

Appendix B – Index to System/Component Cause Codes

Using This Appendix

This appendix contains system/component cause codes to use when completing GADS Event Report (07). For ease of use, it is divided into sections based on the type of generating unit, and each section contains all the codes that can be used for each unit type. For example, the section for fossil steam units includes codes for the boiler, steam turbine, generator, balance of plant, pollution control equipment, external, regulatory, safety and environmental, personnel errors, and performance testing. The section for hydro/pumped storage units contains the codes needed to report the electrical systems, generator, the hydro turbine/pump, external, regulatory, safety and environmental, personnel errors, and performance testing. (Table III-6, Page III-25, is a convenient reference that lists the appropriate system/component cause codes applicable to each type of generating unit.)

When copying the *GADS Data Reporting Instructions* for distribution to individual plants, copy only the section(s) of this appendix that are appropriate for the type(s) of unit(s) at each plant. Then the plant data reporter will have only the codes needed to report events, and may avoid some data reporting errors.

Additional cause codes for combined cycle and co-generation units are shown on Pages B-CC-1 to B-CC-31. There is also a section for geothermal units on Pages B-GE-1 to B-GE-16.

Guide for Code Selection

The intent of this appendix is not to provide an exhaustive list of codes for all possible causes or all components, but to provide the most common cause codes. Please add the details of events in the verbal description field to help understand what issues are occurring at the plant. Also, utilities have the option of reporting more detailed information concerning the manner in which a system or component failed using the Failure Mechanism Code. See Page III-29 and Appendix H for more information.

When reporting an event, select the code which best describes the cause or component responsible for the event. The following criteria are to be used in selecting a code:

- Assign the cause of the event to the major component or system that was responsible for the event, not to an auxiliary component or operation that triggered the failure of a major component or system. For instance, failure of an air line to one feedwater regulating valve may cause closure of that valve, resulting in a boiler trip on low level. In this case, the cause code for the feedwater regulating valve would be reported, not the code for the service air system. Note the fact that the valve closure was triggered by an air line failure in the verbal description. On the other hand, if the feedwater regulating valve closure had resulted from a complete loss of station air, the cause code for the station air system would be reported as the primary cause of the event. In this case, the station air system problem causes malfunctions of numerous valves and instruments throughout the plant, and no one major component or system could be uniquely identified as causing the outage.
- Report power supplies (motor control centers, breakers, etc.) which serve a particular component using the code for that component. Report power supply systems that serve multiple components using the code for the power supply system. For instance, if a breaker failure results in the loss of an FD fan, the code for the FD fan would be used. However, if a problem in the AC power distribution caused not only the loss of the FD fan but also the loss of several other major components, then use the code for AC power distribution.
- Report instruments or controls (such as pressure switches, pressure regulators, position indicators, etc.) that are part of a particular fan, pump, or valve, using the code for that component. Codes have been assigned to some control systems, such as feedwater control. Report all instruments, transmitters, logic

modules, etc., associated with these systems using the code for that control system.

- Use the codes for major overhaul only for non-specific overhaul work. Major repairs conducted during a major overhaul are to be reported separately using the appropriate code(s). For example, consider the case where a general turbine overhaul is conducted, during which reblading of a high pressure turbine wheel is required. Use the code 4400 to report the overhaul and include such things as opening and closing of the turbine, cleaning, and minor repairs as man-hours worked. Use the code 4012 to report the reblading of the HP turbine wheel and include only the man-hours worked on the reblading in the man-hours worked field.
- Use the codes for “External” and “Safety, Regulatory, and Environmental” only when no other system/component cause code applies. For instance, if stack emission limits are exceeded because of a fault in the flue gas scrubber, use a scrubber code. However, if a new limit on emissions is imposed and is exceeded even though the scrubber is functioning properly, then use an environmental code.

FOSSIL STEAM UNITS
INDEX TO SYSTEM/COMPONENT CAUSE CODES
(Unit Codes 100-199 and 600-649)

BOILER	Cause Code	Page No.
	<u>Ranges</u>	<u>Page No.</u>
Boiler Fuel Supply to Bunker	0010-0129	B-FS-5
Boiler Fuel Supply from Bunkers to Boiler	0200-0480	B-FS-6
Boiler Piping System	0500-0799	B-FS-7
Boiler Internals and Structures	0800-0859	B-FS-9
Slag and Ash Removal	0860-0920	B-FS-9
Boiler Tube Leaks	1000-1090	B-FS-9
Boiler Tube Fireside Slagging or Fouling	1100-1210	B-FS-10
Miscellaneous Boiler Tube Problems	1300-1360	B-FS-10
Boiler Air and Gas Systems	1400-1599	B-FS-10
Boiler Control Systems	1700-1799	B-FS-12
Boiler Overhaul and Inspections	1800-1820	B-FS-12
Boiler Water Condition	1850	B-FS-12
Boiler Design Limitations	1900-1910	B-FS-12
Miscellaneous (Boiler)	1980-1999	B-FS-12
 BALANCE OF PLANT		
Condensing System	3110-3199	B-FS-13
Circulating Water Systems	3210-3285	B-FS-14
Waste Water (zero discharge)	3290-3299	B-FS-14
Condensate System	3300-3399	B-FS-15
Feedwater System	3401-3499	B-FS-15
Heater Drain Systems	3501-3509	B-FS-16
Extraction Steam	3520-3549	B-FS-16
Electrical	3600-3690	B-FS-16
Power Station Switchyard	3700-3730	B-FS-17
Auxiliary Systems	3800-3899	B-FS-18
Miscellaneous (Balance of Plant)	3950-3999	B-FS-19
 STEAM TURBINE		
High Pressure Turbine	4000-4099	B-FS-20
Intermediate Pressure Turbine	4100-4199	B-FS-20
Low Pressure Turbine	4200-4250	B-FS-21
Valves	4260-4269	B-FS-21
Piping	4270-4279	B-FS-21
Lube Oil	4280-4289	B-FS-21
Controls	4290-4314	B-FS-21
Miscellaneous (Steam Turbine)	4400-4499	B-FS-22

