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Efficiently Preparing for Temporary Duty (TDY) Travel

by Robert Borys Jr and Colby Adams

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Efficiently Preparing for Temporary Duty (TDY) Travel

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14. ABSTRACT Preparing for participating in experimental facility test firings while on temporary duty (TDY) can be stressful and overwhelming to employees new to (and inexperienced at) making all of the proper arrangements. This is a guideline for what, at minimum, needs to be done to efficiently and effectively prepare and pack for traveling to experimental facility test firings. Communication with test coordinators, packing all the tools that would possibly be needed, and transportation of equipment are some of the major hurdles addressed to help streamline the process. Included is an appendix with a list of common tools and other items that are typically needed or helpful during an experimental facility test firing.						
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1. Introduction

Preparing for test firings while on temporary duty (TDY) can be stressful and exhausting. This write-up is intended to make this process more streamlined and efficient, while assisting in providing guidance on the steps to take to make sure that everything that *needs* to be done prior to leaving is taken care of. Along with all the necessary steps to make sure that all equipment is packed and accounted for and everything is in place for transportation, what needs to be packed and what should be packed are outlined, and guidelines are given to make sure nothing is forgotten and every situation can be addressed in a professional and timely manner while representing the US Army Combat Capabilities Development Command Army Research Laboratory (ARL) in a customer/sister agency atmosphere.

2. Overview

While preparing for testing at a facility while on TDY, there are a few key things that need to be taken into consideration and also need to be done before travel:

- A phone conference and possibly also a site visit to speak and meet with onsite counterparts who may be assisting with any issues that cannot be addressed alone.
- A rule of thumb to remember, even if this is the first experience at a particular testing facility before, is “Hope for Everything, Plan for Nothing”.
- Always pack double or even triple the amount of the three key resources needed during testing. Those three key resources are power, network, and triggering.
- Sit down days before packing and make lists of the all the equipment that may be needed. It is also important to include tools needed to set up and fix any and all issues with the equipment. See the Appendix for a standard list of normally required tools.
- It is important to perform a quick complete test setup at your own facility to verify that the planned field test setup is going to operate in the expected manner and that there are no technical issues with the equipment that is being used.

3. Review of Problems

The following are problems to consider:

- Is there someone at the test facility who will be able to assist when problems or questions arise?
- Is there a network, power, and/or triggering backbone?
- Is there enough equipment for the desired setup, and if not, is there a work-around?
- Is it necessary to rely on the test facility for any aspect of the test during setup or execution?
- Will there be adequate resources for shipping or transport of test equipment?

4. Phone Conference/Site Visit

During the initial phone conference or site visit, introduce and meet with relevant testing personnel who work at the facility at which testing will take place. Ask what capabilities their facility(s) have and if any resources are available that would result in a less labor-intensive setup (to include power connections, network, and triggering systems). Also ensure that the facilities personnel understand what test equipment will be brought along and what this equipment is designed to do to make sure that the desired testing and/or data collection will not interfere with any of their safety protocols.

Two brief contrasting examples of test facility capabilities, and the preparations required as a result, are given here. The two facilities in question are Yuma Proving Ground (YPG), Arizona, and Redstone Arsenal, Alabama. During initial phone conversations with both facilities, an inquiry was made regarding the availability of power, network, and triggering resources. Yuma, being a more remote testing facility, informed us that there would be minimal amenities to support our particular test setup as it was configured at the time. Application of the aforementioned rule of thumb, “hope for everything, and plan for nothing” became very important. As a contrast, Redstone Arsenal’s Test Area 1, being in far closer proximity to the needed infrastructure, had facilities available every 50 m downrange from the firing position to a maximum of 4250 m. Through a brief phone conference, the lead testing personnel at Redstone Arsenal were made aware of testing equipment and our facility requirements.

5. Hope for Everything, Plan for Nothing

When dealing with specialized equipment, it is important to ensure that the subject-matter expert (SME) for the equipment is either on the test program or has been given sufficient training so that any issues that arise during a program can be addressed quickly and correctly. Ensure that all tools that would be needed to fix all problems that could arise (*e.g., hand tools, laptops, specialized hand tools, and specialized computer programs*) are on hand.

Many of the most common problems with equipment are the result of cabling failure. When this happens, it is good to have an organized set of tools and parts needed to fix or make cables that are in need of repair. Some examples of important cabling equipment are as follows: RG58 crimp-on ends, RG58 crimpers, RJ45 ends, RJ45 crimpers, extra cat 5/6 and RG58 cabling, fiber-optic testers, and end cleaners.

