

## Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes

### MULTI-BOILER/MULTI-TURBINE UNITS

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## BALANCE OF PLANT

TABLE B13-1 Balance of Plant: Auxiliary Systems - Auxiliary Steam					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3830	Auxiliary boiler
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3831	Auxiliary steam piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3832	Auxiliary steam valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3833	Auxiliary steam controls and instruments
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3834	Auxiliary boiler tube leaks
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3835	Auxiliary boiler burner management system
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Auxiliary Steam	3836	Steam transfer to other unit

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Multi-boiler/Multi-turbine	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)
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**Notes: 1) For use with Unit Codes 800–899.**

**TABLE B13-2 Balance of Plant: Auxiliary Systems - Closed Cooling Water Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3820	Closed cooling water pumps and motors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3821	Closed cooling water piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3822	Closed cooling water valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3823	Closed cooling water heat exchangers
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3824	Closed cooling water system fouling
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3825	Closed cooling water instrumentation
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Closed Cooling Water Systems	3826	Closed cooling water strainer
Multi-boiler/Multi-turbine	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 B13-3 Balance of Plant: Auxiliary Systems - Fire Protection System**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3860	Fire protection system pumps
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3861	Fire protection system piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3862	Fire protection system valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3863	Fire protection system fouling

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Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3864	Fire protection system instrumentation and controls
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Fire Protection System	3869	Other fire protection system problems

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

**TABLE B13-4 Balance of Plant: Auxiliary Systems - Instrument Air**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3850	Instrument air compressors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3851	Instrument air piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3852	Instrument air valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3853	Instrument air dryers
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3854	N2 backup to instrument air
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Instrument Air	3859	Other instrument air problems

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

**TABLE B13-5 Balance of Plant: Auxiliary Systems - Low-pressure Gas Compression System**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Low-pressure Gas Compression System	3870	Fuel Gas Compressor and Motors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Low-pressure Gas Compression System	3871	Fuel Gas Compressor Piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Low-pressure Gas Compression System	3875	Fuel Gas Compressor Filters
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Low-pressure Gas Compression System	3876	Fuel Gas Compressor Fire System
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Low-pressure Gas Compression System	3879	Fuel Gas Compressor - other

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

**TABLE B13-6 Balance of Plant: Auxiliary Systems - Miscellaneous (Auxiliary Systems)**

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UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	3898	Miscellaneous plant auxiliary process and services instrumentation and controls
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	3899	Other miscellaneous auxiliary system problems
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	6299	Other combined cycle block problems (Use other gas turbine problem codes, other steam turbine codes, etc., whenever appropriate.)
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Miscellaneous (Auxiliary Systems)	6399	Other coal gasification equipment problems

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

**TABLE B13-7 Balance of Plant: Auxiliary Systems - Open Cooling Water System**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3800	Open cooling water pumps and motors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3801	Open cooling water piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3802	Open cooling water valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3803	Open cooling water heat exchangers
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3804	Open cooling water system fouling
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3805	Open cooling water system instrumentation
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Open Cooling Water System	3806	Open cooling water strainer
Multi-boiler/Multi-turbine	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 B13-8 Balance of Plant: Auxiliary Systems - Seal Air Fans**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Seal Air Fans	3880	Seal air fan
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Seal Air Fans	3881	Seal air fan drive - motor
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Seal Air Fans	3882	Seal air control dampers and drives
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Seal Air Fans	3883	Seal air filters
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Seal Air Fans	3889	Other seal air fan problems

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

**TABLE B13-9 Balance of Plant: Auxiliary Systems - Service Air**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3840	Service air compressors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3841	Service air piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3842	Service air valves
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3843	Service air dryers
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3844	Soot blowing air compressor and system
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Air	3849	Other service air problems

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

**TABLE B13-10 Balance of Plant: Auxiliary Systems - Service Water (Open System)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3810	Service water pumps and motors
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3811	Service water piping
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3812	Service water valves



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Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3813	Service water heat exchangers
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3814	Service water system fouling
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3815	Service water strainer
Multi-boiler/Multi-turbine	Balance of Plant	Auxiliary Systems	Service Water (Open System)	3819	Other service water problems

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

**TABLE B13-11 Balance of Plant: Circulating Water Systems**

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

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Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3241	Cooling tower efficiency below design
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3242	Cooling tower fill damage
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3243	Cooling tower icing
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3244	Cooling tower fires
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3245	Other cooling tower problems
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3246	Cooling tower fouling
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3247	Cooling tower instrumentation
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3248	Cooling Tower Overhaul
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3250	Circulating water system instruments and controls
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3260	Traveling screens
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3261	Traveling screen fouling
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3269	Circulating water biological conditions (ie, zebra mussels)
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3270	Intake system problems other than traveling screens
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3271	Intake grating fouling
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3272	Circulating water screenwash system
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3273	Debris in circulating water from outside sources (leaves, mud, etc.)
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3280	High circulating water temperature (not due to season, tower efficiency below design, or other listed equipment problem)
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3281	Circulating water tempering system
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3282	Circulating water cooling ponds

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Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3285	Circulating water chemistry
Multi-boiler/Multi-turbine	Balance of Plant	Circulating Water Systems		3299	Other circulating water system problems

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

**TABLE B13-12 Balance of Plant: Condensate System - Low/Intermediate Pressure Heater and Deaerators**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3339	LP heater head leaks
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3340	LP heater tube leaks
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3341	Other LP heater - general
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3342	IP heater tube leaks
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3343	Other IP heater - general
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3344	Deaerator (including level control)
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Low/Intermediate Pressure Heater and Deaerators	3345	IP heater head leaks

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

**TABLE B13-13 Balance of Plant: Condensate System - Miscellaneous (Condensate System)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3360	Condensate makeup and return (including storage tanks)
Multi-boiler/Multi-turbine	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).
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3380	Condensate coolers
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Miscellaneous (Condensate System)	3399	Other miscellaneous condensate system problems

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

TABLE B13-14 Balance of Plant: Condensate System - Polishers/Chemical Addition					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Polishers/Chemical Addition	3350	Condensate polishing and filtering systems
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Polishers/Chemical Addition	3351	Chemical addition systems
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Polishers/Chemical Addition	3352	Feedwater chemistry (not specific to condenser, polishers, or chemical addition)
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

TABLE B13-15 Balance of Plant: Condensate System - Pumps, Piping, and Valves					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3300	Condensate water pre-treatment
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3310	Condensate/hotwell pumps
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3311	Condensate/hotwell pump motor
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3312	Condensate booster pump
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3313	Condensate booster pump motor
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3314	Condensate booster pump motor - variable speed
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3315	Condensate booster pump drive (other than 3313 and 3314)
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3320	Condensate piping
Multi-boiler/Multi-turbine	Balance of Plant	Condensate System	Pumps, Piping, and Valves	3330	Condensate valves
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

TABLE B13-16 Balance of Plant: Condensing System - Condenser Casing or Shell and Internals					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3120	Tube sheets
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3121	Expansion joint
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3122	Gaskets and seals
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3123	Hot well
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Casing or Shell and Internals	3124	Tube sheet fouling
Multi-boiler/Multi-turbine	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 B13-17 Balance of Plant: Condensing System - Condenser Controls**

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

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

**TABLE B13-18 Balance of Plant: Condensing System - Condenser Tubes and Support Equipment**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3110	Condenser tube leaks
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3111	Condenser tube fouling shell side
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3112	Condenser tube fouling tube side
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3113	Condenser tube and water box cleaning (including circulating water flow reversal)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3114	Air-cooled condenser tubes
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3115	Air-cooled condenser pumps
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3116	Air-cooled condenser fans
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3117	Air-cooled condenser fan motors
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Condenser Tubes and Support Equipment	3118	Other Air-cooled condenser problems
Multi-boiler/Multi-turbine	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 B13-19 Balance of Plant: Condensing System - Miscellaneous (Condensing System)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3170	Condenser inspection (use code 3110 to report looking for tube leaks)
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3171	Air-cooled condenser inspections
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3180	Major condenser overhaul
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3185	Water side cathodic protection
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3186	Auxiliary condenser and associated equipment
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3190	Air leakage (for losses not attributable to previously noted equipment related codes)
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Miscellaneous (Condensing System)	3199	Other miscellaneous condensing system problems

