

Appendix O: Cause Code Updates - Midyear 2019

Background

In 2018 and early 2019, the GADS Working Group had a project to review Cause Codes. It was identified that several cause codes that should apply to all unit types were only applied to most of the unit types. Table O-1 has the list of Cause Codes that have been applied to the Unit Type. These Cause Codes already exist and apply to most unit types. Also in the analysis, there were cause codes for limited unit types that were applied to units that do not apply (Such as a Fluid Bed Cause Code attached to a Fossil-Steam unit type). Table O-2 lists the Cause codes and unit types that have been removed. The Cause Codes still exist for the appropriate unit types and have only been removed from the listed unit types.

Additional Unit Types

Table O-1: Cause Codes that apply to additional unit types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3850	Instrument air compressors
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3851	Instrument air piping
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3852	Instrument air valves
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3853	Instrument air dryers
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3854	N2 backup to instrument air
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3859	Other instrument air problems
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3860	Fire protection system pumps
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3861	Fire protection system piping
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3862	Fire protection system valves
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3863	Fire protection system fouling
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3864	Fire protection system instrumentation and controls

Table O-1: Cause Codes that apply to additional unit types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Auxiliary Systems	3869	Other fire protection system problems
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Miscellaneous (Balance of Plant)	3999	Other miscellaneous balance of plant problems
400	Internal Combustion/Reciprocating Engines	Balance of Plant	Miscellaneous (Balance of Plant)	3998	Balance of plant overhaul/outage
800	Miscellaneous	Balance of Plant	Electrical	3610	Switchyard circuit breakers - (not OMC)
800	Miscellaneous	Balance of Plant	Electrical	3613	Switchyard system protection devices - external (not OMC)
800	Miscellaneous	Balance of Plant	Electrical	3618	Other switchyard equipment - external (not OMC)
800	Miscellaneous	Generator	Generator	4511	Rotor, General
800	Miscellaneous	External	Economic	9180	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9181	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9182	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9183	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9184	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9185	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9186	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9187	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9188	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9189	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9190	Economic (for internal use at plants only)

Table O-1: Cause Codes that apply to additional unit types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
800	Miscellaneous	External	Economic	9191	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9192	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9193	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9194	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9195	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9196	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9197	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9198	Economic (for internal use at plants only)
800	Miscellaneous	External	Economic	9199	Economic (for internal use at plants only)
800	Miscellaneous	Performance	Performance	9997	NERC Reliability Standard Requirement
810	Multi-Boiler/Multi-Turbine	Generator	Generator	4511	Rotor, General
810	Multi-Boiler/Multi-Turbine	Balance of Plant	Miscellaneous	3981	PLC - data highway
810	Multi-Boiler/Multi-Turbine	Balance of Plant	Miscellaneous	3983	PLC - internal and termination wiring
810	Multi-Boiler/Multi-Turbine	Balance of Plant	Miscellaneous	3984	PLC - logic problems
810	Multi-Boiler/Multi-Turbine	Balance of Plant	Miscellaneous	3985	PLC - upgrades
810	Multi-Boiler/Multi-Turbine	External	Catastrophe	9035	Hurricane
810	Multi-Boiler/Multi-Turbine	External	Economic	9151	Labor strikes direct plant management grievances that result in a walkout or strike are under plant management control.
810	Multi-Boiler/Multi-Turbine	External	Economic	9180	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9181	Economic (for internal use at plants only)

Table O-1: Cause Codes that apply to additional unit types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
810	Multi-Boiler/Multi-Turbine	External	Economic	9182	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9183	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9184	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9185	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9186	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9187	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9188	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9189	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9190	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9191	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9192	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9193	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9194	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9195	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9196	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9197	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9198	Economic (for internal use at plants only)
810	Multi-Boiler/Multi-Turbine	External	Economic	9199	Economic (for internal use at plants only)

Table O-1: Cause Codes that apply to additional unit types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
500	Pumped Storage/Hydro	External	Economic	9130	Lack of fuel (water from rivers or lakes, coal mines, gas lines, etc) where the operator is not in control of contracts, supply lines, or delivery of fuels
830	Geothermal	Generator	Miscellaneous (Generator)	4842	Reactive and capability Testing
830	Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors	9960	Staff Shortage

Removing Cause Codes

Table O-2: Removing Cause Codes from Unit Types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
850	Combined Cycle Block	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
851	CC GT units	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
852	CC steam units	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
860	Co-generator Block	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
861	CoG GT units	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
862	CoG steam units	Heat Recovery Steam Generator (HRSG)	HRSG Boiler Air and Gas Systems	1451	Fluidized Air Fan (FBC Only)
850	Combined Cycle Block	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system
851	CC GT units	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system
852	CC steam units	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system
860	Co-generator Block	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system

