Wright-Patterson Air Force Base
NASIC Critical Infrastructure Capabilities Study

Wright-Patterson AFB, OH

Project Completion: 2011
Tri-Tech Services: Mechanical, Electrical Engineering

Project Description

Since its original construction, the NASIC complex at Wright-Patterson Air Force Base has grown and expanded many times. Given its many expansions and renovations, the facility needed a critical infrastructure-capabilities assessment to assess infrastructure preparedness for emergency operations.

Tri-Tech investigated many components, primarily the facility's electrical and mechanical infrastructures. Specifically, Tri-Tech's investigation sought to determine which areas of the building's electrical infrastructure 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.

After the investigation was completed, Tri-Tech analyzed the building infrastructure to provide modification recommendations. The recommended modifications would serve to increase capacity on the critical infrastructure, supply more of the building utilities with backup power and redundancy.