somewhere else.

We use a variety of other tools, sometimes even a screwdriver because sometimes we got to the point right now where we do installations, so we have to use manual -- our manual labor for screwdrivers for mounting and screwing equipment on there.

I like working with my hands even at home. If I can, sometimes I build a little wood whatever with hammers, nails, whatever.

### **WORK SKILLS: Telecommunications technology**

Our primary goal is to get the customer from point A to point B. So say he wants a communication line to Washington, DC. We may not be the only office involved. There may be other central offices involved, but we have to clear our office. He may have some specific equipment requirements in our office to get the communication path completed.

Therefore, we get our documentation, we read what's involved. We do what we call our cross-connects. We verify what we call options, which provide, or specify, digital communication or voice communication. Our engineer will tell us that. We will check our options on our specific or specified equipment, then once we're done with wiring, checked

everything, we will do what we call a cross-office test. That way we know, hey, everything within our office is good. Now, from here on in, the ball's in your court. How are you doing? Once the other offices involved get theirs done, then we will have what we call inter-in test. How to loop from Dallas to Washington? Hey, looking great. Okay, turn it over to the customer.

**WORK SKILLS: Computer skills**

AT&T provides a lot of Internet and network [resources] that we can access for information. We have to know how to operate our computer to get into a certain network to retrieve information or documentation. There are other employee services that are provided to us, you know, for educational purposes. Maybe you want to take a course that may help you learn more about computers or some other sonic optical. We do that, also. So computer knowledge really helps how to knowing not only to use the computer but how to access other networks to enable you to increase your knowledge in your work.

**JOB/CAREER: Job overview**

My job here is basically test acceptance of any central office equipment installed in here, making sure it works before we turn it over for assignment to be used by any customer. Also, maintenance, which will be to clear any trouble called in and also turning up new circuits which we call provisioning and make sure that works also, that's functional right in our office before we turn it over for a customer to use.

Provision is -- includes-- turn up new documentation that's come in, making sure that the service is there for the new client, do all the--what I said before, cross-connects, cross-connects options, and cross-office testing. Maintenance, troubleshooting, making sure that we get the customer back in service as soon as possible because we know their time is money and we don't want to lose that. And if we do a bad job, for sure they're going to go somewhere else. So that's in maintenance area, also. That's basically what I do.

This switching center is considered a major hub . . . so we have a lot of work in turning up new circuits . . . . It involves a lot of pieces of equipment within the whole picture that . . . help us to complete a path of communication to the customer through our office and to another office elsewhere in another state or another city.

**JOB/CAREER: Challenge and satisfaction**

I like turning up equipment and kind of like I've-conquered-a-mountain sort of type of deal. I've brought that baby up. I'll call it, oh, I brought that baby up from scratch. I've tested it and I know it works. I can bet my paycheck on it. I feel confident enough sometimes that way. Of course, I have help. Sometimes it takes two of us to do it.

It's like a challenge to me--when I'll call and certify a piece that's been installed like, again, a DACS-2. It's a Digital Access Cross-Connect System. Me and another coworker have done what we call a test acceptance test. We have to run through a series of tests following a procedure and if there's a trouble in any particular step, we have to go through process of clearing that trouble.

Again, we have to know our basic electronics, knowing how to read a schematic, how to follow the flow and then coming up with resolution, solution to provide the answer to what's causing the problem. It may be what we call a ribbon cable. It may be the pack itself. It may be a variety of other things, but we have to go through the process of elimination using our basic knowledge, our common sense and not panicking. And once you resolve the problem, wham, you've done a good job. You know, I feel good about that. Go brag about it.

**JOB/CAREER: Typical day**

Well, depending on what's set for that day, I actually come in, the first thing I do is check my e-mail. I have to get on the computer, check my e-mail, see if there's anything pertinent I have to look at.

I work with the Provisioning Group. Provisioning Group is a group that takes in all the information coming in, all documentation, all the new facilities that are coming up for customers. [A facility is a telecommunications term for a communication path from Point A to Point B.]

We'll take that and do what we call cross-connections, actually get them to work. We check, again like I said before, options, everything that's included in there. I may do maintenance, also, if required. Troubleshooting. A customer may call in a trouble. I know that time is money for them just as far as it is for us. If we don't do a good job for them,

they're going to look for somebody else. So we have to act in a professional way and also confidently--to show that we know what we're doing. We have to have a knowledge of how to use the test equipment, and also work with the [calling] centers; we won't be working by ourselves. And if we're in doubt, we talk with our techs [other technicians]. "What do you think about this?" Because, you know, we can't do it all by ourselves.

The calling centers: A lot of our calls are directed to our centers like the one in Denver, and they in turn, if they do something and can't quite get to the problem, they may pinpoint to the office and that's a test assist, we'll do that. We provide the test assist. And we go through the process of eliminating where the problem is. It's either incoming or it's leaving. If it's within their office, we'll troubleshoot it and isolate it and may even call to rewire a circuit or replace a circuit pack or packs.

**JOB/CAREER: Background**

Initially, okay, I got some of my training, basic electronics, while I was in the Navy. I came into what was then Western Electric, now Lucent. There I was an installer. I went to a lot of schools there, basic electronics, schematic drawings, how to read schematic. . . . Then, later I transferred over to AT&T because I was going to be relocated after 18 years working with Western. I've been here for the last 15 years with AT&T. I've been sent to schools, again, for more electronics, transistorized systems, digital systems, how a certain piece of equipment works, how they function, how to troubleshoot them.