

Appendix B10: Index To Geothermal Unit Cause Codes

GEOTHERMAL UNITS

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BALANCE OF PLANT

TABLE B10-1 Balance of Plant: Auxiliary Systems - Auxiliary Steam					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3830	Auxiliary boiler
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3831	Auxiliary steam piping
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3832	Auxiliary steam valves
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3833	Auxiliary steam controls and instruments
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3834	Auxiliary boiler tube leaks
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3835	Auxiliary boiler burner management system
Geothermal	Balance of Plant	Auxiliary Systems	Auxiliary Steam	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)

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-2 Balance of Plant: Auxiliary Systems - Closed Cooling Water Systems					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3820	Closed cooling water pumps and motors
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3821	Closed cooling water piping
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3822	Closed cooling water valves
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3823	Closed cooling water heat exchangers
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3824	Closed cooling water system fouling
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3825	Closed cooling water instrumentation
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3826	Closed cooling water strainer
Geothermal	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3829	Other closed cooling water system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-3 Balance of Plant: Auxiliary Systems - Fire Protection System					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3860	Fire protection system pumps
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3861	Fire protection system piping
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3862	Fire protection system valves
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3863	Fire protection system fouling
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3864	Fire protection system instrumentation and controls
Geothermal	Balance of Plant	Auxiliary Systems	Fire Protection System	3869	Other fire protection system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-4 Balance of Plant: Auxiliary Systems - Instrument Air					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3850	Instrument air compressors
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3851	Instrument air piping
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3852	Instrument air valves
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3853	Instrument air dryers
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3854	N2 backup to instrument air
Geothermal	Balance of Plant	Auxiliary Systems	Instrument Air	3859	Other instrument air problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-5 Balance of Plant: Auxiliary Systems - Miscellaneous (Auxiliary Systems)					
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UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	3898	Miscellaneous plant auxiliary process and services instrumentation and controls
Geothermal	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	3899	Other miscellaneous auxiliary system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-6 Balance of Plant: Auxiliary Systems - Open Cooling Water System					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3800	Open cooling water pumps and motors
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3801	Open cooling water piping
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3802	Open cooling water valves
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3803	Open cooling water heat exchangers
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3804	Open cooling water system fouling
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3805	Open cooling water system instrumentation
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3806	Open cooling water strainer
Geothermal	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3809	Other open cooling water problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-7 Balance of Plant: Auxiliary Systems - Seal Air Fans					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Seal Air Fans	3880	Seal air fan
Geothermal	Balance of Plant	Auxiliary Systems	Seal Air Fans	3881	Seal air fan drive - motor
Geothermal	Balance of Plant	Auxiliary Systems	Seal Air Fans	3882	Seal air control dampers and drives
Geothermal	Balance of Plant	Auxiliary Systems	Seal Air Fans	3883	Seal air filters
Geothermal	Balance of Plant	Auxiliary Systems	Seal Air Fans	3889	Other seal air fan problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-8 Balance of Plant: Auxiliary Systems - Service Air					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3840	Service air compressors
Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3841	Service air piping

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Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3842	Service air valves
Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3843	Service air dryers
Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3844	Soot blowing air compressor and system
Geothermal	Balance of Plant	Auxiliary Systems	Service Air	3849	Other service air problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-9 Balance of Plant: Auxiliary Systems - Service Water (Open System)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3810	Service water pumps and motors
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3811	Service water piping
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3812	Service water valves
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3813	Service water heat exchangers
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3814	Service water system fouling
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3815	Service water strainer
Geothermal	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3819	Other service water problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-10 Balance of Plant: Circulating Water Systems

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Circulating Water Systems		3210	Circulating water pumps
Geothermal	Balance of Plant	Circulating Water Systems		3211	Circulating water pump motors
Geothermal	Balance of Plant	Circulating Water Systems		3220	Circulating water piping
Geothermal	Balance of Plant	Circulating Water Systems		3221	Circulating water piping fouling
Geothermal	Balance of Plant	Circulating Water Systems		3230	Circulating water valves
Geothermal	Balance of Plant	Circulating Water Systems		3231	Waterbox
Geothermal	Balance of Plant	Circulating Water Systems		3232	Condenser tube cleaning system including debris filter
Geothermal	Balance of Plant	Circulating Water Systems		3233	Circulating water priming system
Geothermal	Balance of Plant	Circulating Water Systems		3235	Cooling tower booster pump
Geothermal	Balance of Plant	Circulating Water Systems		3236	Cooling tower booster motor
Geothermal	Balance of Plant	Circulating Water Systems		3238	Cooling tower fan motors
Geothermal	Balance of Plant	Circulating Water Systems		3239	Cooling tower fan motors - variable speed
Geothermal	Balance of Plant	Circulating Water Systems		3240	Cooling tower fans
Geothermal	Balance of Plant	Circulating Water Systems		3241	Cooling tower efficiency below design
Geothermal	Balance of Plant	Circulating Water Systems		3242	Cooling tower fill damage

