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Design Data Reporting

Data Reporting Instructions – Section V

Module 04 - GADS Data Reporting Workshops

RELIABILITY | ACCOUNTABILITY




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Why Collect Required Design Data?

- To identify the unit - name, location, type, et cetera
- It is needed to analyze event and performance data
- It provides the opportunity to critique past and present
- It allows you to perform many types of generating plant analyses

Required Design Data

- There are nine (9) required design data fields for two specific reasons:
  - They allow GADS data to be matched with information collected in other databases such as the Transmission Availability Data System (TADS)
    - Example: Certain design data fields are needed to allow generating units to be located in areas where transmission lines are located
  - They ensure the continued quality of information collected by GADS by editing event and performance data

2023 Required Design Data

1. GADS utility code: assigned by NERC
2. GADS unit code: assigned by the reporting company following the guidelines in Appendix C of the DRI
3. NERC Regional Entity (RE) where the unit is located
4. Name of the unit
5. Commercial operating date
6. Type of generating unit: fossil, combined cycle, et cetera
7. MW size: generator nameplate
8. State or province location of the unit
9. Energy Information Administration (EIA) Plant Number
   - US units only

More Required Design Data for 2024

- New required design data will be used to further analyze the GADS data
  - By manufacturer, equipment design, redundancy, et cetera
- The new required design data asks for significantly less data than the voluntary data from the past (approximately 2/3 less)
  - The new design data is equipment specific
    - Model numbers of gas turbines
    - Number of pumps, motors, pulverizers, fans, etc.
    - Will not need manufacturer of pumps, motors, etc. in most cases
- The information request should be easily completed by a knowledgeable plant engineer or operations shift supervisor
- https://www.nerc.com/pa/RAPA/PA/Pages/Section1600DataRequests.aspx

2024 Design Data Process

- You will be asked to complete your design data when you complete the initial 2024 checklist in OATI
- NERC will be providing templates for uploading data later in 2023
- 2024 Q1 conventional GADS data will be due on the Q2 deadline in August instead of May
- Design data must be completed before uploading 2024 event and performance data

Amount of Required Design Data

- Fossil steam – 85 items
- Fluid bed – 91 items
- Gas turbine/jet engine – 48 items
- Combined cycle – 66 items
- Hydro – 51 items
- IC engines – 33 items

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Required Design Data Module Chart

	Combined Cycle	Gas Turbine	Fossil Steam	Internal Combustion Engine	Hydro / Pump Storage	Fluidized Bed		CoGen - Steam	CoGen GT	Other i.e. WW
General Information	x	x	x	x	x	x		X	X	X
Generator	x	x	x	x	x	x		x	x	x
Electrical BOP	x	x	x	x	x	x		x	x	x
Gas Turbine	x	x							x	
Steam Turbine	x		x			x		x		x
HRSG	x								x	
Boiler			x					x		x
Fluidized Bed Boiler						x				
Auxiliary Systems	x		x			x		x	x	x
NOx Reduction System	x	x	x	x		x			x	
Flue Gas Desulferization			x			x		x		
Hydro Turbine					x					
Pump Impeller Turbine					x					
Engine				x						

General Information Required

- NCR number
- Utility code
- Unit code
- Block name (combined cycle/cogen)
- State/province
- EIA number
- ISO region
- Data reporter name
- Data reporter telephone number
- Data reporter email
- Design data submission date
- Unit in-service date
- Unit loading characteristics at time of unit design

Generator Design Data

- Generator installation/commissioning date
- Date of last rewind/replacement
- Is generator more than 50% outdoors?
- Main generator nameplate
- Second generator nameplate
- Third generator nameplate
- Generator voltage
- Generator capability
- Generator speed
- Generator power factor
- Single or redundant excitation
- Type of main exciter

Balance of Plant Electrical Design Data

- Generator synchronizing breaker interrupting media
- Generator synchronizing breaker nameplate voltage
- Generator synchronizing breaker nameplate current
- Generator synchronizing breaker nameplate interrupt rating
- Main Transformer year of installation
- MVA of main transformer
- High side voltage of main transformer
- Low side voltage of main transformer
- Second high side voltage of main transformer
- Second low side voltage of main transformer
- Type of main transformer

