

NAS Infrastructure Management

ATO Technical Operations

Presented to: NEXTOR and FAA Conference
at The National Academies

By: Juaida Norrell

Date: September 9, 2005



Federal Aviation
Administration



NAS Buildings and Building Systems

- **NAS building and building systems infrastructure is made up of:**
 - 9,000 General National Airspace unstaffed facilities
 - Power systems
 - 3800 engine generators
 - 587 uninterruptible power supply systems
 - 21 Air Route Traffic Control Centers (ARTCCs)
 - 3 Center Radar Approach Control (CERAPs)
 - 1 Combined facility (ATCT/TRACON/CERAP)
 - 519 Terminal facilities
 - 3 Automated Flight Service Stations (Alaska)
 - 14 Flight Service Stations (Alaska)



Surveillance



Navigation Aids



Communications



Facility Assessments

Facility Condition Index (FCI)

$$\text{FCI} = \frac{\text{Dollar value of backlog (Maintenance \& repair)}}{\text{Current replacement value}}$$



Shelter Replacement



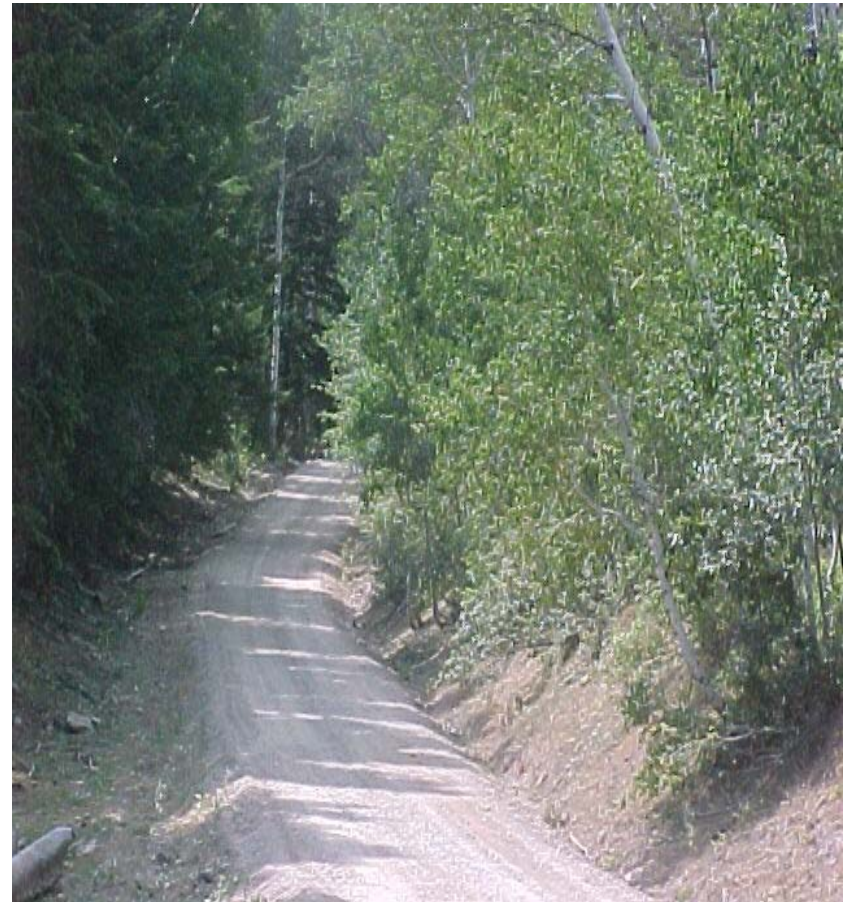
HVAC Replacement



Structural Towers