GENERATOR	Cause Code Ranges	Page No.
Generator	4500-4580	B-FS-23
Exciter	4600-4609	B-FS-23
Cooling System	4610-4650	B-FS-23
Controls	4700-4750	B-FS-23
Miscellaneous (Generator)	4800-4899	B-FS-24
Miscellaneous (Gas Turbine)	5298	B-FS-24
POLLUTION CONTROL EQUIPMENT		
Wet Scrubbers	8000-8499	B-FS-24
Dry Scrubbers	8500-8549	B-FS-26
Precipitators	8550-8590	B-FS-27
Miscellaneous (Pollution Control Equipment)	8600-8699	B-FS-27
Continued Emissions Monitoring Systems (CEMS)	8700-8790	B-FS-27
NO _x Reduction Systems	8800-8835	B-FS-27
CO Reduction	8840-8845	B-FS-28
EXTERNAL		
Catastrophe	9000-9040	B-FS-28
Economic	0000, 9130-9160	B-FS-29
Economic (for internal use at plants only)	9180-9199	B-FS-29
Fuel Quality	9200-9291	B-FS-29
Miscellaneous (External)	9300-9340	B-FS-30
REGULATORY, SAFETY, ENVIRONMENTAL		
Regulatory	9504-9590	B-FS-30
Stack Emission	9600-9656	B-FS-30
Other Operating Environmental Limitations	9660-9690	B-FS-31
Safety	9700-9720	B-FS-31
PERSONNEL OR PROCEDURE ERRORS	9900-9960	B-FS-31
INACTIVE STATE	0002, 9990-9991	B-FS-31
PERFORMANCE	9997-9999	B-FS-31

BOILER

This set of codes contains the following:

- Boiler
- Boiler internals (tubes, refractory, supports, etc.)
- All the fuel handling, storage fuel preparation and burning equipment.
- The forced/induced draft air system.
- Slag and ash removal except for particulate and gas cleanup. These latter items are covered under pollution control equipment.
- The main steam and reheat steam systems up to but not including the turbine stop or isolation valves.
- The feedwater system downstream of the final valve prior to entry into the economizer or boiler.
- Boiler blowdown systems.
- The startup bypass system including drains up to the heaters or condenser.
- Boiler water chemistry problems not due to problems in the condensate/feedwater system, the chemical addition system, or the demineralizer/polisher system.
- The instruments and controls associated with the above equipment.

Boiler Fuel Supply to Bunker

Coal Handling Equipment up Through Bunkers

0010	Thaw shed failure or fire
0020	Coal car dumpers, shakers, and unloaders
0022	Unloading/receiving hopper (train/truck)
0024	Rotary plow
0026	Dust suppression system
0028	Dust collection system
0030	Coal conveyors and feeders
0035	Metal detector/collector (including magnetic separator)
0040	Coal elevators
0050	Coal storage fires
0060	Coal crushers including motors
0070	Coal samplers
0075	Storage silos/hoppers
0080	Stackers/reclaimers
0084	Coal conveyor scales storage coal pile
0085	Bunker feeder coal scales
0090	Bunker fires
0095	Bunker flow problems
0100	Bunker gates
0105	Bunker structures
0106	Coal drying system (see additional codes 0125-0127)
0107	Screen (prior to bunkers)
0110	Other coal fuel supply problems up through bunkers
0125	Coal crusher dryer hammers (see code 0106)
0126	Coal crusher lube oil system (see code 0106)
0127	Other coal crusher dryer problems (see code 0106)
0129	Other coal processing system problems

Boiler Fuel Supply from Bunkers to Boiler

Pulverizers, Primary Air Fans, and Associated Ducts

- 0200 Pulverizer exhauster fan (for indirect firing)
- 0205 Pulverizer exhauster fan drive
- 0210 Pulverizer heater (for indirect firing)
- 0220 Pulverizer system cyclone separator
- 0230 Pulverizer bag filter
- 0240 Pulverized coal bin
- 0250 Pulverizer feeders
- 0253 Pulverizer feeder motor
- 0255 Pulverizer feeder coal scales
- 0256 Seal air system (air to pulverizers)
- 0257 Coal Cursher/dryer between feeder and pulverizer
- 0260 Primary air fan
- 0262 Primary air fan lube oil system
- 0263 Primary air fan drives
- 0264 Other primary air fan problems
- 0265 Primary air heater
- 0266 Primary air heater fouling
- 0267 Primary air flow instrumentation
- 0270 Primary air duct and dampers
- 0280 Pulverizer fires
- 0290 Pulverizer reduced capacity due to wear
- 0300 Pulverizer motors and drives
- 0310 Pulverizer mills
- 0312 Pulverizer mill classifiers
- 0313 Pulverizer mill trunnion seals
- 0314 Pulverizer mill ball charger hopper (ball mills only)
- 0315 Pulverizer mill coal level controls
- 0320 Foreign object in Pulverizers mill
- 0325 Pulverizer skidding
- 0330 Pulverizer coal leak (pulverizers only)
- 0331 Pulverizer system coal leaks (other than pulverizers)
- 0335 Pulverizer lube oil system
- 0338 Pulverizer control systems (temperature and pressure)
- 0339 Pulverizer System Puff
- 0340 Other pulverizer problems
- 0341 Pulverizer deluge system
- 0342 Pulverizer Inert system
- 0344 Pulverizer inspection
- 0345 Pulverizer overhaul
- 0346 Pulverizer pyrite removal system
- 0350 Pulverized fuel and air piping (from pulverizer to wind box)
(see code 0898 for pulverizer reject system problems)

Burners

- 0358 Oil burner piping and valves

0359	Gas burner piping and valves
0360	Burners
0362	Burner tilts
0361	Burner orifices
0370	Burner instruments and controls (except light off)
0380	Light off (igniter) systems (including fuel supply)
0385	Igniters
0390	Burner wind boxes and dampers
0400	Burner wind box fires
0410	Other burner problems

Cyclone

0415	Cyclone feeders
0420	Cyclone crusher
0425	Cyclone dampers
0426	Cyclone air ducts
0430	Cyclone furnace
0435	Other cyclone problems

Oil and Gas Systems (except light off)

0440	Fuel oil pumps (general)
0441	Fuel oil pumps (burner supply)
0442	Fuel oil pumps (forwarding/transfer)
0443	Fuel oil (burner supply) pump drives
0444	Fuel oil (forwarding/transfer) pump drives
0450	Fuel oil heaters
0460	Fuel oil atomizers
0470	Oil and gas fires
0480	Other oil and gas fuel supply problems (see codes 0360 0410 for burner problems)

Boiler Piping System

Main Steam

0500	Main steam piping up to turbine stop valves
0510	Main steam relief/safety valves off superheater
0520	Other main steam valves (including vent and drain valves but not the turbine stop valves)
0530	Other main steam system problems

Cold and Hot Reheat Steam

0540	Hot reheat steam piping up to turbine stop valves
0541	Cold reheat steam piping up to boiler
0550	Reheat steam relief/safety valves
0560	Other hot reheat steam valves (not including turbine stop or intercept valves)
0561	Other cold reheat steam valves (not including turbine stop or intercept valves)
0570	Other reheat steam problems

Desuperheaters/Attemperators

- 0580 Desuperheater/attenuator piping
- 0590 Desuperheater/attenuator valves
- 0600 Desuperheater/attenuator spray nozzles
- 0610 Desuperheater/attenuator drums
- 0620 Other desuperheater/attenuator problems

Startup Bypass

- 0630 Startup bypass system piping (including drain lines up to heaters or condenser)
- 0640 Startup bypass system valves
- 0650 Startup bypass tanks or flash tanks
- 0655 Steam by-pass system instrumentation and controls
- 0660 Other startup bypass system problems