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

**TABLE B13-20 Balance of Plant: Condensing System - Vacuum Equipment**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3130	Air ejectors

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3131	Air ejector piping and valves
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3132	Inter and after condensers
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3133	Vacuum pumps
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3134	Vacuum pump piping and valves
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3135	Vacuum pump motor and auxiliaries
Multi-boiler/Multi-turbine	Balance of Plant	Condensing System	Vacuum Equipment	3139	Other air extraction system problems - general
Multi-boiler/Multi-turbine	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 B13-21 Balance of Plant: Electrical**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3600	Switchyard transformers and associated cooling systems - external (OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3601	Switchyard transformers and associated cooling systems - external (not OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3610	Switchyard circuit breakers - external (not OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3611	Switchyard circuit breakers - external (OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3612	Switchyard system protection devices - external (OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3613	Switchyard system protection devices - external (not OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3618	Other switchyard equipment - external (not OMC)
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3619	Other switchyard equipment - external (OMC)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3620	Main transformer
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3621	Unit auxiliaries transformer
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3622	Station service startup transformer
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3623	Auxiliary generators
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3624	Auxiliary generator voltage supply system
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3629	Other switchyard or high voltage system problems - external
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3630	400-700 volt transformers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3631	400-700 volt circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3632	400-700 volt conductors and buses
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3633	400-700 volt insulators
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3634	400-700 volt protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3639	Other 400-700 volt problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3640	AC instrument power transformers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3641	AC Circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3642	AC Conductors and buses
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3643	AC Inverters
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3644	AC Protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3649	Other AC instrument power problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3650	DC instrument power battery chargers



**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3651	DC circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3652	DC conductors and buses
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3653	DC protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3659	Other DC power problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3660	4000-7000 volt transformers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3661	4000-7000 volt circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3662	4000-7000 volt conductors and buses
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3663	4000-7000 volt insulators
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3664	4000-7000 volt protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3669	Other 4000-7000 volt problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3670	12-15kV transformers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3671	12-15kV circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3672	12-15kV conductors and buses
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3673	12-15kV insulators
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3674	12-15kV protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3679	Other 12-15kV problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3680	Other voltage transformers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3681	Other voltage circuit breakers
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3682	Other voltage conductors and buses

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3683	Other voltage insulators
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3684	Other voltage protection devices
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3689	Other voltage problems
Multi-boiler/Multi-turbine	Balance of Plant	Electrical		3690	Station Service Power Distribution System, General

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

<b>TABLE B13-22 Balance of Plant: Extraction Steam</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3520	HP Extraction steam piping
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3521	HP Extraction steam valves
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3522	HP Extraction steam instruments and controls
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3529	Other HP extraction steam system problems
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3530	IP Extraction steam piping
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3531	IP Extraction steam valves
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3532	IP Extraction steam instruments and controls
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3539	Other IP extraction steam system problems
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3540	LP Extraction steam piping
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3541	LP Extraction steam valves
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3542	LP Extraction steam instruments and controls
Multi-boiler/Multi-turbine	Balance of Plant	Extraction Steam		3549	Other LP extraction steam system problems

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

TABLE B13-23 Balance of Plant: Feedwater System					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3401	Startup feedwater pump
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3402	Startup feedwater pump drives - all types
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3407	Feedwater pump suction screens
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3408	Feedwater pump drive - local controls
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3409	Feedwater pump drive motor - variable speed
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3410	Feedwater pump
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3411	Feedwater pump drive - motor
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3412	Feedwater pump drive - steam turbine
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3413	Feedwater pump coupling and drive shaft
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3414	Feedwater pump local controls
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3415	Feedwater pump/drive lube oil system
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3416	Other feedwater pump problems
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3417	Feedwater pump drive - main shaft
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3418	Feedwater pump drive - other
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3419	Feedwater pump drive - gear
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3420	Feedwater piping and supports
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3430	Feedwater regulating (boiler level control) valve
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3431	Other feedwater valves

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3439	HP heater head leaks
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3440	High pressure heater tube leaks
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3441	Other high pressure heater problems (see condensate system for LP and IP heater codes)
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3451	Feedwater booster pump suction screens
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3452	Feedwater booster pump drive - local controls
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3453	Feedwater booster pump drive motor - variable speed
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3454	Feedwater booster pump
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3455	Feedwater booster pump drive - motor
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3456	Feedwater booster pump drive - steam turbine
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3457	Feedwater booster pump coupling and drive shaft
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3458	Feedwater booster pump local controls
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3459	Feedwater booster pump/drive lube oil system
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3460	Other feedwater booster pump problems
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3461	Feedwater booster pump drive - main shaft
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3462	Feedwater booster pump drive - other
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3463	Feedwater booster pump drive - gear
Multi-boiler/Multi-turbine	Balance of Plant	Feedwater System		3499	Other feedwater system problems

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

**TABLE B13-24 Balance of Plant: Heater Drain Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3501	Heater drain pumps
Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3502	Heater level control
Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3503	Heater drain piping
Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3504	Heater drain valves
Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3505	Heater drain pump drive
Multi-boiler/Multi-turbine	Balance of Plant	Heater Drain Systems		3509	Other heater drain system problems

**Notes: 1) For use with Unit Codes 800–899. 2) Excluding extraction or drain systems.**

**TABLE B13-25 Balance of Plant: Miscellaneous (Balance of Plant)**

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

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3981	PLC - data highway
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3982	PLC - hardware problems (including card failure)
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3983	PLC - internal and termination wiring
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3984	PLC - logic problems
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3985	PLC - upgrades
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3989	Other PLC problems
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3998	Balance of plant overhaul/outage
Multi-boiler/Multi-turbine	Balance of Plant	Miscellaneous (Balance of Plant)		3999	Other miscellaneous balance of plant problems

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

**TABLE B13-26 Balance of Plant: Power Station Switchyard**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Power Station Switchyard		3700	Power Station switchyard (non generating unit equipment)
Multi-boiler/Multi-turbine	Balance of Plant	Power Station Switchyard		3710	Transmission line (connected to powerhouse switchyard to 1st Substation)
Multi-boiler/Multi-turbine	Balance of Plant	Power Station Switchyard		3720	Transmission equipment at the 1st substation (see code 9300 if applicable)
Multi-boiler/Multi-turbine	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 B13-27 Balance of Plant: Waste Water (zero discharge) Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Balance of Plant	Waste Water (zero discharge) Systems		3290	Waste water (zero discharge) tanks, pumps, and motors
Multi-boiler/Multi-turbine	Balance of Plant	Waste Water (zero discharge) Systems		3291	Waste water (zero discharge) system fouling

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Multi-boiler/Multi-turbine	Balance of Plant	Waste Water (zero discharge) Systems		3292	Waste water (zero discharge) piping
Multi-boiler/Multi-turbine	Balance of Plant	Waste Water (zero discharge) Systems		3293	Waste water (zero discharge) valves
Multi-boiler/Multi-turbine	Balance of Plant	Waste Water (zero discharge) Systems		3294	Waste water (zero discharge) controls and instrumentation
Multi-boiler/Multi-turbine	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**

This set of codes contains the following:

- Boiler
- Boiler internals (tubes, refractory, supports, etc.)
- All the fuel handling, storage, 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.