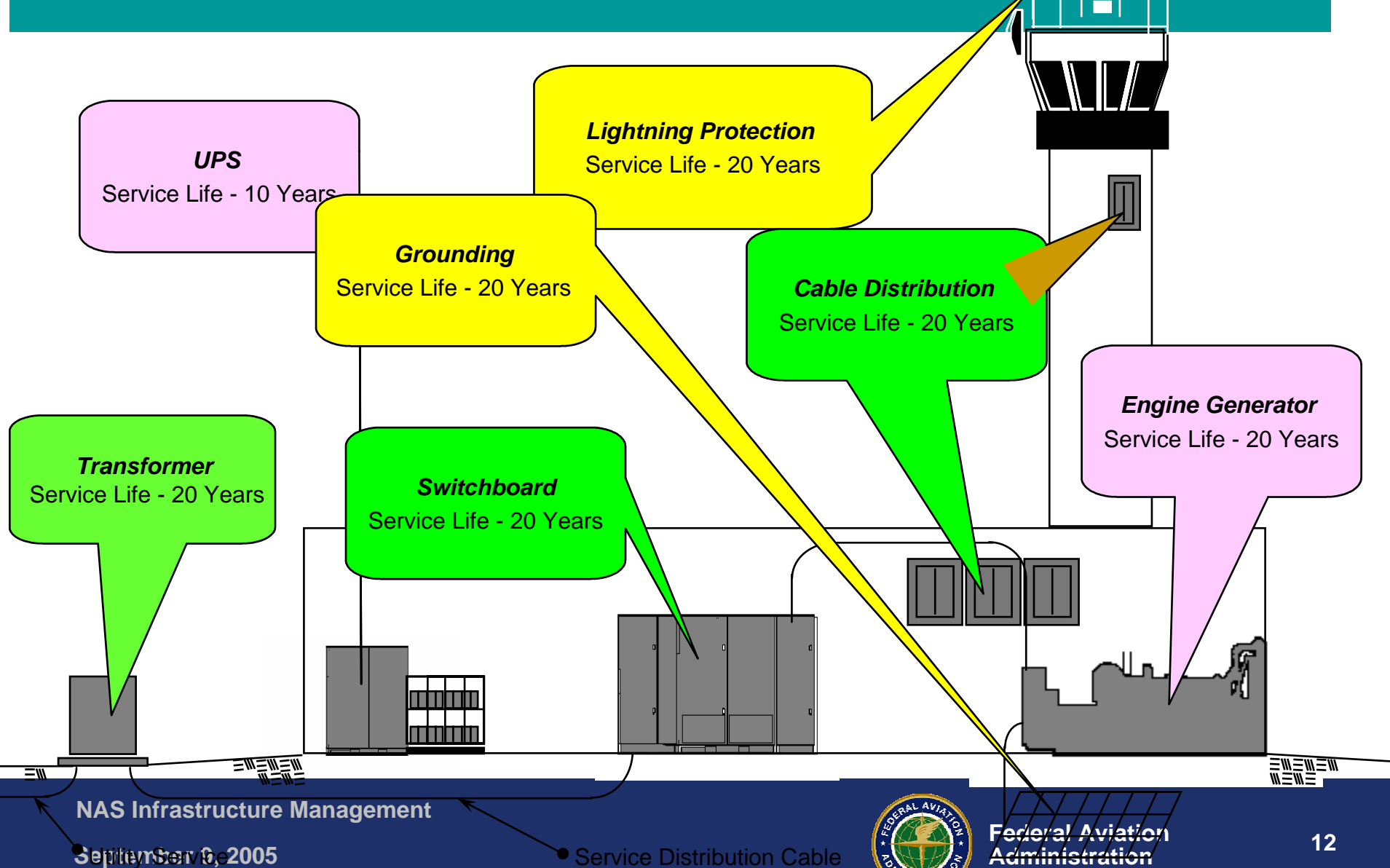
Access Roads



Roofing



NAS Power Systems have Multiple Components



NAS Infrastructure Management

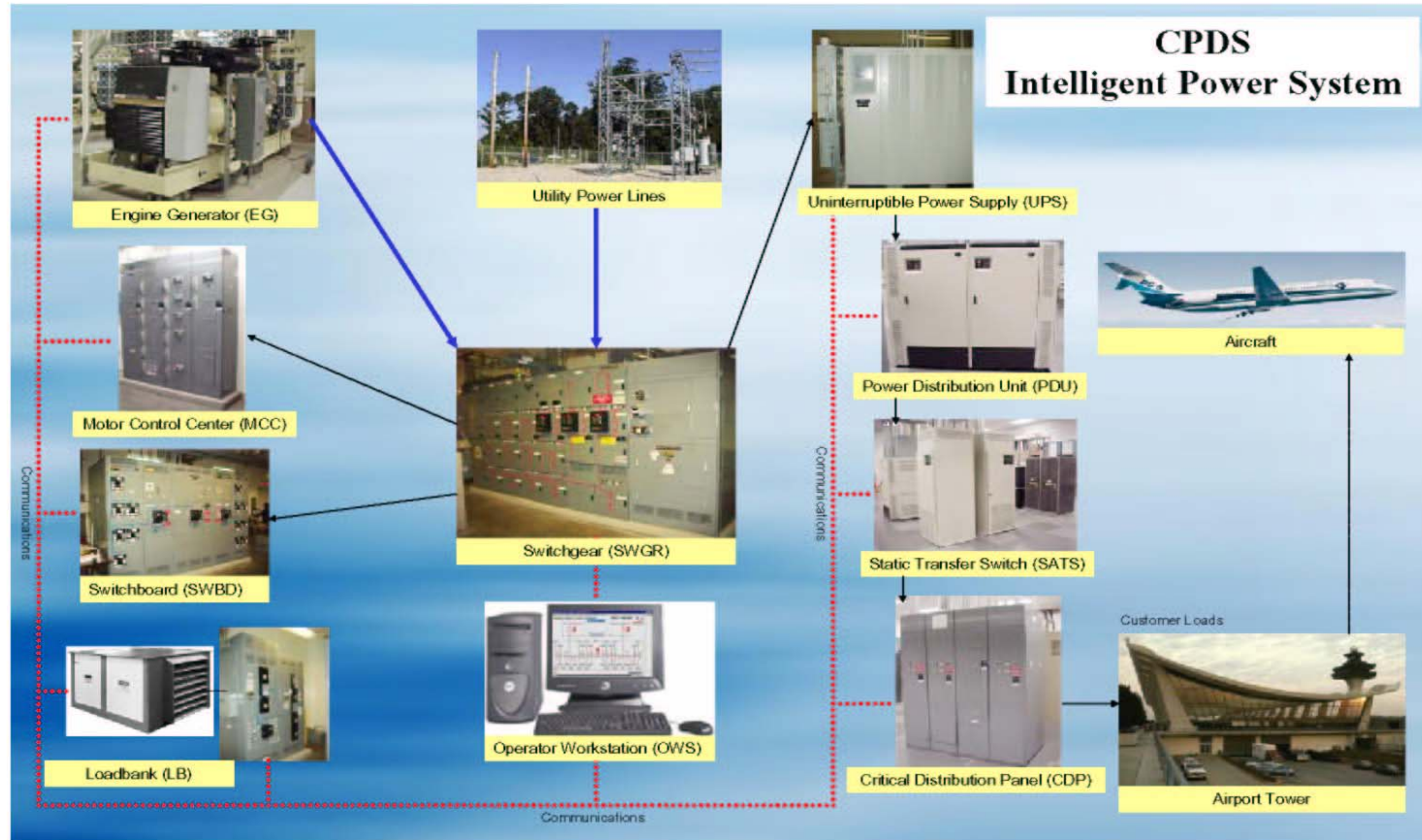
Supply Service

Service Distribution Cable

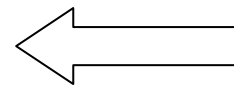


Federal Aviation
Administration

Critical Power Distribution System (CPDS) Have Multiple Complex Subsystems



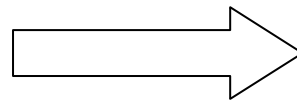
Both GNAS and ARTCC Batteries Must Be Replaced before They Fail



GNAS Battery Bank
"Wet Cells"