Feedwater and Blowdown

- 0670 Feedwater piping downstream of feedwater regulating valve
- 0680 Feedwater valves (not feedwater regulating valve)
- 0690 Other feedwater problems downstream of feedwater regulating valve (use codes 3401 to 3499 for remainder of feedwater system)
- 0700 Blowdown system valves
- 0710 Blowdown system piping
- 0720 Blowdown system controls /instrumentation
- 0730 Other blowdown system problems

Boiler Recirculation

- 0740 Boiler recirculation pumps
- 0741 Boiler recirculation pumps - motors
- 0742 Boiler recirculation pumps – motors – cooling system
- 0750 Boiler recirculation piping (including downcomers)
- 0760 Boiler recirculation valves
- 0770 Other boiler recirculation problems

Miscellaneous (Piping)

- 0775 Economizer piping
- 0780 Headers between tube bundles
- 0782 Headers and caps
- 0790 Pipe hangers, brackets, supports (general)
- 0799 Other miscellaneous piping system problems

Boiler Internals and Structures

0800	Drums and drum internals (single drum)
0810	Boiler supports and structures (use code 1320 for tube supports)
0820	Casing
0830	Doors
0840	Refractory and insulation
0845	Windbox expansion joints
0847	Other expansion joints
0850	Other internal or structural problems
0855	Drum relief/safety valves (single drum)
0859	Tube external fins/membranes

Slag and Ash Removal

0860	Soot blowers - air (see code 3844 for air delivery system)
0870	Soot blowers - steam
0871	Soot blowers - sonic
0872	Soot blowers - water
0873	Soot blower drives
0876	Soot blower controls
0880	Fly ash Removal System (not precipitators, scrubbers, mechanical collectors, or baghouses)
0885	Fly ash Removal System – wet transport
0890	Bottom ash systems (wet or dry)
0891	Bottom ash hoppers (including gates)
0892	Bottom ash clinker grinders
0893	Bottom ash water pumps and motors
0894	Bottom ash piping and valves
0895	Ashpit trouble
0896	Bottom ash dewatering bin system, instruments and controls
0897	Bottom ash rotary (drag chain type) conveyor and motor
0898	Bottom ash pyrite hopper (pulverizer reject) system
0899	Bottom ash controls and instrumentation
0900	Slag-tap (cyclone furnace)
0910	Slag-tap (other than cyclone furnace)
0920	Other slag and ash removal problems

Boiler Tube Leaks

(use code 0859 for tube/membrane failures)

1000	Waterwall (Furnace wall)
1003	Steam generating tubes between steam drum and mud drum
1005	Generating tubes
1010	Cyclone furnace (in cyclone area only)
1020	Convection pass wall (water tubes only)
1030	Boiler screen, wing wall, or slag screen (water tubes only)
1035	Platen superheater
1040	First superheater
1050	Second superheater
1055	External superheater link tubing
1060	First reheater
1070	Second reheater
1075	External reheater link tubing
1080	Economizer
1090	Other boiler tube leaks

Boiler Tube Fireside Slagging or Fouling

(use codes 0860 and 0870 for fouling or slagging due to unavailability of soot blowers or their air or steam supply)

- 1100 Waterwall (Furnace wall)
- 1103 Steam generating tubes between steam drum and mud drum
- 1105 Generating tubes
- 1110 Cyclone furnace (in cyclone area only)
- 1120 Convection pass wall
- 1130 Boiler screen, wing wall, or slag screen (water tubes only)
- 1140 First superheater
- 1150 Second superheater
- 1160 First reheater
- 1170 Second reheater
- 1180 Economizer
- 1190 Other tube slagging or fouling
- 1200 Operation at reduced power to avoid slagging or fouling (use codes 1100 to 1190 to report power reductions for slag accumulation or slag removal)
- 1210 Operation at reduced power to avoid slagging or fouling on waterwalls (Furnace walls) (use codes 1100-1190 to report power reductions for slag accumulation or slag removal)

Miscellaneous Boiler Tube Problems

- 1300 Water side fouling
- 1305 Fireside cleaning (which requires a full outage) Use code 1200 for cleanings that cause deratings.
- 1310 Water side cleaning (acid cleaning)
- 1320 Tube supports/attachments
- 1330 Slag fall damage
- 1340 Tube modifications (including addition and removal of tubes)
- 1350 Other miscellaneous boiler tube problems
- 1360 Boiler drains system

Boiler Air and Gas Systems

(excluding burner pipes, wind boxes, primary air, or pulverizer exhausters)

Air Supply

- 1400 Forced draft fans
- 1401 Forced draft fan dampers
- 1407 Forced draft fan lubrication system
- 1410 Forced draft fan motors
- 1411 Forced draft fan motors - variable speed
- 1412 Forced draft fan drives (other than motor)
- 1413 Forced draft fan couplings
- 1415 Forced draft fan controls
- 1420 Other forced draft fan problems
- 1421 Secondary air fans/blowers
- 1422 Secondary air fan/blower motors - single speed
- 1423 Secondary air fan/blower motors - variable speed
- 1424 Secondary air fan/blower controls
- 1430 Air supply ducts from FD fan
- 1431 Air supply dampers from FD fan
- 1432 Air supply duct expansion joints
- 1440 Air supply dampers

1450 Other air supply problems

Flue Gas

1455 Induced draft fans
1456 Induced draft fan dampers
1457 Induced draft fan lubrication systems
1460 Induced draft fan fouling
1470 Induced draft fan motors and drives
1471 Induced draft fan motors - variable speed
1472 Induced draft fan coupling
1475 Induced draft fan controls
1476 Induced draft fan speed changer
1480 Other induced draft fan problems
1487 Air heater (tubular)
1488 Air heater (regenerative)
1489 Air heater (heat pipe, plate-type)
1492 Air heater fouling (tubular)
1493 Air heater fouling (regenerative)
1495 Other air heater fouling (heat pipe, plate-type)
1500 Air heater soot blowers
1510 Flue gas ducts (except recirculation)
1512 Flue gas expansion joints
1520 Flue gas dampers (except recirculation)
1530 Other flue gas problems

Flue Gas Recirculation

1535 Flue gas recirculating fan
1536 Flue gas recirculating fan dampers
1537 Flue gas recirculating fan lubrication systems
1540 Flue gas recirculation fan fouling
1550 Flue gas recirculation fan motors
1555 Flue gas recirculation fan controls
1560 Other flue gas recirculation fan problems
1570 Flue gas recirculation ducts
1572 Flue gas recirculation duct expansion joints
1580 Flue gas recirculation dampers

Miscellaneous (Boiler Air and Gas Systems)

1590 Stacks (use code 8430 for stack problems due to pollution control equipment)
1591 Stack damper and linkage
1592 Stack damper linkage motors
1599 Other miscellaneous boiler air and gas system problems