<b>TABLE B13-28 Boiler: Bed Material Preparation System (FBC only)</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		160	Bed material tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		162	Bed material conveyors
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		163	Bed material feeders
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		164	Bed material feeder motors

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		165	Bed material crushers
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		166	Bed material crusher motors
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		167	Bed material screens
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		168	Bed material blowers/fans
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		169	Bed material blower/fan motors
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		170	Bed material cyclone
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		171	Bed material baghouse
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		172	Bed material drying equipment
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		173	Bed material pneumatic transport system including piping and valves
Multi-boiler /Multi-turbine	Boiler	Bed Material Preparation System (FBC only)		174	Other bed material handling equipment

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

**TABLE B13-29 Boiler: Bed Material Removal System**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		930	Bed material coolers
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		931	Bed material transport piping/valves
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		932	Bed material transport tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		933	Bed material fans/blowers
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		934	Bed material fan/blower motors
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		935	Bed material disposal conditioner
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		936	Bed material conveyors



**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		937	Bed material mechanical separators and baghouse
Multi-boiler /Multi-turbine	Boiler	Bed Material Removal System		950	Other bed material system problems

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

**TABLE B13-30 Boiler: Bed Solids Recirculation**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		951	Char reinjection feeders
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		952	Char reinjection piping/valves
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		953	Char reinjection controls
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		959	Other char reinjection equipment problems
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		960	Char transport piping and valves
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		961	Char transfer tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		962	Char conditioner
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		969	Other char equipment problems
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		970	Flue gas-solids separator
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		971	Flue gas-solids separator piping and valves
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		972	Flue gas-solids separator controls
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		973	Flue gas-solids separator refractory
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		980	High pressure loop seal recirculation fans/blowers
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		981	High pressure loop seal recirculation fan/blower motors
Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		982	High pressure loop seal recirculation fan/blower controls

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Bed Solids Recirculation		989	Other bed solids recirculation problems
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**Notes: 1) For use with Unit Codes 800–899.**

**TABLE B13-31 Boiler: Boiler Air and Gas Systems - Air Supply**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1400	Forced draft fans
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1401	Forced draft fan dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1407	Forced draft fan lubrication system
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1410	Forced draft fan motors
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1411	Forced draft fan motors - variable speed
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1412	Forced draft fan drives (other than motor)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1413	Forced draft fan couplings
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1415	Forced draft fan controls
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1420	Other forced draft fan problems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1421	Secondary air fans/blowers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1422	Secondary air fan/blower motors - single speed
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1423	Secondary air fan/blower motors - variable speed
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1424	Secondary air fan/blower controls
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1430	Air supply ducts from FD fan
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1431	Air supply dampers from FD fan
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1432	Air supply duct expansion joints

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1440	Air supply dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1450	Other air supply problems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Air Supply	1451	Fluidized Air Fan (FBC Only)
<b>Notes: 1) For use with Unit Codes 800–899. 2) Excluding burner pipes, wind boxes, primary air, or pulverizer exhausters.</b>					

<b>TABLE B13-32 Boiler: Boiler Air and Gas Systems - Flue Gas</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1455	Induced draft fans
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1456	Induced draft fan dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1457	Induced draft fan lubrication systems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1460	Induced draft fan fouling
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1470	Induced draft fan motors and drives
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1471	Induced draft fan motors - variable speed
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1472	Inducted draft fan coupling
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1475	Induced draft fan controls
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1476	Induced draft fan speed changer
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1480	Other induced draft fan problems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1487	Air heater (tubular)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1488	Air heater (regenerative)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1489	Air heater (heat pipe, plate-type)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1492	Air heater fouling (tubular)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1493	Air heater fouling (regenerative)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1495	Other air heater fouling (heat pipe, plate-type)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1500	Air heater soot blowers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1510	Flue gas ducts (except recirculation)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1512	Flue gas expansion joints
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1520	Flue gas dampers (except recirculation)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas	1530	Other flue gas problems

**Notes: 1) For use with Unit Codes 800–899. 2) Excluding burner pipes, wind boxes, primary air, or pulverizer exhausters.**

**TABLE B13-33 Boiler: Boiler Air and Gas Systems - Flue Gas Recirculation**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1535	Flue gas recirculating fan
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1536	Flue gas recirculating fan dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1537	Flue gas recirculating fan lubrication systems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1540	Flue gas recirculation fan fouling
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1550	Flue gas recirculation fan motors
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1555	Flue gas recirculation fan controls
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1560	Other flue gas recirculation fan problems
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1570	Flue gas recirculation ducts
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1572	Flue gas recirculation duct expansion joints
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Flue Gas Recirculation	1580	Flue gas recirculation dampers

**Notes: 1) For use with Unit Codes 800–899. 2) Excluding burner pipes, wind boxes, primary air, or pulverizer exhausters.**

**TABLE B13-34 Boiler: Boiler Air and Gas Systems - Miscellaneous (Boiler Air and Gas Systems)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Miscellaneous (Boiler Air and Gas Systems)	1590	Stacks (use code 8430 for stack problems due to pollution control equipment)
Multi-boiler /Multi-turbine	Boiler	Boiler Air and Gas Systems	Miscellaneous (Boiler Air and Gas Systems)	1599	Other miscellaneous boiler air and gas system problems

**Notes: 1) For use with Unit Codes 800–899. 2) Excluding burner pipes, wind boxes, primary air, or pulverizer exhausters.**

**TABLE B13-35 Boiler: Boiler Control Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1700	Feedwater controls (report local controls - feedwater pump, feedwater regulator valve, etc., - with component or system)
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1710	Combustion/steam condition controls (report local controls - burners, pulverizers, etc., - with component or system)
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1720	Desuperheater/attenuator controls
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1730	Boiler explosion or implosion
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1740	Boiler drum gage glasses / level indicator
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1750	Burner management system
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1760	Feedwater instrumentation (not local controls)
Multi-boiler /Multi-turbine	Boiler	Boiler Control Systems		1799	Other boiler instrumentation and control problems

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

**TABLE B13-36 Boiler: Boiler Design Limitations**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Design Limitations		1900	Improper balance between tube sections not due to fouling or plugging
Multi-boiler /Multi-turbine	Boiler	Boiler Design Limitations		1910	Inadequate air not due to equipment problems
<b>Notes: 1) For use with Unit Codes 800–899. 2) Including instruments which input to the controls.</b>					

<b>TABLE B13-37 Boiler: Boiler Fuel Supply from Bunkers to Boiler - Burners</b>					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	358	Oil burner piping and valves
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	359	Gas burner piping and valves
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	360	Burners
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	361	Burner orifices
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	362	Burner tilts
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	365	Bed warmup burners (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	366	Duct burners (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	370	Burner instruments and controls (except light off)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	375	Burner instruments and controls (FBC light-off system)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	380	Light off (igniter) systems (including fuel supply)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	385	Igniters
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	390	Burner wind boxes and dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	400	Burner wind box fires
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Burners	410	Other burner problems

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

**TABLE B13-38 Boiler: Boiler Fuel Supply from Bunkers to Boiler - Cyclone**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	415	Cyclone feeders
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	420	Cyclone crusher
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	425	Cyclone dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	426	Cyclone air ducts
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	430	Cyclone furnace
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Cyclone	435	Other cyclone problems

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

**TABLE B13-39 Boiler: Boiler Fuel Supply from Bunkers to Boiler - Oil and Gas Systems (except light off)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	440	Fuel oil pumps (general)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	441	Fuel oil pumps (burner supply)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	442	Fuel oil pumps (forwarding/transfer)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	443	Fuel oil (burner supply) pump drives
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	444	Fuel oil (forwarding/transfer) pump drives
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	450	Fuel oil heaters
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	460	Fuel oil atomizers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	470	Oil and gas fires

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	475	Fuel lance (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Oil and Gas Systems (except light off)	480	Other oil and gas fuel supply problems (see codes 0360-0410 for burner problems)
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

<b>TABLE B13-40 Boiler: Boiler Fuel Supply from Bunkers to Boiler - Pulverizers, Primary Air Fans, and Associated Ducts</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	200	Pulverizer exhaust fan (for indirect firing)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	205	Pulverizer exhaust fan drive
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	210	Pulverizer heater (for indirect firing)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	220	Pulverizer system cyclone separator
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	230	Pulverizer bag filter
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	240	Pulverized coal bin
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	250	Pulverizer feeders
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	253	Pulverizer feeder motor
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	255	Pulverizer feeder coal scales
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	256	Seal air system (air to pulverizers)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	257	Coal Crusher/dryer between feeder and pulverizer
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	260	Primary air fan
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	262	Primary air fan lube oil system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	263	Primary air fan drives



