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# Wright-Patterson Air Force Base NASIC Critical Infrastructure Capabilities Study

*Wright-Patterson AFB, OH*

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**Project Completion:** 2011

**Tri-Tech Services:** Mechanical, Electrical Engineering

## Project Description

The NASIC complex at Wright-Patterson Air Force Base is a facility that has grown and expanded many times since its original construction. As a result of the many expansions and renovations, it was necessary to perform a critical infrastructure capabilities assessment to determine an overall level of infrastructure preparedness for emergency operations.

The primary components investigated were the electrical and mechanical infrastructures for the complex. Specifically, the electrical infrastructure investigation sought to determine areas of the building which satisfied the following Facility Capability Definitions:

- **Tier E-0** – Area is served by utility power with no backup by emergency generator or UPS.
- **Tier E-1** – Area is served by utility power with backup available by emergency generator(s), which are capable to support the connected load with no redundancy.
- **Tier E-2** – Area is served by utility power with backup available by emergency generator(s) and UPS, where emergency generator(s) are capable to support the connected load with no redundancy and UPS is capable to support the connected load during utility outage until emergency generator(s) are able to pick up the load, with no redundancy.

The mechanical infrastructure investigation sought to determine areas of the building which satisfied the following Facility Capability Definitions:

- **Tier M-0** – Facility HVAC system provides adequate cooling to satisfy the heat load, with no redundancy, and the equipment and controls derive power from a Tier E-0 electrical system
- **Tier M-1** – Facility HVAC system provides cooling capacity to maintain critical space temperature and relative humidity, with no redundancy, and the equipment and controls derive power from a Tier E-1 electrical system
- **Tier M-2** – Facility HVAC system provides cooling capacity to maintain critical space temperature and relative humidity, with redundant equipment (N+1), and the equipment and controls derive power from a Tier E-1 electrical system.

Following completion of the findings, an analysis on the building infrastructure was performed to provide recommendations to modify the existing infrastructure with the goal of increasing capacity on the critical infrastructure to supply more of the building with utilities with backup power and redundancy.