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Geothermal	Balance of Plant	Circulating Water Systems		3243	Cooling tower icing
Geothermal	Balance of Plant	Circulating Water Systems		3244	Cooling tower fires
Geothermal	Balance of Plant	Circulating Water Systems		3245	Other cooling tower problems
Geothermal	Balance of Plant	Circulating Water Systems		3246	Cooling tower fouling
Geothermal	Balance of Plant	Circulating Water Systems		3247	Cooling tower instrumentation
Geothermal	Balance of Plant	Circulating Water Systems		3248	Cooling Tower Overhaul
Geothermal	Balance of Plant	Circulating Water Systems		3250	Circulating water system instruments and controls
Geothermal	Balance of Plant	Circulating Water Systems		3260	Traveling screens
Geothermal	Balance of Plant	Circulating Water Systems		3261	Traveling screen fouling
Geothermal	Balance of Plant	Circulating Water Systems		3269	Circulating water biological conditions (ie, zebra mussels)
Geothermal	Balance of Plant	Circulating Water Systems		3270	Intake system problems other than traveling screens
Geothermal	Balance of Plant	Circulating Water Systems		3271	Intake grating fouling
Geothermal	Balance of Plant	Circulating Water Systems		3272	Circulating water screenwash system
Geothermal	Balance of Plant	Circulating Water Systems		3280	High circulating water temperature (not due to season, tower efficiency below design, or other listed equipment problem)
Geothermal	Balance of Plant	Circulating Water Systems		3281	Circulating water tempering system
Geothermal	Balance of Plant	Circulating Water Systems		3282	Circulating water cooling ponds
Geothermal	Balance of Plant	Circulating Water Systems		3285	Circulating water chemistry
Geothermal	Balance of Plant	Circulating Water Systems		3299	Other circulating water system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-11 Balance of Plant: Condensate System - Miscellaneous (Condensate System)					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3360	Condensate makeup and return (including storage tanks)
Geothermal	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3370	Condensate system controls and instrumentation (not hotwell level, heater level, or deaerator level controls; see codes 3150-3159, 3344, 3502).
Geothermal	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3380	Condensate coolers
Geothermal	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3399	Other miscellaneous condensate system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-12 Balance of Plant: Condensate System - Pumps, Piping, and Valves

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3300	Condensate water pre-treatment
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3310	Condensate/hotwell pumps
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3311	Condensate/hotwell pump motor
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3312	Condensate booster pump
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3313	Condensate booster pump motor
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3314	Condensate booster pump motor - variable speed
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3315	Condensate booster pump drive (other than 3313 and 3314)
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3320	Condensate piping
Geothermal	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3330	Condensate valves

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-13 Balance of Plant: Condensing System - Condenser Casing or Shell and Internals

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3120	Tube sheets
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3121	Expansion joint
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3122	Gaskets and seals
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3123	Hot well
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3124	Tube sheet fouling
Geothermal	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3129	Other condenser casing or shell and internal problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-14 Balance of Plant: Condensing System - Condenser Controls

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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Geothermal	Balance of Plant	Condensing System	Condenser Controls	3150	Hot well level controls
Geothermal	Balance of Plant	Condensing System	Condenser Controls	3151	Vacuum pump and air ejector controls
Geothermal	Balance of Plant	Condensing System	Condenser Controls	3152	Air-cooled condenser controls
Geothermal	Balance of Plant	Condensing System	Condenser Controls	3159	Other condensing system controls and instruments

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-15 Balance of Plant: Condensing System - Condenser Tubes and Support Equipment

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3110	Condenser tube leaks
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3111	Condenser tube fouling shell side
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3112	Condenser tube fouling tube side
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3113	Condenser tube and water box cleaning (including circulating water flow reversal)
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3114	Air-cooled condenser tubes
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3115	Air-cooled condenser pumps
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3116	Air-cooled condenser fans
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3117	Air-cooled condenser fan motors
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3118	Other Air-cooled condenser problems
Geothermal	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3119	Other condenser tube casing or shell and internal problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-16 Balance of Plant: Condensing System - Miscellaneous (Condensing System)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3170	Condenser inspection (use code 3110 to report looking for tube leaks)
Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3171	Air-cooled condenser inspections

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Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3180	Major condenser overhaul
Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3185	Water side cathodic protection
Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3190	Air leakage (for losses not attributable to previously noted equipment related codes)
Geothermal	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3199	Other miscellaneous condensing system problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-17 Balance of Plant: Condensing System - Vacuum Equipment

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3130	Air ejectors
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3131	Air ejector piping and valves
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3132	Inter and after condensers
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3133	Vacuum pumps
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3134	Vacuum pump piping and valves
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3135	Vacuum pump motor and auxiliaries
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	3139	Other air extraction system problems - general
Geothermal	Balance of Plant	Condensing System	Vacuum Equipment	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.