**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	264	Other primary air fan problems
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	265	Primary air heater
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	266	Primary air heater fouling
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	267	Primary air flow instrumentation
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	270	Primary air duct and dampers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	280	Pulverizer fires
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	290	Pulverizer reduced capacity due to wear
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	300	Pulverizer motors and drives
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	310	Pulverizer mills
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	312	Pulverizer mill classifiers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	313	Pulverizer mill trunnion seals
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	314	Pulverizer mill ball charger hopper (ball mills only)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	315	Pulverizer mill coal level controls
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	320	Foreign object in Pulverizers mill
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	325	Pulverizer skidding
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	330	Pulverizer coal leak (pulverizers only)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	331	Pulverizer system coal leaks (other than pulverizers, see code 0330)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	335	Pulverizer lube oil system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	338	Pulverizer control systems (temperature and pressure)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	340	Other pulverizer problems
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	341	Pulverizer deluge system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	342	Pulverizer inert system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	344	Pulverizer inspection
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	345	Pulverizer overhaul
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	346	Pulverizer pyrite removal system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply from Bunkers to Boiler	Pulverizers, Primary Air Fans, and Associated Ducts	350	Pulverized fuel and air piping (from pulverizer to wind box) (see code 0898 for pulverizer reject system problems)

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

**TABLE B13-41 Boiler: Boiler Fuel Supply to Bunker - Coal Handling Equipment up Through Bunkers**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	10	Thaw shed failure or fire
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	20	Coal car dumpers, shakers, and unloaders
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	22	Unloading/receiving hopper (train/truck)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	24	Rotary plow
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	26	Dust suppression system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	28	Dust collection system
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	30	Coal conveyors and feeders
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	35	Metal detector/collector (including magnetic separator)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	40	Coal elevators

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	50	Coal storage fires
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	60	Coal crushers including motors
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	70	Coal samplers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	75	Storage silos/hoppers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	80	Stackers/reclaimers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	84	Coal conveyor scales storage coal pile
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	85	Bunker feeder coal scales
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	90	Bunker fires
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	95	Bunker flow problems
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	100	Bunker gates
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	105	Bunker structures
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	106	Coal drying system (see additional codes 0125-0127)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	107	Screen (prior to bunkers)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	110	Other coal fuel supply problems up through bunkers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	125	Coal crusher dryer hammers (see code 0106)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	126	Coal crusher lube oil system (see code 0106)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	127	Other coal crusher dryer problems (see code 0106)
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Coal Handling Equipment up Through Bunkers	129	Other coal processing system problems

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

**TABLE B13-42 Boiler: Boiler Fuel Supply to Bunker - Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	111	Solid fuel feeder conveyors
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	112	Solid fuel feed tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	113	Solid fuel tank/hopper fires
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	114	Solid fuel volumetric feeder
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	115	Solid fuel gravimetric feeder
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	116	Solid fuel feeder motors
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	117	Solid fuel pneumatic transport system including piping and valves
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	118	Solid fuel drying system including screens
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	119	Solid fuel crushers
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	120	Solid fuel crusher motors
Multi-boiler /Multi-turbine	Boiler	Boiler Fuel Supply to Bunker	Solid Fuel Feed Equipment from Bunkers to Boiler (FBC only)	121	Other solid fuel feed problems

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

**TABLE B13-43 Boiler: Boiler Internals and Structures**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		800	Drums and drum internals (single drum only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		810	Boiler supports and structures (use code 1320 for tube supports)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		811	Convection pass enclosure (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		812	Distribution plate (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		813	Lower furnace (in-bed) tube supports (FBC only)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		814	In-bed bubble caps (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		820	Casing
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		830	Doors
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		840	Refractory and insulation
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		845	Windbox expansion joints
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		846	Convection pass expansion joints (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		847	Other expansion joints
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		850	Other internal or structural problems
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		855	Drum relief/safety valves (single drum only)
Multi-boiler /Multi-turbine	Boiler	Boiler Internals and Structures		859	Tube external fins/membranes

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

<b>TABLE B13-44 Boiler: Boiler Overhaul and Inspections</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1800	Major boiler overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1801	Minor boiler overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1810	Other boiler inspections
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1811	Boiler Inspections - problem identification / investigation
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1812	Boiler Inspections - scheduled or routine
Multi-boiler /Multi-turbine	Boiler	Boiler Overhaul and Inspections		1820	Chemical cleaning/steam blows

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

**TABLE B13-45 Boiler: Boiler Piping System - Boiler Recirculation**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	740	Boiler recirculation pumps
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	741	Boiler recirculation pumps - motors
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	742	Boiler recirculation pumps - motors - cooling system
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	750	Boiler recirculation piping including downcomers
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	760	Boiler recirculation valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Boiler Recirculation	770	Other boiler recirculation problems

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

**TABLE B13-46 Boiler: Boiler Piping System - Cold and Hot Reheat Steam**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	540	Hot reheat steam piping up to turbine stop valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	541	Cold reheat steam piping up to boiler
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	550	Reheat steam relief/safety valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	560	Other hot reheat steam valves (not including turbine stop or intercept valves)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	561	Other cold reheat steam valves (not including turbine stop or intercept valves)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Cold and Hot Reheat Steam	570	Other reheat steam problems

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

**TABLE B13-47 Boiler: Boiler Piping System - Desuperheaters/Attemperators**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

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

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

**TABLE B13-48 Boiler: Boiler Piping System - Feedwater and Blowdown**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	670	Feedwater piping downstream of feedwater regulating valve
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	680	Feedwater valves (not feedwater regulating valve)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	690	Other feedwater problems downstream of feedwater regulating valve (use codes 3401 to 3499 for remainder of feedwater system)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	700	Blowdown system valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	710	Blowdown system piping
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	720	Blowdown system controls / instrumentation
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Feedwater and Blowdown	730	Other blowdown system problems

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

**TABLE B13-49 Boiler: Boiler Piping System - Main Steam**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Main Steam	500	Main steam piping up to turbine stop valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Main Steam	510	Main steam relief/safety valves off superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Main Steam	520	Other main steam valves (including vent and drain valves but not including the turbine stop valves)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Main Steam	530	Other main steam system problems

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

**TABLE B13-50 Boiler: Boiler Piping System - Miscellaneous (Piping)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Miscellaneous (Piping)	775	Economizer piping
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Miscellaneous (Piping)	780	Headers between tube bundles
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Miscellaneous (Piping)	782	Headers and caps
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Miscellaneous (Piping)	790	Pipe hangers, brackets, supports (general)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Miscellaneous (Piping)	799	Other miscellaneous piping system problems

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

**TABLE B13-51 Boiler: Boiler Piping System - Startup Bypass**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Startup Bypass	630	Startup bypass system piping (including drain lines up to heaters or condenser)
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Startup Bypass	640	Startup bypass system valves
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Startup Bypass	650	Startup bypass tanks or flash tanks
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Startup Bypass	655	Steam by-pass system instrumentation and controls
Multi-boiler /Multi-turbine	Boiler	Boiler Piping System	Startup Bypass	660	Other startup bypass system problems



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

**TABLE B13-52 Boiler: Boiler Tube Fireside Slagging or Fouling**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1100	Waterwall (Furnace wall)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1105	Generating tubes
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1110	Cyclone Furnace (in cyclone area only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1120	Convection Pass Wall
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1130	Boiler screen, wing wall, or slag screen (water tubes only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1140	First superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1150	Second superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1160	First reheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1170	Second reheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1180	Economizer
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1190	Other tube slagging or fouling
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside Slagging or Fouling		1191	Bed agglomeration (FBC only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Fireside 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)

