

## PLANT UTILITY CONTROL SYSTEMS TEAM – WATER SECTOR INFRASTRUCTURE

<b>DESCRIPTION</b>	The Plant Utility Control Systems Team - Water Sector Infrastructure restores and repairs supervisory control and data acquisition (SCADA) and radio telemetry systems
<b>RESOURCE CATEGORY</b>	Public Works
<b>RESOURCE KIND</b>	Team
<b>OVERALL FUNCTION</b>	The Plant Utility Control Systems Team - Water Sector Infrastructure restores and repairs radio communications, SCADA, telemetry, plant control systems, and programmable logic controllers (PLC)
<b>COMPOSITION AND ORDERING SPECIFICATIONS</b>	<ol style="list-style-type: none"> <li>1. Discuss logistics for deploying this team, such as working conditions, safety, length of deployment, security, lodging, transportation, and meals, prior to deployment</li> <li>2. Requestor specifies human machine interface (HMI), PLC brand and model, mode of communication, and other unique requirements</li> <li>3. Requestor orders mission-specific National Incident Management System (NIMS) Utility Worker Specialist - Water Sector Infrastructure personnel as single resources to supplement this team based on the equipment needing repair</li> <li>4. Requestor specifies major repair components</li> <li>5. Requestor provides external support, such as vehicle fuel and power for phones, computers, and other rechargeable devices</li> <li>6. Requestor specifies any necessary safety qualifications and equipment</li> </ol>

Each type of resource builds on the qualifications of the type below it. For example, Type 1 qualifications include the qualifications in Type 2, plus an increase in capability. Type 1 is the highest qualification level.

COMPONENT	TYPE 1	TYPE 2	TYPE 3	NOTES
<b>MINIMUM PERSONNEL PER TEAM</b>	Same as Type 2	4	2	Not Specified
<b>MANAGEMENT AND OVERSIGHT PERSONNEL PER TEAM</b>	Same as Type 2	Same as Type 3	1 - National Incident Management System (NIMS) Type 2 Water Operations Team Leader or NIMS Type 2 Wastewater Operations Team Leader	Requestor specifies the type of facility associated with the control systems and requests the corresponding team leader, whether NIMS Type 2 Water Operations Team Leader or NIMS Type 2 Wastewater Operations Team Leader.
<b>SUPPORT PERSONNEL PER TEAM</b>	Same as Type 2	Same as Type 3, PLUS: 2 - NIMS Utility Worker Specialist - Water Sector Infrastructure	1 - NIMS Utility Worker Specialist - Water Sector Infrastructure	The NIMS Utility Worker Specialist - Water Sector Infrastructure can be a welder, electrician, or mechanic. Requestor specifies worker specialty based on mission needs.
<b>CAPABILITY PER TEAM</b>	Same as Type 2, PLUS: Ability to repair and restore plant control systems and PLCs	Same as Type 3, PLUS: Ability to troubleshoot and repair remote SCADA and telemetry systems	Ability to troubleshoot and repair communications system cabling	Requestor specifies types of communications infrastructure, SCADA software, and other control specifications.

COMPONENT	TYPE 1	TYPE 2	TYPE 3	NOTES
<b>CAPABILITY EQUIPMENT PER TEAM</b>	Same as Type 2, PLUS: Necessary tools for plant controls and PLC repairs	Same as Type 3, PLUS: 1. Digital multimeter with amp clamp 2. 4 to 20 milliamp signal generator 3. Bucket truck	1. Necessary tools for SCADA repairs 2. Port tools for cable repairs 3. Hand digging tools	1. Equipment includes a full complement of industry-specific tools necessary for the repairs indicated, such as power tools and hand tools. 2. For the Type 1 and Type 2 bucket truck, requestor specifies working height.
<b>PERSONAL PROTECTIVE EQUIPMENT (PPE) PER TEAM MEMBER</b>	Same as Type 2	Same as Type 3	1. Hard hat 2. Reflective vest 3. Gloves 4. Protective clothing 5. Protective footwear	PPE is mission-specific and may vary by work environment; it includes protective footwear, protective clothing for skin exposure, eye and ear protection, respirators, gloves, and masks.
<b>ELECTRONICS EQUIPMENT PER TEAM</b>	Same as Type 2	Same as Type 3	1. Laptop computer with serial port and appropriate software 2. Other appropriate software	Other appropriate software includes operating system, word processing, spreadsheet, and database management programs.
<b>COMMUNICATIONS EQUIPMENT PER TEAM</b>	Same as Type 2	Same as Type 3	1. Cell phone 2. Portable radio	1. Consider alternate forms of communication, such as satellite phones, based on the mission assignment and team needs. 2. Requestor provides radio specifications. 3. Provider supplies necessary chargers and backup batteries for battery-powered portable equipment.
<b>TRANSPORTATION EQUIPMENT PER TEAM</b>	Same as Type 2	Same as Type 3	1 - Truck/SUV	Vehicle must be capable of traversing rough terrain, flood conditions, and adverse environmental conditions, and must carry equipment necessary for maintaining vehicle operation.



## NOTES

Nationally typed resources represent the minimum criteria for the associated component and capability.

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## REFERENCES

1. FEMA, NIMS 509: Supervisory Control and Data Acquisition Specialist
2. FEMA, NIMS 509: Utility Worker Specialist – Water Sector Infrastructure
3. FEMA, NIMS 509: Water Operations Team Leader
4. FEMA, NIMS 509: Wastewater Operations Team Leader
5. FEMA, National Incident Management System (NIMS), October 2017
6. FEMA, National Response Framework, June 2016