Fossil/HRSG/Fluid Bed Design Data

- Common boiler/HRSG/Fluid Bed
  - Year of boiler installation/commissioning
  - Is more than 50% of boiler outdoor?
  - Boiler steam flow rate
  - Design main steam temp
  - Design main steam pressure
- HRSG only
  - Duct burner primary fuel
  - Duct burner secondary fuel

Fossil/Fluid Bed Design Data

- Boiler/fluid bed only
  - Type of fuel firing system
  - Number of primary air heaters
  - Type of primary air heaters
  - Number of secondary air heaters
  - Type of secondary air heaters
  - Mechanical precipitator?
  - Electrostatic precipitator?
  - Bag house?
  - Flyash removal system?
  - Number of FD fans
  - Type of FD fan drive
  - Number of ID fans
  - Number of gas recirculating fans

Fossil/Fluid Bed Design Data

- Number of critical path coal conveyor systems
- Number of pulverizers including spares (N/A to fluid bed)
- Number of pulverizers to make max continuous output (N/A to fluid bed)
- Type of pulverizers (N/A to fluid bed)
- Location of mechanical precipitator
- Location of electrostatic precipitator
- Number of baghouse fans
- Baghouse type
- Type of flyash removal

Fluid Bed Design Data

- Bed material injection system
- Method of feeding solid fuel into boiler
- Method of feeding sorbent into boiler
- Sorbent feed with fuel?
- Method of feeding bed material into boiler
- Primary fuel
- Secondary fuel
- Sorbent material type
- Sorbent screened?
- Solid fuel crushing system?
- Type of solid fuel crushing system
- Char injection system?

FGD (Scrubber) Design Data

- Date of FGD operation
- Was FGD part of original design?
- Are FGD modules shared with another unit?
- Type of scrubber used
- Number of FGD fans
- Number of FGD fans for full load
- Location of FGD fans

NOx Reduction System Design Data

- SNCR?
- SCR?
- Catalytic air heaters?
- Water injection system for NOx control?

Steam Turbine Design Data

- Steam turbine installation date
- Steam turbine outdoors?
- Steam turbine output

Gas Turbine Design Data

- Year of installation/commissioning
- Gas turbine/jet engine nameplate rating
- Turbine/engine model number
- Type of Fuel used
- Gas turbine cycle type
- Start-up system type
- Time from cold start to full load
- Time from emergency cold start to full load
- Black start capability?

Auxiliary System Design Data

- Fossil/Fluid Bed/Combined Cycle/Cogeneration
  - Type of condenser cooling water
  - Origin of condenser cooling water
  - Total number of condensate pumps (fossil, fluid bed)
  - Minimum number of condensate pumps for maximum continuous output
  - Number of feedwater pumps
  - Number of feedwater pumps for maximum continuous output
  - Number of circulating water pumps
  - Type of cooling tower
- Fossil/Fluid bed only
  - Startup boiler
  - Startup feedwater pump? Capability
  - Number of high pressure heaters per train
  - Number of intermediate pressure heaters per train
  - Number of low pressure heaters per train

Hydro Design Data

- Year of installation/commissioning
- Hydro turbine orientation
- Hydro turbine configuration
- Hydro turbine type
- Turbine rated head
- Turbine speed
- Turbine rated output
- Sync/condense capability?
- Automatic generation control (AGC)?

Pumped Hydro Required Design Data

- Pump-turbine impeller installed?
- Pump-turbine year of installation/commissioning
- Pump-turbine impeller type
- Turbine head
- Pump speed
- Pump rated load
- Pump-turbine sync/condense capability?

IC Recipricating Engine Design Data

- Year of installation/commissioning
- Engine nameplate rating
- Engine model number
- Type of fuel(s) used
- Number of cylinders
- Black start capability?

Questions and Answers