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

**TABLE B13-53 Boiler: Boiler Tube Leaks**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1000	Waterwall (Furnace wall)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1003	Steam generating tubes between steam drum and mud drum
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1005	Generating tubes
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1006	In-bed reheat tubes (FBC only - includes external heat exchangers)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1010	Cyclone furnace (in cyclone area only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1020	Convection pass wall (water tubes only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1030	Boiler screen, wing wall, or slag screen (water tubes only)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1035	Platen superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1040	First superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1045	In-bed superheater tubes (FBC only - includes external heat exchangers)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1050	Second superheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1055	External superheater link tubing
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1060	First reheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1070	Second reheater
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1075	External reheater link tubing
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1080	Economizer
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1085	In-bed evaporative tubes (FBC only - includes external heat exchangers)
Multi-boiler /Multi-turbine	Boiler	Boiler Tube Leaks		1090	Other boiler tube leaks

**Notes: 1) For use with Unit Codes 800–899. 2) Use codes 860 and 870 for fouling or slagging due to unavailability of soot blowers or their air or steam supply.**

**TABLE B13-54 Boiler: Boiler Water Condition**

Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Boiler Water Condition		1850	Boiler water condition (not feedwater water quality)

**Notes: 1) For use with Unit Codes 800–899. 2) Use code 859 for tube/membrane failures.**

**TABLE B13-55 Boiler: External Fluidized Bed Heat Exchanger**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	External Fluidized Bed Heat Exchanger		990	Refractory
Multi-boiler /Multi-turbine	Boiler	External Fluidized Bed Heat Exchanger		991	Tube leaks
Multi-boiler /Multi-turbine	Boiler	External Fluidized Bed Heat Exchanger		992	Tube supports
Multi-boiler /Multi-turbine	Boiler	External Fluidized Bed Heat Exchanger		999	Other heat exchanger problems

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

**TABLE B13-56 Boiler: Miscellaneous (Boiler)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Miscellaneous (Boiler)		1980	Boiler safety valve test
Multi-boiler /Multi-turbine	Boiler	Miscellaneous (Boiler)		1990	Boiler performance testing (use code 9999 for total unit performance testing)
Multi-boiler /Multi-turbine	Boiler	Miscellaneous (Boiler)		1999	Boiler, miscellaneous

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

**TABLE B13-57 Boiler: Miscellaneous Boiler Tube Problems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1300	Water side fouling
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1305	Fireside cleaning (which requires a full outage) Use code 1200 for cleanings that cause deratings.

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1310	Water side cleaning (acid cleaning)
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1320	Tube supports/attachments
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1330	Slag fall damage
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1340	Tube modifications (including addition and removal of tubes)
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1350	Other miscellaneous boiler tube problems
Multi-boiler /Multi-turbine	Boiler	Miscellaneous Boiler Tube Problems		1360	Boiler drains system

**Notes: 1) For use with Unit Codes 800–899. 2) Use more specific codes - other slagging and fouling problems, other control problems, etc. - whenever possible. Describe miscellaneous problems in the verbal description.**

**TABLE B13-58 Boiler: Slag and Ash Removal**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		860	Soot blowers - air (see code 3844 for air delivery system)
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		870	Soot blowers - steam
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		871	Soot blowers - sonic
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		872	Soot blowers - water
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		873	Soot blower drives
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		876	Soot blower controls
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		880	Fly Ash Removal System (not precipitators, scrubbers, mechanical collectors, or baghouses)
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		885	Fly ash Removal System - wet transport
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		890	Bottom ash systems (wet or dry)
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		891	Bottom ash hoppers (including gates)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		892	Bottom ash clinker grinders
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		893	Bottom ash water pumps and motors
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		894	Bottom ash piping and valves
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		895	Ashpit trouble
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		896	Bottom ash dewatering bin system, instruments and controls
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		897	Bottom ash rotary (drag chain type) conveyor and motor
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		898	Bottom ash pyrite hopper (pulverizer reject) system
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		899	Bottom ash controls and instrumentation
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		900	Slag tap (cyclone furnace)
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		910	Slag tap (other than cyclone furnace)
Multi-boiler /Multi-turbine	Boiler	Slag and Ash Removal		920	Other slag and ash removal problems

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

**TABLE B13-59 Boiler: Sorbent Supply (FBC only) - Sorbent Feed Equipment from Bunkers to Boiler (FBC only)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	150	Sorbent feed conveyors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	151	Sorbent feed tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	152	Sorbent feed volumetric feeder
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	153	Sorbent feed gravimetric feeder
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	154	Sorbent feed feeder motors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	155	Sorbent feed pneumatic transport system including piping and valves

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Feed Equipment from Bunkers to Boiler (FBC only)	156	Other sorbent feed problems
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**Notes: 1) For use with Unit Codes 800–899.**

**TABLE B13-60 Boiler: Sorbent Supply (FBC only) - Sorbent Handling System up Through Bunkers (FBC only)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	130	Sorbent handling tanks/hoppers
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	131	Sorbent handling conveyors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	132	Sorbent handling feeders
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	133	Sorbent handling feeder motors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	134	Sorbent handling crushers
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	135	Sorbent handling crusher motors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	136	Sorbent handling blowers/fans
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	137	Sorbent handling blower/fan motors
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	138	Sorbent handling baghouse
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	139	Sorbent handling drying equipment
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	140	Sorbent handling screens
Multi-boiler /Multi-turbine	Boiler	Sorbent Supply (FBC only)	Sorbent Handling System up Through Bunkers (FBC only)	141	Other sorbent handling equipment problems

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

## EXPANDER TURBINE

**TABLE B13-61 Expander Turbine: Expander Turbine**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7800	Couplings

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Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7810	Shaft
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7820	Bearings
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7830	Blades
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7840	Discs
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7850	Spacers
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7860	Nozzles/vanes
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7870	Heat shields
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7880	Exhaust diffusers
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7890	Seal oil system and seals
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7900	Inner casing
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7910	Outer exhaust casing
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7920	Lube oil system
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7930	Controls and instrumentation
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7940	Evactor
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7950	Major overhaul
Multi-boiler /Multi-turbine	Expander Turbine	Expander Turbine		7960	Other expander turbine 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.

<b>TABLE B13-62 External: Catastrophe</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	External	Catastrophe		9000	Flood
Multi-boiler /Multi-turbine	External	Catastrophe		9001	Drought
Multi-boiler /Multi-turbine	External	Catastrophe		9010	Fire including wildfires, not related to a specific component
Multi-boiler /Multi-turbine	External	Catastrophe		9020	Lightning
Multi-boiler /Multi-turbine	External	Catastrophe		9025	Geomagnetic disturbance
Multi-boiler /Multi-turbine	External	Catastrophe		9030	Earthquake
Multi-boiler /Multi-turbine	External	Catastrophe		9031	Tornado

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	External	Catastrophe		9035	Hurricane
Multi-boiler /Multi-turbine	External	Catastrophe		9036	Storms (ice, snow, etc)
Multi-boiler /Multi-turbine	External	Catastrophe		9040	Other catastrophe
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

<b>TABLE B13-63 External: Economic</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	External	Economic		0	Reserve shutdown
Multi-boiler /Multi-turbine	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.)
Multi-boiler /Multi-turbine	External	Economic		9131	Lack of fuel – due to contractual or tariff provisions that allow for service interruption or price fluctuations during peak demand periods.
Multi-boiler /Multi-turbine	External	Economic		9132	Wet Fuel - Biomass
Multi-boiler /Multi-turbine	External	Economic		9134	Fuel conservation
Multi-boiler /Multi-turbine	External	Economic		9135	Lack of water
Multi-boiler /Multi-turbine	External	Economic		9137	Ground water or other water supply problems
Multi-boiler /Multi-turbine	External	Economic		9140	Plant modifications to burn different fuel that are not regulatory mandated
Multi-boiler /Multi-turbine	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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Multi-boiler /Multi-turbine	External	Economic		9151	Labor strikes direct plant management grievances that result in a walkout or strike are under plant management control.
Multi-boiler /Multi-turbine	External	Economic		9160	Other economic problems
Multi-boiler /Multi-turbine	External	Economic		9180	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9181	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9182	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9183	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9184	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9185	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9186	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9187	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9188	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9189	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9190	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9191	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9192	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9193	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9194	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9195	Economic (for internal use at plants only)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	External	Economic		9196	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9197	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9198	Economic (for internal use at plants only)
Multi-boiler /Multi-turbine	External	Economic		9199	Economic (for internal use at plants only)