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-18 Balance of Plant: Electrical

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Electrical		3600	Switchyard transformers and associated cooling systems - external (OMC)
Geothermal	Balance of Plant	Electrical		3601	Switchyard transformers and associated cooling systems - external (not OMC)
Geothermal	Balance of Plant	Electrical		3610	Switchyard circuit breakers - external (not OMC)
Geothermal	Balance of Plant	Electrical		3611	Switchyard circuit breakers - external (OMC)

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Geothermal	Balance of Plant	Electrical		3612	Switchyard system protection devices - external (OMC)
Geothermal	Balance of Plant	Electrical		3613	Switchyard system protection devices - external (not OMC)
Geothermal	Balance of Plant	Electrical		3618	Other switchyard equipment - external (not OMC)
Geothermal	Balance of Plant	Electrical		3619	Other switchyard equipment - external (OMC)
Geothermal	Balance of Plant	Electrical		3620	Main transformer
Geothermal	Balance of Plant	Electrical		3621	Unit auxiliaries transformer
Geothermal	Balance of Plant	Electrical		3622	Station service startup transformer
Geothermal	Balance of Plant	Electrical		3623	Auxiliary generators
Geothermal	Balance of Plant	Electrical		3629	Other switchyard or high voltage system problems - external
Geothermal	Balance of Plant	Electrical		3630	400-700 volt transformers
Geothermal	Balance of Plant	Electrical		3631	400-700 volt circuit breakers
Geothermal	Balance of Plant	Electrical		3632	400-700 volt conductors and buses
Geothermal	Balance of Plant	Electrical		3633	400-700 volt insulators
Geothermal	Balance of Plant	Electrical		3634	400-700 volt protection devices
Geothermal	Balance of Plant	Electrical		3639	Other 400-700 volt problems
Geothermal	Balance of Plant	Electrical		3640	AC instrument power transformers
Geothermal	Balance of Plant	Electrical		3641	AC Circuit breakers
Geothermal	Balance of Plant	Electrical		3642	AC Conductors and buses
Geothermal	Balance of Plant	Electrical		3643	AC Inverters
Geothermal	Balance of Plant	Electrical		3644	AC Protection devices
Geothermal	Balance of Plant	Electrical		3649	Other AC instrument power problems
Geothermal	Balance of Plant	Electrical		3650	DC instrument power battery chargers
Geothermal	Balance of Plant	Electrical		3651	DC circuit breakers
Geothermal	Balance of Plant	Electrical		3652	DC conductors and buses
Geothermal	Balance of Plant	Electrical		3653	DC protection devices
Geothermal	Balance of Plant	Electrical		3659	Other DC power problems
Geothermal	Balance of Plant	Electrical		3660	4000-7000 volt transformers
Geothermal	Balance of Plant	Electrical		3661	4000-7000 volt circuit breakers
Geothermal	Balance of Plant	Electrical		3662	4000-7000 volt conductors and buses
Geothermal	Balance of Plant	Electrical		3663	4000-7000 volt insulators
Geothermal	Balance of Plant	Electrical		3664	4000-7000 volt protection devices
Geothermal	Balance of Plant	Electrical		3669	Other 4000-7000 volt problems
Geothermal	Balance of Plant	Electrical		3670	12-15kV transformers

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Geothermal	Balance of Plant	Electrical		3671	12-15kV circuit breakers
Geothermal	Balance of Plant	Electrical		3672	12-15kV conductors and buses
Geothermal	Balance of Plant	Electrical		3673	12-15kV insulators
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Geothermal	Balance of Plant	Electrical		3679	Other 12-15kV problems
Geothermal	Balance of Plant	Electrical		3680	Other voltage transformers
Geothermal	Balance of Plant	Electrical		3681	Other voltage circuit breakers
Geothermal	Balance of Plant	Electrical		3682	Other voltage conductors and buses
Geothermal	Balance of Plant	Electrical		3683	Other voltage insulators
Geothermal	Balance of Plant	Electrical		3684	Other voltage protection devices
Geothermal	Balance of Plant	Electrical		3689	Other voltage problems
Geothermal	Balance of Plant	Electrical		3690	Station Service Power Distribution System, General