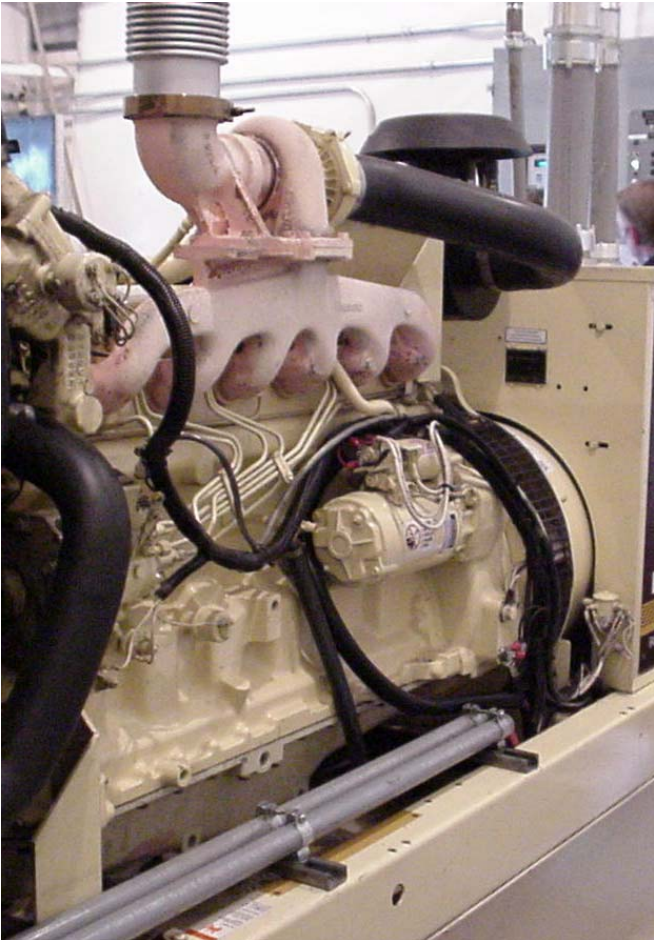


ARTCC UPS Batteries
"VRLA Cells"

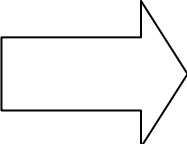




DC Systems Replace Standby Generators



Before

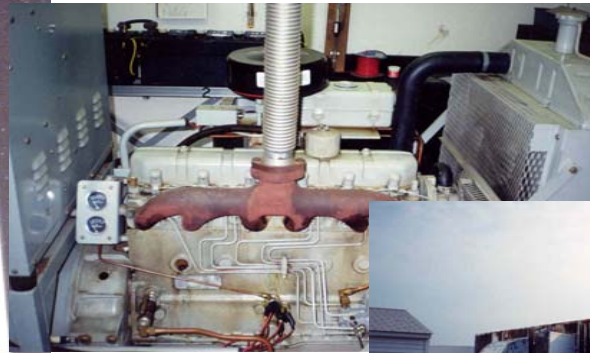


After

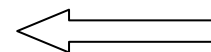
Legacy Engine Generators: Overdue To Be Replaced

Vintage E/G in NAS service

ENGINE GENERATOR PLANT
K.V.A. VOLT PHASE
MADE FOR
DEPARTMENT OF COMMERCE
CIVIL AERONAUTICS ADMINISTRATION
ORDER NO. SERIAL NO.
THE WARNER & SWASEY CO.
DUPLEX DIV. LANSING MICH. U.S.A.