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

<b>TABLE B13-64 External: Fuel Quality</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	External	Fuel Quality		9200	High ash content (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9201	High ash content (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9205	Poor quality natural gas fuel, low heat content
Multi-boiler /Multi-turbine	External	Fuel Quality		9210	Low grindability (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9211	Low grindability (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9220	High sulfur content (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9221	High sulfur content (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9230	High vanadium content (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9231	High vanadium content (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9240	High sodium content (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9241	High sodium content (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9250	Low BTU coal (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9251	Low BTU coal (not OMC)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	External	Fuel Quality		9260	Low BTU oil (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9261	Low BTU oil (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9270	Wet coal (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9271	Wet coal (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9280	Frozen coal (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9281	Frozen coal (not OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9290	Other fuel quality problems (OMC)
Multi-boiler /Multi-turbine	External	Fuel Quality		9291	Other fuel quality problems (not OMC)

**Notes: 1) For use with Unit Codes 800–899. 2) 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.**

**TABLE B13-65 External: Miscellaneous (External)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	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)
Multi-boiler /Multi-turbine	External	Miscellaneous (External)		9305	Ash disposal problem
Multi-boiler /Multi-turbine	External	Miscellaneous (External)		9310	Operator training
Multi-boiler /Multi-turbine	External	Miscellaneous (External)		9320	Other miscellaneous external problems
Multi-boiler /Multi-turbine	External	Miscellaneous (External)		9340	Synchronous Condenser Operation

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

## **GAS TURBINE**

**TABLE B13-66 Gas Turbine: Auxiliary Systems**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5110	Lube oil system - general
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5111	Lube oil pumps
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5112	Lube oil coolers
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5113	Lube oil valves/piping
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5114	Lube oil filters
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5115	Oil vapor extractor
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5117	Power augmentation piping
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5118	Power augmentation valves
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5119	Power augmentation controls
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5120	Hydraulic oil system
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5130	Starting system (including motor)
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5140	Battery and charger system
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5150	Turning gear and motor
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5160	Cooling and seal air system
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5170	Cooling water system
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5180	Anti-icing system
Multi-boiler /Multi-turbine	Gas Turbine	Auxiliary Systems		5190	Other auxiliary system problems

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

**TABLE B13-67 Gas Turbine: Exhaust Systems**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5100	Chamber
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5101	Hoods
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5102	Vanes/nozzles
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5103	Silencer
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5104	Cones
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5108	High engine exhaust temperature
Multi-boiler /Multi-turbine	Gas Turbine	Exhaust Systems		5109	Other exhaust problems (including high exhaust system temperature not attributable to a specific problem)

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

**TABLE B13-68 Gas Turbine: Fuel, Ignition, and Combustion Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5040	Fuel tanks
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5041	Fuel piping and valves
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5042	Fuel nozzles/vanes
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5043	Fuel filters
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5044	Liquid fuel oil pump
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5046	Liquid fuel oil transfer/forwarding pump
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5048	Gas fuel system including controls and instrumentation
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5049	Other fuel system problems

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5050	Ignition system
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5060	Atomizing air system
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5070	Combustor casing
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5071	Combustor liner
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5072	Combustor caps
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5073	Flame scanners
Multi-boiler /Multi-turbine	Gas Turbine	Fuel, Ignition, and Combustion Systems		5079	Other combustor problems

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

**TABLE B13-69 Gas Turbine: Inlet Air System and Compressors - Compressors**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5010	High pressure shaft
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5011	High pressure bearings
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5012	High pressure blades/buckets
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5013	Compressor casing and bolts
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5014	Compressor diaphragms
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5015	Compressor seals
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5016	High pressure compressor bleed valves
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5019	Other high pressure problems
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5020	Low pressure shaft
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5021	Low pressure bearings

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5022	Low pressure blades/buckets
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5029	Other low pressure problems
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5030	Supercharging fans
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Compressors	5039	Other compressor problems

**Notes: 1) For use with Unit Codes 800–899. 2) Use HP compressor if only one.**

**TABLE B13-70 Gas Turbine: Inlet Air System and Compressors - Ducts and Filters**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Ducts and Filters	5000	Inlet air ducts
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Ducts and Filters	5001	Inlet air vanes/nozzles
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Ducts and Filters	5002	Inlet air filters
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Ducts and Filters	5003	Inlet cone
Multi-boiler /Multi-turbine	Gas Turbine	Inlet Air System and Compressors	Ducts and Filters	5009	Other inlet air problems

**Notes: 1) For use with Unit Codes 800–899. 2) Use HP compressor if only one.**

**TABLE B13-71 Gas Turbine: Miscellaneous (Gas Turbine)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5200	Reduction gear
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5201	Load shaft and bearings
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5210	Intercoolers
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5220	Regenerators
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5230	Heat shields

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Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5240	Fire detection and extinguishing system (including hazardous gas detection system)
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5241	Fire in unit
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5250	Other controls and instrumentation problems
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5255	Computer
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5260	Major overhaul (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5261	Gas turbine/compressor washing
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5262	Gas turbine exchange
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5270	Hot end inspection
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5272	Boroscope inspection
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5274	General unit inspection
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5280	Vibration (not engine) in unit not attributable to bearings or other components
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5285	Gas turbine vibration
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5290	Gas turbine performance testing - individual engines (use code 9999 for total unit performance testing)
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5298	Main gas filter
Multi-boiler /Multi-turbine	Gas Turbine	Miscellaneous (Gas Turbine)		5299	Other miscellaneous gas turbine problems

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

<b>TABLE B13-72 Gas Turbine: Turbine</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>



**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5080	High pressure shaft
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5081	High pressure bearings
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5082	High pressure blades/buckets
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5083	High pressure nozzles/vanes
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5084	High pressure casing/expansion joints
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5085	Interstage gas passages - HP
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5086	High pressure shaft seals
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5089	Other high pressure problems
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5090	Low pressure shaft
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5091	Low pressure bearings
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5092	Low pressure blades/buckets
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5093	Low pressure nozzles/vanes
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5094	Low pressure casing/expansion joints
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5095	Interstage gas passages - LP
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5096	Low pressure shaft seals
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5097	Other low pressure problems
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5098	Expansion joints
Multi-boiler /Multi-turbine	Gas Turbine	Turbine		5099	HP to LP coupling

**Notes: 1) For use with Unit Codes 800–899. 2) Use HP if only one.**

## 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 B13-73 Generator: Controls					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Generator	Controls		4700	Generator voltage control
Multi-boiler /Multi-turbine	Generator	Controls		4710	Generator metering devices
Multi-boiler /Multi-turbine	Generator	Controls		4720	Generator synchronization equipment
Multi-boiler /Multi-turbine	Generator	Controls		4730	Generator current and potential transformers
Multi-boiler /Multi-turbine	Generator	Controls		4740	Emergency generator trip devices
Multi-boiler /Multi-turbine	Generator	Controls		4750	Other generator controls and metering problems
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

TABLE B13-74 Generator: Cooling System					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Generator	Cooling System		4610	Hydrogen cooling system piping and valves
Multi-boiler /Multi-turbine	Generator	Cooling System		4611	Hydrogen coolers
Multi-boiler /Multi-turbine	Generator	Cooling System		4612	Hydrogen storage system
Multi-boiler /Multi-turbine	Generator	Cooling System		4613	Hydrogen seals
Multi-boiler /Multi-turbine	Generator	Cooling System		4619	Other hydrogen system problems
Multi-boiler /Multi-turbine	Generator	Cooling System		4620	Air cooling system
Multi-boiler /Multi-turbine	Generator	Cooling System		4630	Liquid cooling system