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-19 Balance of Plant: Miscellaneous (Balance of Plant)					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3950	Process computer
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3960	Thermal derating (thermal efficiency losses in balance of plant when specific cause(s) unknown)
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3970	Distributive Control System (DCS) - process computer
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3971	DCS - data highway
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3972	DCS - hardware problems (including card failure)
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3973	DCS - internal and termination wiring
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3974	DCS - logic problems
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3975	DCS - upgrades
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3979	Other DCS problems
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3980	Programmable Logic Controller (PLC)
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3981	PLC - data highway
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3982	PLC - hardware problems (including card failure)
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3983	PLC - internal and termination wiring
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3984	PLC - logic problems
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3985	PLC - upgrades

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Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3989	Other PLC problems
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3995	Powerhouse heating and ventilating systems
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3996	Air conditioning systems - rooms and areas
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3998	Balance of plant overhaul/outage
Geothermal	Balance of Plant	Miscellaneous (Balance of Plant)		3999	Other miscellaneous balance of plant problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-20 Balance of Plant: Power Station Switchyard

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Power Station Switchyard		3700	Power Station switchyard (non generating unit equipment)
Geothermal	Balance of Plant	Power Station Switchyard		3710	Transmission line (connected to powerhouse switchyard to 1st Substation)
Geothermal	Balance of Plant	Power Station Switchyard		3720	Transmission equipment at the 1st substation (see code 9300 if applicable)
Geothermal	Balance of Plant	Power Station Switchyard		3730	Transmission equipment beyond the 1st substation (see code 9300 if applicable)

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-21 Balance of Plant: Waste Water (zero discharge) Systems

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3290	Waste water (zero discharge) tanks, pumps, and motors
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3291	Waste water (zero discharge) system fouling
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3292	Waste water (zero discharge) piping
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3293	Waste water (zero discharge) valves
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3294	Waste water (zero discharge) controls and instrumentation
Geothermal	Balance of Plant	Waste Water (zero discharge) Systems		3295	Other waste water (zero discharge) problems

Notes: 1) For use with Unit Codes 800–899.

BOILER

TABLE B10-22 Boiler: Boiler Piping System - Desuperheaters/Attemperators

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Boiler	Boiler Piping System	Desuperheaters/Attemperators	580	Desuperheater/attemperator piping
Geothermal	Boiler	Boiler Piping System	Desuperheaters/Attemperators	590	Desuperheater/attemperator valves
Geothermal	Boiler	Boiler Piping System	Desuperheaters/Attemperators	600	Desuperheater/attemperator spray nozzles
Geothermal	Boiler	Boiler Piping System	Desuperheaters/Attemperators	610	Desuperheater/attemperator drums
Geothermal	Boiler	Boiler Piping System	Desuperheaters/Attemperators	620	Other desuperheater/attemperator problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-23 Boiler: Boiler Piping System - Main Steam

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Boiler	Boiler Piping System	Main Steam	500	Main steam piping up to turbine stop valves
Geothermal	Boiler	Boiler Piping System	Main Steam	510	Main steam relief/safety valves off superheater
Geothermal	Boiler	Boiler Piping System	Main Steam	520	Other main steam valves (including vent and drain valves but not including the turbine stop valves)
Geothermal	Boiler	Boiler Piping System	Main Steam	530	Other main steam system problems

Notes: 1) For use with Unit Codes 800–899.

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.

TABLE B10-24 External: Catastrophe

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	External	Catastrophe		9000	Flood
Geothermal	External	Catastrophe		9001	Drought

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Geothermal	External	Catastrophe		9010	Fire including wildfires, not related to a specific component
Geothermal	External	Catastrophe		9020	Lightning
Geothermal	External	Catastrophe		9025	Geomagnetic disturbance
Geothermal	External	Catastrophe		9030	Earthquake
Geothermal	External	Catastrophe		9031	Tornado
Geothermal	External	Catastrophe		9035	Hurricane
Geothermal	External	Catastrophe		9036	Storms (ice, snow, etc)
Geothermal	External	Catastrophe		9040	Other catastrophe

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-25 External: Economic					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	External	Economic		0	Reserve shutdown
Geothermal	External	Economic		9130	Failure of fuel supplier to fulfill contractual obligations or a pre-arranged deal due to physical fuel disruptions or operational impairments (e.g. force majeure on a pipeline or compressor down; making the pipeline incapable of making its firm deliveries.)
Geothermal	External	Economic		9131	Lack of fuel – due to contractual or tariff provisions that allow for service interruption or price fluctuations during peak demand periods.
Geothermal	External	Economic		9134	Fuel conservation
Geothermal	External	Economic		9136	Problems with Primary Fuel for Units with Secondary Fuel Operation
Geothermal	External	Economic		9137	Ground water or other water supply problems
Geothermal	External	Economic		9140	Plant modifications to burn different fuel that are not regulatory mandated
Geothermal	External	Economic		9150	Labor strikes company-wide problems or strikes outside the company's jurisdiction such as manufacturers (delaying repairs) or transportation (fuel supply) problems.