Boiler Control Systems

(including instruments which input to the controls)

- 1700 Feedwater controls (report local controls – feedwater pump, feedwater regulator valve, etc., – with component or system)
- 1710 Combustion/steam condition controls (report local controls – burners, pulverizers, etc., – with component or system)
- 1720 Desuperheater/attenuator controls (not local controls)
- 1730 Boiler explosion or implosion
- 1740 Boiler gage glasses /level indicator
- 1741 Furnace and water gauge television auxiliary system
- 1750 Burner management system
- 1760 Feedwater instrumentation (not local controls)
- 1761 Combustion /Steam condition instrumentation (not local controls)
- 1762 Desuperheater/attenuator instrumentation (not local controls)
- 1799 Other boiler instrumentation and control problems

Boiler Overhaul and Inspections

- 1800 Major boiler overhaul (720 hours or more) (use for non-specific overhaul only; see page B-FS-2)
- 1801 Minor boiler overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-FS-2)
- 1810 Other boiler inspections
- 1811 Boiler Inspections – problem identification/investigation
- 1812 Boiler Inspections – scheduled or routine
- 1820 Chemical cleaning/steam blows

Boiler Water Condition

- 1850 Boiler water condition (not feedwater water quality)

Boiler Design Limitations

- 1900 Improper balance between tube sections not due to fouling or plugging
- 1910 Inadequate air not due to equipment problems

Miscellaneous (Boiler)

(use more specific codes - other slagging and fouling problems, other control problems, etc. - whenever possible. Describe miscellaneous problems in the verbal description.)

- 1980 Boiler safety valve test
- 1990 Boiler performance testing (use code 9999 for total unit performance testing)
- 1999 Boiler, miscellaneous

BALANCE OF PLANT

Condensing System

Condenser Tubes and Support Equipment

- 3110 Condenser tube leaks
- 3111 Condenser tube fouling shell side
- 3112 Condenser tube fouling tube side
- 3113 Condenser tube and water box cleaning (including circulating water flow reversal)
- 3114 Air-cooled condenser tubes
- 3115 Air-cooled condenser pumps
- 3116 Air-cooled condenser fans
- 3117 Air-cooled condenser fan motors
- 3118 Other Air-cooled condenser problems
- 3119 Other condenser tube casing or shell and internal problems

Condenser Casing or Shell and Internals

- 3120 Tube sheets
- 3121 Expansion joint
- 3122 Gaskets and seals
- 3123 Hot well
- 3124 Tube sheet fouling
- 3129 Other condenser casing or shell and internal problems

Vacuum Equipment

- 3130 Air ejectors
- 3131 Air ejector piping and valves
- 3132 Inter and after condensers
- 3133 Vacuum pumps
- 3134 Vacuum pump piping and valves
- 3135 Vacuum pump motor and auxiliaries
- 3139 Other air extraction system problems - general
- 3149 Loss of vacuum not attributable to a particular component such as air ejectors or valves, or high back pressure not attributable to high circulating water temperature, or vacuum losses from a known cause.

Condenser Controls

- 3150 Hot well level controls
- 3151 Vacuum pump and air ejector controls
- 3152 Air-cooled condenser controls
- 3159 Other condensing system controls and instruments

Miscellaneous (Condensing System)

- 3170 Condenser inspection (use code 3110 to report looking for tube leaks)
- 3171 Air-cooled condenser inspections
- 3180 Major condenser overhaul
- 3185 Water side cathodic protection
- 3186 Auxiliary condenser and associated equipment
- 3190 Air leakage (for losses not attributable to previously noted equipment related codes)

3199 Other miscellaneous condensing system problems

Circulating Water Systems

3210 Circulating water pumps
3211 Circulating water pump motors
3220 Circulating water piping
3221 Circulating water piping fouling
3230 Circulating water valves
3231 Waterbox
3232 Condenser tube cleaning system including debris filter
3233 Circulating water priming system
3235 Cooling tower booster pump
3236 Cooling tower booster motor
3238 Cooling tower fan motors
3239 Cooling tower fan motors - variable speed
3240 Cooling tower fans
3241 Cooling tower efficiency below design
3242 Cooling tower fill damage
3243 Cooling tower icing
3244 Cooling tower fires
3245 Other cooling tower problems
3246 Cooling tower fouling
3247 Cooling tower instrumentation
3250 Circulating water system instruments and controls
3260 Traveling screens
3261 Traveling screen fouling
3269 Circulating water biological conditions (ie, zebra mussels)
3270 Intake system problems other than traveling screens
3271 Intake grating fouling
3272 Circulating water screenwash system
3273 Debris in circulating water from outside sources (leaves, mud, etc.)
3274 Ice blockages at intake structures including frazil ice, sheets, blocks of ice, etc.
3280 High circulating water temperature (not due to season, tower efficiency below design, or other listed equipment problem)
3281 Circulating water tempering system
3282 Circulating water cooling ponds
3285 Circulating water chemistry

Waste Water (zero discharge) Systems

3290 Waste water (zero discharge) tanks, pumps and motors
3291 Waste water (zero discharge) system fouling
3292 Waste water (zero discharge) piping
3293 Waste water (zero discharge) valves
3294 Waste water (zero discharge) controls and instrumentation
3295 Other waste water (zero discharge) problems
3299 Other circulating water system problems

Condensate System

Pumps, Piping, and Valves

- 3300 Condensate water pre-treatment
- 3310 Condensate/hotwell pumps
- 3311 Condensate/hotwell pump motor
- 3312 Condensate booster pump
- 3313 Condensate booster pump motor
- 3314 Condensate booster pump motor - variable speed
- 3315 Condensate booster pump drive (other than 3313 and 3314)
- 3320 Condensate piping
- 3330 Condensate valves

Low/Intermediate Pressure Heater and Deaerators

- 3339 LP heater head leaks
- 3340 LP heater tube leaks
- 3341 Other LP heater – general
- 3342 IP heater tube leaks
- 3343 Other IP heater – general
- 3344 Deaerator (including level control)
- 3345 IP heater head leaks

Polishers/Chemical Addition

- 3350 Condensate polishing and filtering systems
- 3351 Chemical addition systems
- 3352 Feedwater chemistry (not specific to condenser, polishers, or chemical addition)

Miscellaneous (Condensate System)

- 3360 Condensate makeup and return (including storage tanks)
- 3370 Condensate system controls and instrumentation (not hotwell level, heater level, or deaerator level controls: see codes 3150-3159, 3344, 3502).
- 3380 Condensate coolers
- 3399 Other miscellaneous condensate system problems

Feedwater System

(excluding extraction or drain systems)