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Generator	Cooling System		4640	Seal oil system and seals
Multi-boiler /Multi-turbine	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 B13-75 Generator: Exciter**

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

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

**TABLE B13-76 Generator: Generator**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Generator	Generator		4500	Rotor windings (including damper windings and fan blades on hydro units)
Multi-boiler /Multi-turbine	Generator	Generator		4510	Rotor collector rings
Multi-boiler /Multi-turbine	Generator	Generator		4511	Rotor, General
Multi-boiler /Multi-turbine	Generator	Generator		4512	Retaining Rings
Multi-boiler /Multi-turbine	Generator	Generator		4520	Stator windings, bushings, and terminals

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Generator	Generator		4530	Stator core iron
Multi-boiler /Multi-turbine	Generator	Generator		4535	Stator, General
Multi-boiler /Multi-turbine	Generator	Generator		4536	Generator Heaters
Multi-boiler /Multi-turbine	Generator	Generator		4540	Brushes and brush rigging
Multi-boiler /Multi-turbine	Generator	Generator		4550	Generator bearings and lube oil system (including thrust bearings on hydro units)
Multi-boiler /Multi-turbine	Generator	Generator		4551	Generator bearings
Multi-boiler /Multi-turbine	Generator	Generator		4552	Generator lube oil system
Multi-boiler /Multi-turbine	Generator	Generator		4555	Bearing cooling system
Multi-boiler /Multi-turbine	Generator	Generator		4560	Generator vibration (excluding vibration due to failed bearing and other components)
Multi-boiler /Multi-turbine	Generator	Generator		4570	Generator casing
Multi-boiler /Multi-turbine	Generator	Generator		4580	Generator end bells and bolting

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

<b>TABLE B13-77 Generator: Miscellaneous (Generator)</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4800	Generator main leads
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4805	Generator Bus Duct Cooling System
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4810	Generator output breaker
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4830	Major generator overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4831	Minor generator overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4840	Inspection
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4841	Generator dole testing
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4842	Reactive and capability testing
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4850	Core monitor alarm
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4860	Generator neutral grounding equipment
Multi-boiler /Multi-turbine	Generator	Miscellaneous (Generator)		4899	Other miscellaneous generator problems

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

## HEAT RECOVERY STEAM GENERATOR (HRSG)

**TABLE B13-78 Heat Recovery Steam Generator (HRSG): Miscellaneous (HRSG Boiler)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Heat Recovery Steam Generator (HRSG)	Miscellaneous (HRSG Boiler)		6100	Steam turbine to gas turbine coupling. For additional codes, use Fossil Steam Cause Codes 4000 to 4499.
Multi-boiler /Multi-turbine	Heat Recovery Steam Generator (HRSG)	Miscellaneous (HRSG Boiler)		6000	Heat recovery steam generator to gas turbine connecting equipment. For additional codes, use Fossil Steam Cause Codes 0010 to 1999.

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

## INACTIVE STATES

**TABLE B13-79 Inactive States: Inactive States**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler /Multi-turbine	Inactive States	Inactive States		2	Inactive Reserve Shutdown
Multi-boiler /Multi-turbine	Inactive States	Inactive States		9990	Retired unit
Multi-boiler /Multi-turbine	Inactive States	Inactive States		9991	Mothballed unit

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

**JET ENGINE****TABLE B13-80 Jet Engine: Auxiliary Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5510	Lube oil system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5520	Hydraulic oil system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5530	Starting system (including motor)
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5540	Battery and charger system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5550	Turning gear and motor
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5560	Cooling and seal air system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5570	Cooling water system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5580	Anti-icing system
Multi-boiler/Multi-turbine	Jet Engine	Auxiliary Systems		5590	Other auxiliary system problems

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

**TABLE B13-81 Jet Engine: Exhaust Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5500	Chamber
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5501	Hoods
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5502	Vanes/nozzles
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5503	Silencer

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5504	Cones
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5508	High engine exhaust temperature
Multi-boiler/Multi-turbine	Jet Engine	Exhaust Systems		5509	Other exhaust problems (including high exhaust temperature not attributable to a specific problem)

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

**TABLE B13-82 Jet Engine: Fuel, Ignition, and Combustion Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5440	Fuel tanks
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5441	Fuel piping and valves
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5442	Fuel nozzles/vanes
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5443	Fuel filters
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5449	Other fuel system problems
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5450	Ignition system
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5455	Fuel nozzle/vane cooling air system
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5460	Atomizing air system
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5470	Combustor casing
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5471	Combustor liner
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5472	Combustor caps
Multi-boiler/Multi-turbine	Jet Engine	Fuel, Ignition, and Combustion Systems		5479	Other combustor problems

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

**TABLE B13-83 Jet Engine: Inlet Air System and Compressors - Compressors**

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5410	High pressure shaft
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5411	High pressure bearings
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5412	High pressure blades/buckets
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5413	Other high pressure problems
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5420	Low pressure shaft
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5421	Low pressure bearings
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5422	Low pressure blades/buckets
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5429	Other low pressure problems
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Compressors	5430	Supercharging fans

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

**TABLE B13-84 Jet Engine: Inlet Air System and Compressors - Ducts and Filters**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Ducts and Filters	5400	Inlet air ducts
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Ducts and Filters	5401	Inlet air vanes/nozzles
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Ducts and Filters	5402	Inlet air filters
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Ducts and Filters	5403	Inlet and exhaust cones
Multi-boiler/Multi-turbine	Jet Engine	Inlet Air System and Compressors	Ducts and Filters	5409	Other inlet air problems

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

**TABLE B13-85 Jet Engine: Miscellaneous (Jet Engine)**



**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5600	Reduction gear
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5601	Load shaft and bearings
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5610	Intercoolers
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5620	Regenerators
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5630	Heat shields
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5640	Fire detection and extinguishing system
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5641	Fire in unit
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5650	Other controls and instrumentation problems
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5660	Major overhaul (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5661	Engine/compressor washing
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5662	Engine exchange
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5665	Engine shafts and bearings
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5670	Hot end inspection
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5672	Boroscope inspection
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5674	General unit inspection
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5680	Vibration (not engine) in unit not attributable to bearings or other components
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5685	Engine vibration
Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5690	Engine performance testing - individual engines (use code 9999 for total unit performance testing)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Jet Engine	Miscellaneous (Jet Engine)		5699	Other miscellaneous jet engine problems
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**Notes: 1) For use with Unit Codes 800–899.**

<b>TABLE B13-86 Jet Engine: Turbine</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5480	High pressure shaft
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5481	High pressure bearings
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5482	High pressure blades/buckets
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5483	High pressure nozzles/vanes
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5484	High pressure casing/expansion joint
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5485	Interstage gas passages
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5486	High pressure shaft seals
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5489	Other high pressure problems
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5490	Low pressure shaft
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5491	Low pressure bearings
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5492	Low pressure blades/buckets
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5493	Low pressure nozzles/vanes
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5494	Low pressure casing/expansion joints
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5497	Other low pressure problems
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5498	Expansion joints
Multi-boiler/Multi-turbine	Jet Engine	Turbine		5499	Shaft seals

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

**MISCELLANEOUS**

TABLE B13-87 Miscellaneous: Instruments and Controls

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/ Multi-turbine	Miscellaneous	Instruments and Controls		6200	Combined cycle instruments and controls. (Report instruments and controls specific to the gas turbine, steam turbine, boiler, generator, or balance of plant using the codes for the appropriate piece of equipment.)