Table O-2: Removing Cause Codes from Unit Types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
861	CoG GT units	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system
862	CoG steam units	Balance of Plant	Auxiliary Systems	3844	Soot blowing air compressor and system
850	Combined Cycle Bloc	External	Fuel Quality	9210	Low grindability (OMC)
851	CC GT units	External	Fuel Quality	9210	Low grindability (OMC)
852	CC steam units	External	Fuel Quality	9210	Low grindability (OMC)
860	Co-generator Block	External	Fuel Quality	9210	Low grindability (OMC)
861	CoG GT units	External	Fuel Quality	9210	Low grindability (OMC)
862	CoG steam units	External	Fuel Quality	9210	Low grindability (OMC)
850	Combined Cycle Block	External	Fuel Quality	9211	Low grindability (not OMC)
851	CC GT units	External	Fuel Quality	9211	Low grindability (not OMC)
852	CC steam units	External	Fuel Quality	9211	Low grindability (not OMC)
860	Co-generator Block	External	Fuel Quality	9211	Low grindability (not OMC)
861	CoG GT units	External	Fuel Quality	9211	Low grindability (not OMC)
862	CoG steam units	External	Fuel Quality	9211	Low grindability (not OMC)
850	Combined Cycle Block	External	Fuel Quality	9250	Low BTU coal (OMC)
851	CC GT units	External	Fuel Quality	9250	Low BTU coal (OMC)
852	CC steam units	External	Fuel Quality	9250	Low BTU coal (OMC)
860	Co-generator Block	External	Fuel Quality	9250	Low BTU coal (OMC)
861	CoG GT units	External	Fuel Quality	9250	Low BTU coal (OMC)
862	CoG steam units	External	Fuel Quality	9250	Low BTU coal (OMC)
850	Combined Cycle Block	External	Fuel Quality	9251	Low BTU coal (not OMC)
851	CC GT units	External	Fuel Quality	9251	Low BTU coal (not OMC)
852	CC steam units	External	Fuel Quality	9251	Low BTU coal (not OMC)
860	Co-generator Block	External	Fuel Quality	9251	Low BTU coal (not OMC)
861	CoG GT units	External	Fuel Quality	9251	Low BTU coal (not OMC)
862	CoG steam units	External	Fuel Quality	9251	Low BTU coal (not OMC)
850	Combined Cycle Block	External	Fuel Quality	9270	Wet coal (OMC)
851	CC GT units	External	Fuel Quality	9270	Wet coal (OMC)
852	CC steam units	External	Fuel Quality	9270	Wet coal (OMC)

Table O-2: Removing Cause Codes from Unit Types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
860	Co-generator Block	External	Fuel Quality	9270	Wet coal (OMC)
861	CoG GT units	External	Fuel Quality	9270	Wet coal (OMC)
862	CoG steam units	External	Fuel Quality	9270	Wet coal (OMC)
850	Combined Cycle Block	External	Fuel Quality	9271	Wet coal (not OMC)
851	CC GT units	External	Fuel Quality	9271	Wet coal (not OMC)
852	CC steam units	External	Fuel Quality	9271	Wet coal (not OMC)
860	Co-generator Block	External	Fuel Quality	9271	Wet coal (not OMC)
861	CoG GT units	External	Fuel Quality	9271	Wet coal (not OMC)
862	CoG steam units	External	Fuel Quality	9271	Wet coal (not OMC)
850	Combined Cycle Block	External	Fuel Quality	9280	Frozen coal (OMC)
851	CC GT units	External	Fuel Quality	9280	Frozen coal (OMC)
852	CC steam units	External	Fuel Quality	9280	Frozen coal (OMC)
860	Co-generator Block	External	Fuel Quality	9280	Frozen coal (OMC)
861	CoG GT units	External	Fuel Quality	9280	Frozen coal (OMC)
862	CoG steam units	External	Fuel Quality	9280	Frozen coal (OMC)
850	Combined Cycle Block	External	Fuel Quality	9281	Frozen coal (not OMC)
851	CC GT units	External	Fuel Quality	9281	Frozen coal (not OMC)
852	CC steam units	External	Fuel Quality	9281	Frozen coal (not OMC)
860	Co-generator Block	External	Fuel Quality	9281	Frozen coal (not OMC)
861	CoG GT units	External	Fuel Quality	9281	Frozen coal (not OMC)
862	CoG steam units	External	Fuel Quality	9281	Frozen coal (not OMC)
850	Combined Cycle Block	External	Miscellaneous (External)	9305	Ash disposal problem
851	CC GT units	External	Miscellaneous (External)	9305	Ash disposal problem
852	CC steam units	External	Miscellaneous (External)	9305	Ash disposal problem
860	Co-generator Block	External	Miscellaneous (External)	9305	Ash disposal problem
861	CoG GT units	External	Miscellaneous (External)	9305	Ash disposal problem
862	CoG steam units	External	Miscellaneous (External)	9305	Ash disposal problem
850	Combined Cycle Block	Regulatory, Safety, Environmental	Stack Emission	9605	SO2 stack emissions (Internal Combustion/Reciprocating Engines)
860	Co-generator Block	Regulatory, Safety, Environmental	Stack Emission	9605	SO2 stack emissions (Internal Combustion/Reciprocating Engines)

Table O-2: Removing Cause Codes from Unit Types					
Unit Type Code	Unit Type Name	System Name	Component Name	Cause Code ID	Cause Code Name
861	CoG GT units	Regulatory, Safety, Environmental	Stack Emission	9605	SO2 stack emissions (Internal Combustion/Reciprocating Engines)
862	CoG steam units	Regulatory, Safety, Environmental	Stack Emission	9605	SO2 stack emissions (Internal Combustion/Reciprocating Engines)