- 3401 Startup feedwater pump
- 3402 Startup feedwater pump drives - all types
- 3407 Feedwater pump suction screens
- 3408 Feedwater pump drive – local controls
- 3409 Feedwater pump drive motor - variable speed
- 3410 Feedwater pump
- 3411 Feedwater pump drive - motor
- 3412 Feedwater pump drive - steam turbine
- 3413 Feedwater pump coupling and drive shaft
- 3414 Feedwater pump local controls
- 3415 Feedwater pump/drive lube oil system
- 3416 Other feedwater pump problems
- 3417 Feedwater pump drive - main shaft

- 3418 Feedwater pump drive - other
- 3419 Feedwater pump drive - gear
- 3420 Feedwater piping and supports
- 3430 Feedwater regulating (boiler level control) valve
- 3431 Other feedwater valves
- 3439 HP heater head leaks
- 3440 High pressure heater tube leaks
- 3441 Other high pressure heater problems (see condensate system for LP and IP heater codes)
- 3451 Feedwater booster pump suction screens
- 3452 Feedwater booster pump drive - local controls
- 3453 Feedwater booster pump drive motor - variable speed
- 3454 Feedwater booster pump
- 3455 Feedwater booster pump drive - motor
- 3456 Feedwater booster pump drive - steam turbine
- 3457 Feedwater booster pump coupling and drive shaft
- 3458 Feedwater booster pump local controls
- 3459 Feedwater booster pump/drive lube oil system
- 3460 Other feedwater booster pump problems
- 3461 Feedwater booster pump drive - main shaft
- 3462 Feedwater booster pump drive - other
- 3463 Feedwater booster pump drive - gear
- 3499 Other feedwater system problems

Heater Drain Systems

- 3501 Heater drain pumps
- 3502 Heater level control
- 3503 Heater drain piping
- 3504 Heater drain valves
- 3505 Heater drain pump drive
- 3509 Other heater drain system problems

Extraction Steam

- 3520 HP Extraction steam piping
- 3521 HP Extraction steam valves
- 3522 HP Extraction steam instruments and controls
- 3529 Other HP extraction steam system problems
- 3530 IP Extraction steam piping
- 3531 IP Extraction steam valves
- 3532 IP Extraction steam instruments and controls
- 3539 Other IP extraction steam system problems
- 3540 LP Extraction steam piping
- 3541 LP Extraction steam valves
- 3542 LP Extraction steam instruments and controls
- 3549 Other LP extraction steam system problems

Electrical

- 3600 Switchyard transformers and associated cooling systems – external (OMC)
- 3601 Switchyard transformers and associated cooling systems – external (not OMC)
- 3610 Switchyard circuit breakers – external (not OMC)
- 3611 Switchyard circuit breakers – external (OMC)
- 3612 Switchyard system protection devices – external (OMC)
- 3613 Switchyard system protection devices – external (not OMC)

3618	Other switchyard equipment – external (not OMC)
3619	Other switchyard equipment – external (OMC)
3620	Main transformer
3621	Unit auxiliaries transformer
3622	Station service startup transformer
3623	Auxiliary generators
3624	Auxiliary generator voltage supply system
3629	Other switchyard or high voltage system problems - external
3630	400-700-volt transformers
3631	400-700-volt circuit breakers
3632	400-700-volt conductors and buses
3633	400-700-volt insulators
3634	400-700-volt protection devices
3639	Other 400-700-volt problems
3640	AC instrument power transformers
3641	AC Circuit breakers
3642	AC Conductors and buses
3643	AC Inverters
3644	AC Protection devices
3649	Other AC instrument power problems
3650	DC instrument power battery chargers
3651	DC circuit breakers
3652	DC conductors and buses
3653	DC protection devices
3659	Other DC power problems
3660	4000-7000-volt transformers
3661	4000-7000-volt circuit breakers
3662	4000-7000-volt conductors and buses
3663	4000-7000-volt insulators
3664	4000-7000-volt protection devices
3669	Other 4000-7000-volt problems
3670	12-15kV transformers
3671	12-15kV circuit breakers
3672	12-15kV conductors and buses
3673	12-15kV insulators
3674	12-15kV protection devices
3679	Other 12-15kV problems
3680	Other voltage transformers
3681	Other voltage circuit breakers
3682	Other voltage conductors and buses
3683	Other voltage insulators
3684	Other voltage protection devices
3689	Other voltage problems
3690	Station Service Power Distribution System, General

Power Station Switchyard

3700	Power Station switchyard (non generating unit equipment)
3710	Transmission line (connected to powerhouse switchyard to 1st Substation)
3720	Transmission equipment at the 1st substation) (see code 9300 if applicable)

3730 Transmission equipment beyond the 1st substation (see code 9300 if applicable)

Auxiliary Systems

Open Cooling Water System

3800 Open cooling water pumps and motors
3801 Open cooling water piping
3802 Open cooling water valves
3803 Open cooling water heat exchangers
3804 Open cooling water system fouling
3805 Open cooling water system instrumentation
3806 Open cooling water strainer
3809 Other open cooling water problems

Service Water (Open System)

3810 Service water pumps and motors
3811 Service water piping
3812 Service water valves
3813 Service water heat exchangers
3814 Service water system fouling
3815 Service water strainer
3819 Other service water problems

Closed Cooling Water Systems

3820 Closed cooling water pumps
3821 Closed cooling water piping
3822 Closed cooling water valves
3823 Closed cooling water heat exchangers
3824 Closed cooling water system fouling
3825 Closed cooling water instrumentation
3826 Closed cooling water strainer
3829 Other closed cooling water system problems

Auxiliary Steam

3830 Auxiliary boiler
3831 Auxiliary steam piping
3832 Auxiliary steam valves
3833 Auxiliary steam controls and instruments
3834 Auxiliary boiler tube leaks
3835 Auxiliary boiler burner management system
3836 Steam transfer to other unit
3839 Other auxiliary steam problems (also see extraction steam codes 3520 to 3529; startup bypass codes 0630 to 0660; and soot blower steam code 0870)

Service Air

3840 Service air compressors
3841 Service air piping
3842 Service air valves
3843 Service air dryers

- 3844 Soot blowing air compressor and system
- 3849 Other service air problems

Instrument Air

- 3850 Instrument air compressors
- 3851 Instrument air piping
- 3852 Instrument air valves
- 3853 Instrument air dryers
- 3854 N₂ backup to instrument air
- 3859 Other instrument air problems

Fire Protection System

- 3860 Fire protection system pumps
- 3861 Fire protection system piping
- 3862 Fire protection system valves
- 3863 Fire protection system fouling
- 3864 Fire protection system instruments and controls
- 3869 Other fire protection system problems

Low-pressure Gas Compression System

- 3870 Fuel Gas Compressor and Motors
- 3871 Fuel Gas Compressor Piping
- 3872 Fuel Gas Compressor Valves
- 3873 Fuel Gas Compressor Heat Exchangers
- 3874 Fuel Gas Compressor Controls and Instrumentation
- 3875 Fuel Gas Compressor Filters
- 3876 Fuel Gas Compressor Fire System
- 3879 Fuel Gas Compressor – other