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Geothermal	External	Economic		9151	Labor strikes direct plant management grievances that result in a walkout or strike are under plant management control.
Geothermal	External	Economic		9160	Other economic problems
Geothermal	External	Economic		9180	Economic (for internal use at plants only)
Geothermal	External	Economic		9181	Economic (for internal use at plants only)
Geothermal	External	Economic		9182	Economic (for internal use at plants only)
Geothermal	External	Economic		9183	Economic (for internal use at plants only)
Geothermal	External	Economic		9184	Economic (for internal use at plants only)
Geothermal	External	Economic		9185	Economic (for internal use at plants only)
Geothermal	External	Economic		9186	Economic (for internal use at plants only)
Geothermal	External	Economic		9187	Economic (for internal use at plants only)
Geothermal	External	Economic		9188	Economic (for internal use at plants only)
Geothermal	External	Economic		9189	Economic (for internal use at plants only)
Geothermal	External	Economic		9190	Economic (for internal use at plants only)
Geothermal	External	Economic		9191	Economic (for internal use at plants only)
Geothermal	External	Economic		9192	Economic (for internal use at plants only)
Geothermal	External	Economic		9193	Economic (for internal use at plants only)
Geothermal	External	Economic		9194	Economic (for internal use at plants only)
Geothermal	External	Economic		9195	Economic (for internal use at plants only)
Geothermal	External	Economic		9196	Economic (for internal use at plants only)
Geothermal	External	Economic		9197	Economic (for internal use at plants only)
Geothermal	External	Economic		9198	Economic (for internal use at plants only)
Geothermal	External	Economic		9199	Economic (for internal use at plants only)

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-26 External: Miscellaneous (External)					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	External	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)
Geothermal	External	Miscellaneous (External)		9305	Ash disposal problem
Geothermal	External	Miscellaneous (External)		9310	Operator training
Geothermal	External	Miscellaneous (External)		9320	Other miscellaneous external problems
Geothermal	External	Miscellaneous (External)		9340	Synchronous Condenser Operation

Notes: 1) For use with Unit Codes 800–899.

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.

TABLE B10-27 Generator: Controls

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Generator	Controls		4700	Generator voltage control
Geothermal	Generator	Controls		4710	Generator metering devices
Geothermal	Generator	Controls		4720	Generator synchronization equipment
Geothermal	Generator	Controls		4730	Generator current and potential transformers
Geothermal	Generator	Controls		4740	Emergency generator trip devices
Geothermal	Generator	Controls		4741	Frequency Trip (81 Relay)
Geothermal	Generator	Controls		4750	Other generator controls and metering problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-28 Generator: Cooling System

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Generator	Cooling System		4610	Hydrogen cooling system piping and valves
Geothermal	Generator	Cooling System		4611	Hydrogen coolers
Geothermal	Generator	Cooling System		4612	Hydrogen storage system
Geothermal	Generator	Cooling System		4613	Hydrogen seals
Geothermal	Generator	Cooling System		4619	Other hydrogen system problems
Geothermal	Generator	Cooling System		4620	Air cooling system
Geothermal	Generator	Cooling System		4630	Liquid cooling system
Geothermal	Generator	Cooling System		4640	Seal oil system and seals
Geothermal	Generator	Cooling System		4650	Other cooling system problems

Notes: 1) For use with Unit Codes 800–899. 2) Report failures caused by water leaks into generator as codes 4500, 4510, etc.

TABLE B10-29 Generator: Exciter

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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Geothermal	Generator	Exciter		4600	Exciter drive - motor
Geothermal	Generator	Exciter		4601	Exciter field rheostat
Geothermal	Generator	Exciter		4602	Exciter commutator and brushes
Geothermal	Generator	Exciter		4603	Solid state exciter element
Geothermal	Generator	Exciter		4604	Exciter drive - shaft
Geothermal	Generator	Exciter		4605	Exciter transformer
Geothermal	Generator	Exciter		4609	Other exciter problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-30 Generator: Generator