With the rule of thumb “hope for everything, plan for nothing” in mind, always pack a lot of extra parts, cables, hand tools, and needed equipment (*e.g., laptops/computers, oscilloscopes, power supplies and so on*). Also, even in the case that a facility claims to have a fully implemented range computer network, it is important to bring equipment that will allow for the implementation of a backup network backbone (*i.e., fiber long enough to reach the length needed.*)

6. Getting Equipment to Test Facility

When packing equipment for transportation, the first thing to consider if equipment will be shipped to the TDY location would be what accommodations are needed to transport the equipment around the testing facility. Questions to ask include whether a truck is needed to move equipment boxes, whether the boxes are light enough to lift into the vehicle, and—in the case where a trailer is needed to transport the equipment—whether the testing facility has the means to move the trailer to desired data-collection locations or if a rental truck would be needed.

When shipping equipment, it is a good idea to make sure it arrives at minimum of a 3 days prior to test setup so it will definitely be available when needed. Depending on the safety guidelines of the remote test facility, there may or may not be freedom to transport equipment to its final location. Again, to provide two contrasting examples, YPG required YPG range personnel to transport ARL’s test equipment, whereas Redstone Test Center (RTC) allowed ARL to transport equipment with assistance from RTC personnel for receipt and storage of the trailer prior to the arrival of ARL personnel. This required rental of a truck capable of moving the trailer to its final location.

7. Mock Test Setup While Still in the Laboratory

While still at your own laboratory, it is very important to make sure to do a full and complete mock test setup. This will ensure that the test layout on paper will work in a real-world setting. This includes setting up networks, power systems, trigger systems, and any special equipment that will be on the particular program being supported. Examples of how this can be done to the fullest extent would be an example of the difference in setups from Eglin Air Force Base to that of YPG. In the mock test setup for Eglin, all that needed to be tested was the specialized equipment, the localized network, and the remote power controller's involved with the test. Eglin provided the actual power and fiber-optic cable for long-distance communication. The mock test setup for YPG involved not only setting up specialized equipment and the localized network, but also setting up generators and 3750 m of single-mode fiber-optic cable that was used for long-distance communications. In doing the mock setup, most of the concerns that would arise on the test can and will be addressed while still having time to come up with a solution, along with making sure that all the equipment works together as it should. If there is a space constraint, it is always good to make sure to set up all the equipment, as close as it can be, the way it will be set up during testing to make sure it meets any space constraints. This includes setting up tripods, routing cables, and making sure any equipment in direct sunlight during testing on a hot day is covered or cooled the best way possible so it does not overheat.

8. Conclusion

In conclusion, by preparing oneself using these guidelines, one will not only have great data results but will represent oneself and ARL as a professional outfit and, in doing so, will be recognized by other facilities and organizations for competency and sought out for possible collaborations in future work. Being organized and prepared for any and all situations and communicating with other facilities and organizations prior to actual testing allows TDY testing to go mostly without issue.

Appendix. Standard Tool List

The following is the standard list of normally required tools:

- 1) SAE Socket sets 1/4 inch and 3/8 inch
- 2) Metric Socket sets 1/4 inch and 3/8 inch
- 3) SAE wrench set
- 4) Metric wrench set
- 5) Hammer
- 6) Vise grips
- 7) Channel locks
- 8) Flat head and Phillips head screwdrivers
- 9) SAE Allen wrenches
- 10) Metric Allen wrenches
- 11) Needle-nose pliers
- 12) Side cutters
- 13) Pliers
- 14) Utility knife
- 15) Duct tape
- 16) Gun tape
- 17) Electrical tape
- 18) Wire strippers
- 19) RG58 wire strippers and crimpers
- 20) RJ45 wire strippers and crimpers
- 21) RG58 barrel connectors and "T" connectors
- 22) RJ45 barrel connectors
- 23) Voltmeter
- 24) Generator(s)
- 25) Oscilloscope
- 26) RG 58 wire

- 27) Cat 5/6 wire
- 28) Fiber-optic cable
- 29) Extension cords (long and short) (10AWG to 14AWG)
- 30) Tripods
- 31) SLR camera (if permitted)
- 32) Trash bags (covering equipment in case of a pop-up storm)
- 33) Pop-up tent
- 34) Pop-up table
- 35) Bungee cords
- 36) Ratchet straps
- 37) Cooler
- 38) All needed personal protective equipment (PPE)
- 39) Electric drills with batteries and chargers and needed bits
- 40) Ethernet hubs (plus two extra)
- 41) Fiber-optic to Cat 5 converters (as many as needed plus at least four extra)

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