Seal Air Fans

- 3880 Seal air fan
- 3881 Seal air fan drive - motor
- 3882 Seal air control dampers and drives
- 3883 Seal air filters
- 3889 Other seal air problems

Miscellaneous (Auxiliary Systems)

- 3898 Miscellaneous plant auxiliary process and services instrumentation and controls
- 3899 Other miscellaneous auxiliary system problems

Miscellaneous (Balance of Plant)

- 3950 Process computer
- 3960 Thermal derating (thermal efficiency losses in balance of plant when specific cause(s) unknown)
- 3970 Distributive Control System (DCS) – process computer
- 3971 DCS – data highway
- 3972 DCS – hardware problems (including card failure)
- 3973 DCS – internal and termination wiring

3974	DCS – logic problems
3975	DCS – upgrades
3979	Other DCS problems
3980	Programmable Logic Controller (PLC)
3981	PLC – data highway
3982	PLC – hardware problems (including card failure)
3983	PLC – internal and termination wiring
3984	PLC – logic problems
3985	PLC – upgrades
3989	Other PLC problems
3995	Powerhouse heating and ventilating systems
3996	Air conditioning systems – rooms and areas
3998	Balance of plant overhaul/outage
3999	Other miscellaneous balance of plant problems

STEAM TURBINE

Besides the turbine, this set includes the steam stop/control valves, turbine control system, and the turbine auxiliaries. The extraction steam codes are contained in the Balance of Plant set.

High Pressure Turbine

4000	Outer casing
4001	Inner casing
4009	Nozzle bolting
4010	Nozzles and nozzle blocks
4011	Diaphragms
4012	Buckets or blades
4013	Diaphragms unit and shroud type
4014	Bucket or blade fouling
4015	Wheels or spindles
4020	Shaft seals
4021	Dummy rings
4022	Gland rings
4030	Rotor shaft
4040	Bearings
4041	Thrust bearings
4099	Other high pressure turbine problems

Intermediate Pressure Turbine

4100	Outer casing
4101	Inner casing
4109	Nozzle bolting
4110	Nozzles and nozzle blocks
4111	Diaphragms
4112	Buckets or blades
4113	Bucket or blade fouling
4115	Wheels or spindles
4120	Shaft seals
4121	Dummy rings
4122	Gland rings
4130	Rotor shaft
4140	Bearings

- 4141 Thrust bearings
- 4199 Other intermediate pressure turbine problems

Low Pressure Turbine

- 4200 Outer casing
- 4201 Inner casing
- 4209 Nozzle bolting
- 4210 Nozzles and nozzle blocks
- 4211 Diaphragms
- 4212 Buckets or blades
- 4213 Bucket or blade fouling
- 4215 Wheels or spindles
- 4220 Shaft seals
- 4221 Dummy rings
- 4222 Gland rings
- 4230 Rotor shaft
- 4240 Bearings
- 4241 Thrust bearings
- 4250 Other low pressure turbine problems

Valves

- 4260 Main stop valves
- 4261 Control valves
- 4262 Intercept valves
- 4263 Reheat stop valves
- 4264 Combined intercept valves
- 4265 Miscellaneous drain and vent valves
- 4266 Main stop valve testing
- 4267 Control valve testing
- 4268 Reheat/intercept valve testing
- 4269 Other turbine valves

Piping

- 4270 Crossover or under piping
- 4279 Miscellaneous turbine piping

Lube Oil

(do not include bearing failures due to lube oil)

- 4280 Lube oil pumps
- 4281 Lube oil coolers
- 4282 Lube oil conditioners
- 4283 Lube oil system valves and piping
- 4284 Lube oil pump drive
- 4289 Other lube oil system problems

Controls

- 4290 Hydraulic system pumps
- 4291 Hydraulic system coolers
- 4292 Hydraulic system filters

- 4293 Hydraulic system pipes and valves
- 4299 Other hydraulic system problems
- 4300 Turbine supervisory system (use codes 4290 to 4299 for hydraulic oil)
- 4301 Turbine governing system
- 4302 Turbine trip devices (including instruments)
- 4303 Exhaust hood and spray controls
- 4304 Automatic turbine control systems - mechanical
- 4305 Automatic turbine control systems - mechanical - hydraulic
- 4306 Automatic turbine control systems - electro-hydraulic - analog
- 4307 Automatic turbine control systems - electro-hydraulic - digital
- 4308 Automatic turbine control systems - digital control and monitoring
- 4309 Other turbine instrument and control problems
- 4310 Steam Turbine Control System - data highway
- 4311 Steam Turbine Control System - hardware problems (including card failure)
- 4312 Steam Turbine Control System - internal and termination wiring
- 4313 Steam Turbine Control System - logic problems
- 4314 Steam Turbine Control System - upgrades

Miscellaneous (Steam Turbine)

- 4400 Major turbine overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-FS-2)
- 4401 Inspection
- 4402 Minor turbine overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-FS-2)
- 4410 Turning gear and motor
- 4411 Steam turbine gear box (single shaft configuration)
- 4412 Steam turbine clutch (single shaft configuration)
- 4415 Shaft coupling mechanism
- 4420 Vibration of the turbine generator unit that cannot be attributed to a specific cause such as bearings or blades (use this code for balance moves)
- 4430 Gland seal system
- 4450 Water induction
- 4460 Turbine overspeed trip test
- 4470 Differential expansion
- 4490 Turbine performance testing (use code 9999 for total unit performance testing)
- 4499 Other miscellaneous steam turbine problems

GENERATOR

This set of codes contains the generator, exciter, generator cooling systems, and generator controls. Note the main leads up to and includes the generator output breaker in this set of codes.

Generator

4500	Rotor windings
4510	Rotor collector rings
4511	Rotor, General
4512	Retaining Rings
4520	Stator windings, bushings, and terminals
4530	Stator core iron
4535	Stator, General
4536	Generator Heaters
4540	Brushes and brush rigging
4550	Generator bearings and lube oil system
4551	Generator bearings
4552	Generator lube oil system
4555	Bearing cooling system
4560	Generator vibration (excluding vibration due to failed bearing and other components)
4570	Generator casing
4580	Generator end bells and bolting

Exciter

4600	Exciter drive - motor
4601	Exciter field rheostat
4602	Exciter commutator and brushes
4603	Solid state exciter element
4604	Exciter drive - shaft
4605	Exciter transformer
4609	Other exciter problems

Cooling System

(report failures caused by water leaks into generator as codes 4500, 4510, etc.)