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Generator	Generator		4500	Rotor windings (including damper windings and fan blades on hydro units)
Geothermal	Generator	Generator		4510	Rotor collector rings
Geothermal	Generator	Generator		4511	Rotor, General
Geothermal	Generator	Generator		4512	Retaining Rings
Geothermal	Generator	Generator		4520	Stator windings, bushings, and terminals
Geothermal	Generator	Generator		4530	Stator core iron
Geothermal	Generator	Generator		4535	Stator, General
Geothermal	Generator	Generator		4536	Generator Heaters
Geothermal	Generator	Generator		4540	Brushes and brush rigging
Geothermal	Generator	Generator		4550	Generator bearings and lube oil system (including thrust bearings on hydro units)
Geothermal	Generator	Generator		4551	Generator bearings
Geothermal	Generator	Generator		4552	Generator lube oil system
Geothermal	Generator	Generator		4555	Bearing cooling system
Geothermal	Generator	Generator		4560	Generator vibration (excluding vibration due to failed bearing and other components)
Geothermal	Generator	Generator		4570	Generator casing
Geothermal	Generator	Generator		4580	Generator end bells and bolting

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-31 Generator: Miscellaneous (Generator)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Generator	Miscellaneous (Generator)		4800	Generator main leads

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

Notes: 1) For use with Unit Codes 800–899.

INACTIVE STATES

TABLE B10-32 Inactive States: Inactive States

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Inactive States	Inactive States		2	Inactive Reserve Shutdown
Geothermal	Inactive States	Inactive States		9990	Retired unit
Geothermal	Inactive States	Inactive States		9991	Mothballed unit

Notes: 1) For use with Unit Codes 800–899.

MISCELLANEOUS

TABLE B10-33 Miscellaneous: Plant and Auxiliaries

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Miscellaneous	Plant and Auxiliaries		6410	Steam wells/steam field piping problems
Geothermal	Miscellaneous	Plant and Auxiliaries		6415	Low steam pressure
Geothermal	Miscellaneous	Plant and Auxiliaries		6420	Condensate reinjection system
Geothermal	Miscellaneous	Plant and Auxiliaries		6430	Unit H2S emission limitations - regulatory
Geothermal	Miscellaneous	Plant and Auxiliaries		6435	Steam field H2S emission limitations - regulatory
Geothermal	Miscellaneous	Plant and Auxiliaries		6440	H2S abatement system problems - general
Geothermal	Miscellaneous	Plant and Auxiliaries		6450	Heat exchanger problems due to H2S abatement system

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Geothermal	Miscellaneous	Plant and Auxiliaries		6460	Condenser problems due to H2S abatement system
Geothermal	Miscellaneous	Plant and Auxiliaries		6470	Cooling tower problems due to H2S abatement system
Geothermal	Miscellaneous	Plant and Auxiliaries		6480	Steam strainer plugging - mineral deposits
Geothermal	Miscellaneous	Plant and Auxiliaries		6490	Turbine plugging - mineral deposits
Geothermal	Miscellaneous	Plant and Auxiliaries		6499	Geothermal
Notes: 1) For use with Unit Codes 800–899.					

PERFORMANCE

TABLE B10-34 Performance: Performance					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Performance	Performance		9997	NERC Reliability Standard Requirement
Geothermal	Performance	Performance		9998	Black start testing
Geothermal	Performance	Performance		9999	Total unit performance testing (use appropriate codes for individual component testing)
Notes: 1) For use with Unit Codes 800–899.					

PERSONNEL OR PROCEDURAL ERRORS

TABLE B10-35 Personnel or Procedural Errors: Personnel or Procedural Errors					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9900	Operator error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9910	Maintenance personnel error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9920	Contractor error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9930	Operating procedure error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9940	Maintenance procedure error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9950	Contractor procedure error
Geothermal	Personnel or Procedural Errors	Personnel or Procedural Errors		9960	Staff shortage
Notes: 1) For use with Unit Codes 800–899.					

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. 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

TABLE B10-36 Pollution Control Equipment: Continuous Emissions Monitoring Systems (CEMS)					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8700	CEMS Certification and Recertification
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8710	SO2 analyzer problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8720	NOx analyzer problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8730	CO analyzer problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8740	CO2 analyzer problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8750	O2 analyzer problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8760	Opacity monitor problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8770	Flow monitor problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8780	Data acquisition system problems
Geothermal	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8790	Miscellaneous CEMS problems
Notes: 1) For use with Unit Codes 800–899.					