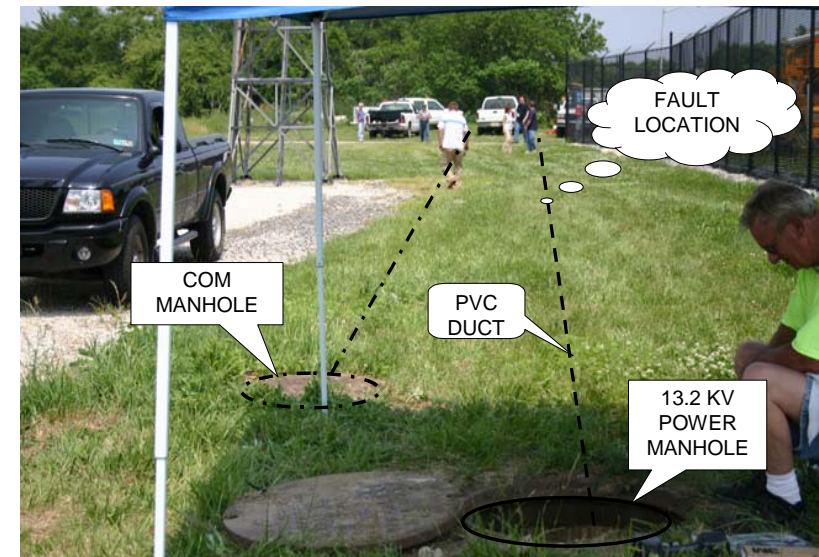


Current engine generator

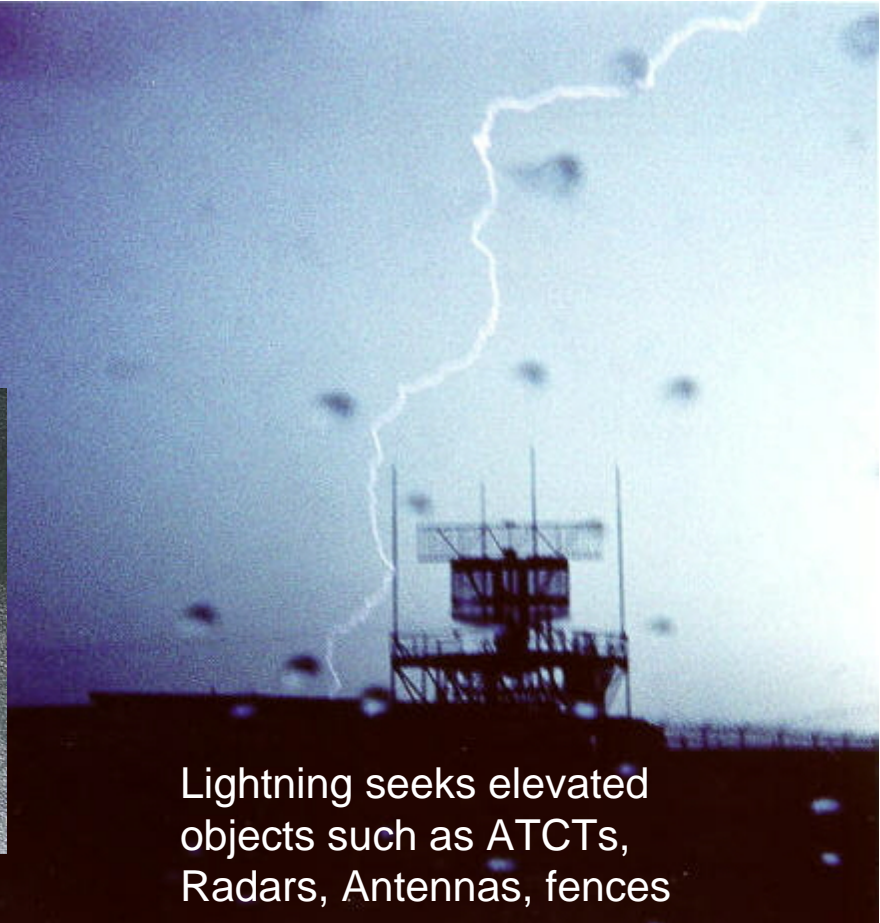
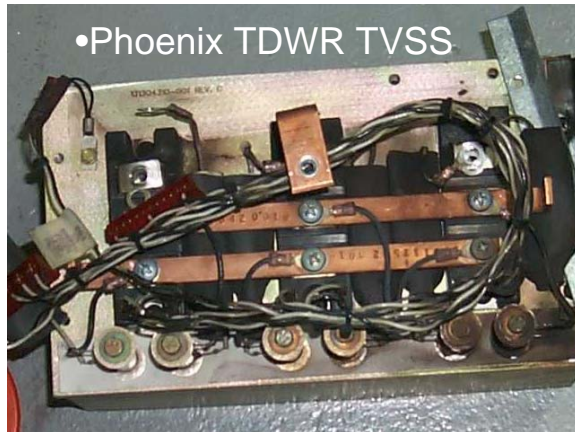


Airport Buried Power Cable: Failure Causes Delays

Philadelphia Airport
Power and Data
Cable Outage, July
2005



Proper Grounding Is Critical



Lightning seeks elevated objects such as ATCTs, Radars, Antennas, fences

Commercial and Standby power outages are increasing