4610	Hydrogen cooling system piping and valves
4611	Hydrogen coolers
4612	Hydrogen storage system
4613	Hydrogen seals
4619	Other hydrogen system problems
4620	Air cooling system
4630	Liquid cooling system
4640	Seal oil system and seals
4650	Other cooling system problems

Controls

4700	Generator voltage control
4710	Generator metering devices
4720	Generator synchronization equipment
4730	Generator current and potential transformers
4740	Emergency generator trip devices

4750 Other generator controls and metering problems

Miscellaneous (Generator)

4800 Generator main leads
 4805 Generator Bus Duct Cooling System
 4810 Generator output breaker
 4830 Major generator overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-FS-2)
 4831 Minor generator overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-FS-2)
 4840 Inspection
 4841 Generator dole testing
 4842 Reactive and capability testing
 4850 Core monitor alarm
 4860 Generator neutral grounding equipment
 4899 Other miscellaneous generator problems

Miscellaneous (Gas Turbine)

5298 Main Gas Filter

POLLUTION CONTROL EQUIPMENT *

Use this set of codes to report problems with flue gas desulphurization equipment and stack gas particulate removal equipment. If outages or deratings occur due to reasons other than equipment problems, use the set of codes for Regulatory, Safety, Environmental stack emission limits.

Wet Scrubbers

Chemical Supply

8000 Chemical feed storage, mill feeders, and conveyors
 8002 Screw conveyors
 8003 Bucket elevators
 8006 Weigh feeders
 8010 Crushers/mills
 8020 Mill slurry tanks supply problems
 8030 Classifiers
 8040 Slurry transfer pumps and motors
 8050 Chemical unavailability
 8099 Other chemical supply problems

Wet Scrubber

8100 Scrubber/absorber tower or module
 8110 Spray nozzles
 8115 Disc scrubber throats
 8120 Spray pumps and motors
 8125 Scrubber recycle (liquid) pumps
 8127 Scrubber recycle (liquid) pump motors
 8130 Recirculation tanks including agitators
 8140 Reaction tanks including agitators
 8150 Tubes

- 8160 Mist eliminators/demisters and washdown
- 8199 Other scrubber problems

Piping, Ducting, Dampers, and Fans

- 8200 Piping
- 8210 Valves
- 8220 Strainers or filters
- 8225 Drain pots
- 8230 Ducting
- 8235 Demister
- 8240 Bypass dampers
- 8250 Dampers other than bypass
- 8260 Scrubber booster I.D. fan (fan specific to the scrubber)
- 8261 Scrubber booster I.D. fan drive

* Use code 9510 for outages or deratings required to install pollution control equipment. Use codes 9600 to 9650 only when the pollution control equipment problems are not responsible for exceeding emission limits.

Piping, Ducting, Dampers, and Fans (Continued)

- 8262 Scrubber booster I.D. fan vibration (fan specific to the scrubber)
- 8264 Scrubber booster I.D. fan blades (fan specific to the scrubber)
- 8265 Scrubber booster ID fan dampers
- 8270 Scrubber booster F.D. fan (fan specific to the scrubber)
- 8271 Scrubber booster F.D. fan drive
- 8272 Scrubber booster F.D. fan vibration (fan specific to the scrubber)
- 8274 Scrubber booster F.D. fan blades (fan specific to the scrubber)
- 8275 Scrubber booster FD fan dampers
- 8280 Reagent feed piping
- 8290 Demister wash piping assembly
- 8299 Other piping, ducting, damper, and fan problems

Waste Disposal and Recovery

- 8300 Waste disposal/recovery tanks
- 8310 Waste disposal/recovery pumps
- 8320 Waste disposal ponds
- 8325 Ash disposal problems
- 8330 Dewatering equipment(thickener, centrifuge, etc.)
- 8335 Dryers
- 8340 Centrifuge/vacuum filter
- 8345 Calciners
- 8349 Other waste disposal and recovery problems
- 8399 Solids conveying and mixing system problems

Miscellaneous (Wet Scrubber)

- 8400 Scrubber gas discharge reheaters - general
- 8402 Scrubber gas discharge reheaters - vibration
- 8404 Scrubber gas discharge reheaters - tube leaks
- 8406 Scrubber gas discharge reheaters - ducts
- 8410 Scrubber instruments and controls
- 8415 Liquid level controls
- 8420 Heat tracer

- 8425 Miscellaneous mechanical failures
- 8426 Miscellaneous electrical failures
- 8430 Stack damage related to scrubber system
- 8440 Major overhaul
- 8450 Inspection
- 8460 Testing
- 8470 SO₂ monitor
- 8499 Other miscellaneous wet scrubber problems

Dry Scrubbers

Reagent\Slurry Supply

- 8500 Slurry storage and feed tanks
- 8501 Reagent storage, feed bins, and conveyors
- 8502 Weigh feeders
- 8503 Screw conveyors
- 8504 Mills/slakers
- 8505 Scalping screens
- 8506 Slurry pipelines
- 8507 Reagent uploading and transfer systems
- 8508 Reagent unavailability
- 8510 Slurry mixers and agitators
- 8520 Slurry transfer pumps and motors
- 8521 Reagent/slurry problems

Piping, Ducting, and Dampers

- 8522 Piping
- 8523 Valves
- 8524 Strainers or filters
- 8525 Ducting
- 8526 Dampers
- 8527 Other piping, ducting, and damper problems

Dry Scrubber

- 8528 Dry scrubber instruments and controls
- 8529 Gas dispersers
- 8530 Spray towers
- 8531 Spray machine/atomizer
- 8532 Spray machine/atomizer motors
- 8533 Spray machine/atomizer lubrication systems
- 8534 Spray machine/atomizer vibration problems

Waste Disposal and Recovery

- 8535 Fly ash conveyors
- 8536 Bucket elevators
- 8537 Weigh hoppers
- 8538 Recycle storage and feed tanks including agitators
- 8539 Recycle slurry transfer pumps
- 8540 Waste disposal
- 8541 Recycle feed bins
- 8542 Recycle feed bins aeration systems

8543 Powder coolers

Miscellaneous (Dry Scrubber)

8544 Mechanical failures
8545 Electrical failures
8546 Major overhaul
8547 Inspection
8548 Testing
8549 Other dry scrubber problems

Precipitators

8550 Electrostatic precipitator fouling
8551 Electrostatic precipitator field out of service
8560 Electrostatic precipitator problems
8570 Mechanical precipitator fouling
8580 Mechanical precipitator problems
8590 Other precipitator problems

Miscellaneous (Pollution Control Equipment)

8600 Flue gas additives (furnace injection)
8601 SO₃ mitigation
8620 Mercury Abatement Equipment
8650 Baghouse systems, general
8651 Bag failures and rebagging
8652 Shakers and rappers
8653 Inflation and deflation fans and motors
8654 Baghouse booster fans and motors
8655 Structural duct work and dampers
8656 Controls and instrumentation
8657 Ash handling system and hoppers
8658 Slurry system from precipitators
8670 Emission monitors (other than CEMS)
8699 Other miscellaneous pollution control equipment problems

Continuous Emissions Monitoring Systems (CEMS)