TABLE B10-37 Pollution Control Equipment: Wet Scrubbers - Chemical Supply					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8000	Chemical feed storage, mill feeders, and conveyors
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8002	Screw conveyors

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Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8003	Bucket elevators
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8006	Weigh feeders
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8010	Crushers/mills
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8020	Mill slurry tanks supply problems
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8030	Classifiers
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8040	Slurry transfer pumps and motors
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8050	Chemical unavailability
Geothermal	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8099	Other chemical supply problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-38 Pollution Control Equipment: Wet Scrubbers - Miscellaneous (Wet Scrubber)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8400	Scrubber gas discharge reheaters - general
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8402	Scrubber gas discharge reheaters - vibration
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8404	Scrubber gas discharge reheaters - tube leaks
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8406	Scrubber gas discharge reheaters - ducts
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8410	Scrubber instruments and controls
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8415	Liquid level controls
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8420	Heat tracer
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8425	Miscellaneous mechanical failures
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8426	Miscellaneous electrical failures

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Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8430	Stack damage related to scrubber system
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8440	Major overhaul
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8450	Inspection
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8460	Testing
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8470	SO2 monitor
Geothermal	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8499	Other miscellaneous wet scrubber problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-39 Pollution Control Equipment: Wet Scrubbers - Piping, Ducting, Dampers, and Fans

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8200	Piping
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8210	Valves
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8220	Strainers or filters
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8225	Drain pots
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8230	Ducting
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8235	Demister
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8240	Bypass dampers
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8250	Dampers other than bypass
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8260	Scrubber booster I.D. fan (fan specific to the scrubber)
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8261	Scrubber booster I.D. fan drive
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8262	Scrubber booster I.D. fan vibration (fan specific to the scrubber)

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Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8264	Scrubber booster I.D. fan blades (fan specific to the scrubber)
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8270	Scrubber booster F.D. fan (fan specific to the scrubber)
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8271	Scrubber booster F.D. fan drive
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8272	Scrubber booster F.D. fan vibration (fan specific to the scrubber)
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8274	Scrubber booster F.D. fan blades (fan specific to the scrubber)
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8280	Reagent feed piping
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8290	Demister wash piping assembly
Geothermal	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8299	Other piping, ducting, damper, and fan problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-40 Pollution Control Equipment: Wet Scrubbers - Wet Scrubber

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8100	Scrubber/absorber tower or module
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8110	Spray nozzles
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8115	Disc scrubber throats
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8120	Spray pumps and motors
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8125	Scrubber recycle (liquid) pumps
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8127	Scrubber recycle (liquid) pump motors
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8130	Recirculation tanks including agitators
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8140	Reaction tanks including agitators
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8150	Tubes

Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8160	Mist eliminators/demisters and washdown
Geothermal	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8199	Other scrubber problems

Notes: 1) For use with Unit Codes 800–899.

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.

TABLE B10-41 Regulatory, Safety, Environmental: Regulatory					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Regulatory, Safety, Environmental	Regulatory		9504	Regulatory (environmental) proceedings and hearings - regulatory agency initiated
Geothermal	Regulatory, Safety, Environmental	Regulatory		9506	Regulatory (environmental) proceedings and hearings - intervenor initiated
Geothermal	Regulatory, Safety, Environmental	Regulatory		9510	Plant modifications strictly for compliance with new or changed regulatory requirements (scrubbers, cooling towers, etc.)
Geothermal	Regulatory, Safety, Environmental	Regulatory		9520	Oil spill in Gulf of Mexico (OMC)
Geothermal	Regulatory, Safety, Environmental	Regulatory		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)

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-42 Regulatory, Safety, Environmental: Safety					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Regulatory, Safety, Environmental	Safety		9700	OSHA-related retrofit or inspection

Geothermal	Regulatory, Safety, Environmental	Safety		9720	Other safety problems
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Notes: 1) For use with Unit Codes 800–899.

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.

TABLE B10-43 Steam Turbine: Controls					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Controls		4290	Hydraulic system pumps
Geothermal	Steam Turbine	Controls		4291	Hydraulic system coolers
Geothermal	Steam Turbine	Controls		4292	Hydraulic system filters
Geothermal	Steam Turbine	Controls		4293	Hydraulic system pipes and valves
Geothermal	Steam Turbine	Controls		4299	Other hydraulic system problems
Geothermal	Steam Turbine	Controls		4300	Turbine supervisory system (use codes 4290 to 4299 for hydraulic oil)
Geothermal	Steam Turbine	Controls		4301	Turbine governing system
Geothermal	Steam Turbine	Controls		4302	Turbine trip devices (including instruments)
Geothermal	Steam Turbine	Controls		4303	Exhaust hood and spray controls
Geothermal	Steam Turbine	Controls		4304	Automatic turbine control systems - mechanical
Geothermal	Steam Turbine	Controls		4305	Automatic turbine control systems - mechanical - hydraulic
Geothermal	Steam Turbine	Controls		4306	Automatic turbine control systems - electro-hydraulic - analog
Geothermal	Steam Turbine	Controls		4307	Automatic turbine control systems - electro-hydraulic - digital
Geothermal	Steam Turbine	Controls		4308	Automatic turbine control systems - digital control and monitoring
Geothermal	Steam Turbine	Controls		4309	Other turbine instrument and control problems
Geothermal	Steam Turbine	Controls		4310	Steam Turbine Control System - data highway