8700 CEMS Certification and Recertification
8710 SO₂ analyzer problems
8720 NO_x analyzer problems
8730 CO analyzer problems
8740 CO₂ analyzer problems
8750 O₂ analyzer problems
8760 Opacity monitor problems
8770 Flow monitor problems
8780 Data acquisition system problems
8790 Miscellaneous CEMS problems

NO_x Reduction Systems
(Use code 0360 for Low NO_x Burners)

Selective Non-Catalytic Reduction Systems

8800	Reagent
8801	Carrier gas
8802	Control system
8803	SNCR Performance testing
8809	Other SNCR problems

Selective Catalytic Reduction Systems

8810	Reactor
8811	Reagent
8812	Catalyst
8813	Injection grid piping/valves
8814	Catalyst support material
8815	Soot blowers
8816	Plugging
8817	Control system
8820	SCR NOx Ammonia injection grid piping/valves"
8821	SCR NOx Ammonia tanks, piping and valves (not injection)"
8822	SCR NOx Ammonia air blowers"
8823	SCR NOx Other ammonia system problems"
8825	Other SCR problems

Catalytic Air Heaters

8830	Active catalyst
8831	Support materials
8832	Plugging
8835	Other CAH problems

CO Reduction

8840	Active catalyst
8841	Support materials
8842	Plugging
8845	Other CO reduction problems

EXTERNAL

Use this set of codes to report events caused by external factors (flood, lightning, etc); economic factors (lack of fuel, labor strikes, etc.); operator training; and transmission system problems external to the plant.

Catastrophe

9000	Flood
9001	Drought
9010	Fire including wildfires, not related to a specific component
9020	Lightning
9025	Geomagnetic disturbance
9030	Earthquake
9031	Tornado

- 9035 Hurricane
- 9036 Storms (ice, snow, etc)
- 9040 Other catastrophe

Economic

- 0000 Reserve shutdown
- 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
- 9131 Lack of fuel (interruptible supply of fuel part of fuel contract)
- 9132 Wet Fuel - Biomass
- 9134 Fuel conservation
- 9136 Problems with Primary Fuel for Units with Secondary Fuel Operation
- 9137 Ground water or other water supply problems.
- 9140 Plant modifications to burn different fuel that are not regulatory mandated
- 9150 Labor strikes company-wide problems or strikes outside the company's jurisdiction such as manufacturers (delaying repairs) or transportation (fuel supply) problems.
- 9151 Labor strikes direct plant management grievances that result in a walkout or strike are under plant management control.
- 9160 Other economic problems
- 9180 Economic (for internal use at plants only)
- 9181 Economic (for internal use at plants only)
- 9182 Economic (for internal use at plants only)
- 9183 Economic (for internal use at plants only)
- 9184 Economic (for internal use at plants only)
- 9185 Economic (for internal use at plants only)
- 9186 Economic (for internal use at plants only)
- 9187 Economic (for internal use at plants only)
- 9188 Economic (for internal use at plants only)
- 9189 Economic (for internal use at plants only)
- 9190 Economic (for internal use at plants only)
- 9191 Economic (for internal use at plants only)
- 9192 Economic (for internal use at plants only)
- 9193 Economic (for internal use at plants only)
- 9194 Economic (for internal use at plants only)
- 9195 Economic (for internal use at plants only)
- 9196 Economic (for internal use at plants only)
- 9197 Economic (for internal use at plants only)
- 9198 Economic (for internal use at plants only)
- 9199 Economic (for internal use at plants only)

Fuel Quality

(Use code 9600 to 9650 if the fuel quality results in excess stack emissions through no fault in the pollution control equipment. Use the appropriate equipment code to report fouling and slagging.)

- 9200 High ash content (OMC)
- 9201 High ash content (not OMC)
- 9205 Poor quality natural gas fuel, low heat content
- 9210 Low grindability (OMC)
- 9211 Low grindability (not OMC)
- 9220 High sulfur content (OMC)

9221	High sulfur content (not OMC)
9230	High vanadium content (OMC)
9231	High vanadium content (not OMC)
9240	High sodium content (OMC)
9241	High sodium content (not OMC)
9250	Low BTU coal (OMC)
9251	Low BTU coal (not OMC)
9260	Low BTU oil (OMC)
9261	Low BTU oil (not OMC)
9270	Wet coal (OMC)
9271	Wet coal (not OMC)
9280	Frozen coal (OMC)
9281	Frozen coal (not OMC)
9290	Other fuel quality problems (OMC)
9291	Other fuel quality problems (not OMC)

Miscellaneous (External)

9300	Transmission system problems other than catastrophes (do not include switchyard problems in this category; see codes 3600 to 3629, 3720 to 3730)
9305	Ash disposal problem
9310	Operator training
9320	Other miscellaneous external problems
9340	Synchronous Condenser Operation

REGULATORY, SAFETY, ENVIRONMENTAL

Use these codes only for events not directly attributable to equipment failures. Inspections or testing of certain equipment due to regulation are reported using the appropriate equipment cause codes and the fact that it was a regulatory requirement noted in the verbal description section.

Regulatory

9504	Regulatory (environmental) proceedings and hearings - regulatory agency initiated
9506	Regulatory (environmental) proceedings and hearings - intervener initiated
9510	Plant modifications strictly for compliance with new or changed regulatory requirements (scrubbers, cooling towers, etc.)
9520	Oil spill in Gulf of Mexico (OMC)
9590	Miscellaneous regulatory (this code is primarily intended for use with event contribution code 2 to indicate that a regulatory-related factor contributed to the primary cause of the event)

Stack Emission

(include exhaust emissions)

9600	SO ₂ stack emissions – fossil
9610	NO _x stack emissions - fossil
9620	Particulate stack emissions – fossil
9630	Opacity - fossil
9650	Other stack or exhaust emissions - fossil (use codes 9200 to 9290 if fuel quality causes pollution control equipment problems that result in excess stack emissions)
9656	Other stack or exhaust emissions testing - fossil

Other Operating Environmental Limitations

- 9660 Thermal discharge limits – fossil and nuclear
- 9670 Noise limits (not for personnel safety) - fossil
- 9677 Noise limits testing - fossil
- 9680 Fish kill – fossil and nuclear
- 9690 Other miscellaneous operational environmental limits – fossil and nuclear

Safety

- 9700 OSHA-related retrofit or inspection
- 9720 Other safety problems

PERSONNEL OR PROCEDURE ERRORS

- 9900 Operator error
- 9910 Maintenance personnel error
- 9920 Contractor error
- 9930 Operating procedure error
- 9940 Maintenance procedure error
- 9950 Contractor procedure error
- 9960 Staff shortage

INACTIVE STATES

- 0002 Inactive Reserve Shutdown
- 9990 Retired unit
- 9991 Mothballed unit

PERFORMANCE

- 9997 NERC Reliability Standard Requirement
- 9998 Black start testing
- 9999 Total unit performance testing (use appropriate codes for individual component testing)