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Geothermal	Steam Turbine	Controls		4311	Steam Turbine Control System - hardware problems (including card failure)
Geothermal	Steam Turbine	Controls		4312	Steam Turbine Control System - internal and termination wiring
Geothermal	Steam Turbine	Controls		4313	Steam Turbine Control System - logic problems
Geothermal	Steam Turbine	Controls		4314	Steam Turbine Control System - upgrades

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-44 Steam Turbine: Low Pressure Turbine

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Low Pressure Turbine		4200	Outer casing
Geothermal	Steam Turbine	Low Pressure Turbine		4201	Inner casing
Geothermal	Steam Turbine	Low Pressure Turbine		4209	Nozzle bolting
Geothermal	Steam Turbine	Low Pressure Turbine		4210	Nozzles and nozzle blocks
Geothermal	Steam Turbine	Low Pressure Turbine		4211	Diaphragms
Geothermal	Steam Turbine	Low Pressure Turbine		4212	Buckets or blades
Geothermal	Steam Turbine	Low Pressure Turbine		4213	Bucket or blade fouling
Geothermal	Steam Turbine	Low Pressure Turbine		4215	Wheels or spindles
Geothermal	Steam Turbine	Low Pressure Turbine		4220	Shaft seals
Geothermal	Steam Turbine	Low Pressure Turbine		4221	Dummy rings
Geothermal	Steam Turbine	Low Pressure Turbine		4222	Gland rings
Geothermal	Steam Turbine	Low Pressure Turbine		4230	Rotor shaft
Geothermal	Steam Turbine	Low Pressure Turbine		4240	Bearings
Geothermal	Steam Turbine	Low Pressure Turbine		4241	Thrust bearings
Geothermal	Steam Turbine	Low Pressure Turbine		4250	Other low pressure turbine problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-45 Steam Turbine: Lube Oil

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Lube Oil		4280	Lube oil pumps
Geothermal	Steam Turbine	Lube Oil		4281	Lube oil coolers
Geothermal	Steam Turbine	Lube Oil		4282	Lube oil conditioners
Geothermal	Steam Turbine	Lube Oil		4283	Lube oil system valves and piping

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Geothermal	Steam Turbine	Lube Oil		4284	Lube oil pump drive
Geothermal	Steam Turbine	Lube Oil		4289	Other lube oil system problems

Notes: 1) For use with Unit Codes 800–899. 2) Do not include bearing failures due to lube oil.

TABLE B10-46 Steam Turbine: Miscellaneous (Steam Turbine)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4400	Major turbine overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4401	Inspection
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4402	Minor turbine overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4410	Turning gear and motor
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4411	Steam turbine gear box (single shaft configuration)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4412	Steam turbine clutch (single shaft configuration)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4415	Shaft coupling mechanism
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		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)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4430	Gland seal system
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4450	Water induction
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4460	Turbine overspeed trip test
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4470	Differential expansion
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4490	Turbine performance testing (use code 9999 for total unit performance testing)
Geothermal	Steam Turbine	Miscellaneous (Steam Turbine)		4499	Other miscellaneous steam turbine problems

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-47 Steam Turbine: Piping

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Piping		4270	Crossover or under piping
Geothermal	Steam Turbine	Piping		4279	Miscellaneous turbine piping

Notes: 1) For use with Unit Codes 800–899.

TABLE B10-48 Steam Turbine: Valves

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Geothermal	Steam Turbine	Valves		4260	Main stop valves
Geothermal	Steam Turbine	Valves		4261	Control valves
Geothermal	Steam Turbine	Valves		4262	Intercept valves
Geothermal	Steam Turbine	Valves		4263	Reheat stop valves
Geothermal	Steam Turbine	Valves		4264	Combined intercept valves
Geothermal	Steam Turbine	Valves		4265	Miscellaneous drain and vent valves
Geothermal	Steam Turbine	Valves		4266	Main stop valve testing
Geothermal	Steam Turbine	Valves		4267	Control valve testing
Geothermal	Steam Turbine	Valves		4268	Reheat/intercept valve testing
Geothermal	Steam Turbine	Valves		4269	Other turbine valves (including LP steam admission valves)

Notes: 1) For use with Unit Codes 800–899.