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

**PERFORMANCE**

TABLE B13-88 Performance: Performance

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Performance	Performance		9997	NERC Reliability Standard Requirement
Multi-boiler/Multi-turbine	Performance	Performance		9998	Black start testing
Multi-boiler/Multi-turbine	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 B13-89 Personnel or Procedural Errors: Personnel or Procedural Errors

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9900	Operator error
Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9910	Maintenance personnel error
Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9920	Contractor error
Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9930	Operating procedure error

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9940	Maintenance procedure error
Multi-boiler/Multi-turbine	Personnel or Procedural Errors	Personnel or Procedural Errors		9950	Contractor procedure error
Multi-boiler/Multi-turbine	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.

<b>TABLE B13-90 Pollution Control Equipment: Continuous Emissions Monitoring Systems (CEMS)</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8700	CEMS Certification and Recertification
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8710	SO2 analyzer problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8720	NOx analyzer problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8730	CO analyzer problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8740	CO2 analyzer problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8750	O2 analyzer problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8760	Opacity monitor problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8770	Flow monitor problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8780	Data acquisition system problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Continuous Emissions Monitoring Systems (CEMS)		8790	Miscellaneous CEMS problems

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

### TABLE B13-91 Pollution Control Equipment: Dry Scrubbers - Dry Scrubber

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8529	Gas dispersers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8530	Spray towers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8531	Spray machine/atomizer
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8532	Spray machine/atomizer motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8533	Spray machine/atomizer lubrication systems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Dry Scrubber	8534	Spray machine/atomizer vibration problems

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

**TABLE B13-92 Pollution Control Equipment: Dry Scrubbers - Miscellaneous (Dry Scrubber)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8544	Mechanical failures
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8545	Electrical failures
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8546	Major overhaul
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8547	Inspection
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8548	Testing
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Miscellaneous (Dry Scrubber)	8549	Other dry scrubber problems

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

**TABLE B13-93 Pollution Control Equipment: Dry Scrubbers - Piping, Ducting, and Dampers**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8522	Piping

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8523	Valves
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8524	Strainers or filters
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8525	Ducting
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8526	Dampers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Piping, Ducting, and Dampers	8527	Other piping, ducting, and damper problems

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

<b>TABLE B13-94 Pollution Control Equipment: Dry Scrubbers - Reagent\Slurry Supply</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8500	Slurry storage and feed tanks
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8501	Reagent storage, feed bins, and conveyors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8502	Weigh feeders
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8503	Screw conveyors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8504	Mills/slakers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8505	Scalping screens
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8506	Slurry pipelines
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8507	Reagent uploading and transfer systems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8508	Reagent unavailability
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8510	Slurry mixers and agitators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8520	Slurry transfer pumps and motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Reagent\Slurry Supply	8521	Reagent/slurry problems

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

TABLE B13-95 Pollution Control Equipment: Dry Scrubbers - Waste Disposal and Recovery

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8535	Fly ash conveyors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8536	Bucket elevators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8537	Weigh hoppers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8538	Recycle storage and feed tanks including agitators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8539	Recycle slurry transfer pumps
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8540	Waste disposal
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8541	Recycle feed bins
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8542	Recycle feed bins aeration systems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Dry Scrubbers	Waste Disposal and Recovery	8543	Powder coolers

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

TABLE B13-96 Pollution Control Equipment: Miscellaneous (Pollution Control Equipment)

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8565	Electrostatic Precipitator rebuild/overhaul
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8600	Flue gas additives (furnace injection)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8601	SO3 mitigation
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8620	Mercury Abatement Equipment
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8650	Baghouse systems, general

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8651	Bag failures and rebagging
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8652	Shakers and rappers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8653	Inflation and deflation fans and motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8654	Baghouse booster fans and motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8655	Structural duct work and dampers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8656	Controls and instrumentation
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8657	Ash handling system and hoppers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8658	Slurry system from precipitators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8670	Emission monitors (other than CEMS)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Miscellaneous (Pollution Control Equipment)		8699	Other miscellaneous pollution control equipment problems

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

**TABLE B13-97 Pollution Control Equipment: NOx Reduction Systems - Catalytic Air Heaters**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Catalytic Air Heaters	8830	CAH NOx Active catalyst
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Catalytic Air Heaters	8831	CAH NOx Support materials
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Catalytic Air Heaters	8832	CAH NOx Plugging
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Catalytic Air Heaters	8835	Other CAH problems

**Notes: 1) For use with Unit Codes 800–899. 2) Use code 360 for Low NOx Burners.**

**TABLE B13-98 Pollution Control Equipment: NOx Reduction Systems - Selective Catalytic Reduction Systems**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8810	SCR NOx Reactor
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8811	SCR NOx Reagent
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8812	SCR NOx Catalyst
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8813	SCR NOx Injection grid piping/valves
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8814	SCR NOx Catalyst support material
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8815	SCR NOx Soot blowers
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8816	SCR NOx Plugging
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8817	SCR NOx Control system
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Catalytic Reduction Systems	8825	Other SCR NOx problems

**Notes: 1) For use with Unit Codes 800–899. 2) Use code 360 for Low NOx Burners.**

<b>TABLE B13-99 Pollution Control Equipment: NOx Reduction Systems - Selective Non-Catalytic Reduction Systems</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Non-Catalytic Reduction Systems	8800	SNCR NOx Reagent
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Non-Catalytic Reduction Systems	8801	SNCR NOx Carrier gas
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Non-Catalytic Reduction Systems	8802	SNCR NOx Control system
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Non-Catalytic Reduction Systems	8803	SNCR Performance Testing
Multi-boiler/Multi-turbine	Pollution Control Equipment	NOx Reduction Systems	Selective Non-Catalytic Reduction Systems	8809	Other SNCR NOx problems

**Notes: 1) For use with Unit Codes 800–899. 2) Use code 360 for Low NOx Burners.**

<b>TABLE B13-100 Pollution Control Equipment: Precipitators</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8550	Electrostatic precipitator fouling
Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8551	Electrostatic precipitator field out of service
Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8560	Electrostatic precipitator problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8570	Mechanical precipitator fouling
Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8580	Mechanical precipitator problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Precipitators		8590	Other precipitator problems

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

**TABLE B13-101 Pollution Control Equipment: Wet Scrubbers - Chemical Supply**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8000	Chemical feed storage, mill feeders, and conveyors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8002	Screw conveyors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8003	Bucket elevators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8006	Weigh feeders
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8010	Crushers/mills
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8020	Mill slurry tanks supply problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8030	Classifiers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8040	Slurry transfer pumps and motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8050	Chemical unavailability
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Chemical Supply	8099	Other chemical supply problems

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

TABLE B13-102 Pollution Control Equipment: Wet Scrubbers - Miscellaneous (Wet Scrubber)					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8400	Scrubber gas discharge reheaters - general
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8402	Scrubber gas discharge reheaters - vibration
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8404	Scrubber gas discharge reheaters - tube leaks
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8406	Scrubber gas discharge reheaters - ducts
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8410	Scrubber instruments and controls
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8415	Liquid level controls
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8420	Heat tracer
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8425	Miscellaneous mechanical failures
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8426	Miscellaneous electrical failures
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8430	Stack damage related to scrubber system
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8440	Major overhaul
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8450	Inspection
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8460	Testing
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8470	SO2 monitor
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Miscellaneous (Wet Scrubber)	8499	Other miscellaneous wet scrubber problems
<b>Notes: 1) For use with Unit Codes 800–899.</b>					

TABLE B13-103 Pollution Control Equipment: Wet Scrubbers - Piping, Ducting, Dampers, and Fans					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION

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Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8200	Piping
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8210	Valves
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8220	Strainers or filters
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8225	Drain pots
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8230	Ducting
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8235	Demister
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8240	Bypass dampers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8250	Dampers other than bypass
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8260	Scrubber booster I.D. fan (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8261	Scrubber booster I.D. fan drive
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8262	Scrubber booster I.D. fan vibration (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8264	Scrubber booster I.D. fan blades (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8265	Scrubber booster I.D. fan dampers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8270	Scrubber booster F.D. fan (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8271	Scrubber booster F.D. fan drive
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8272	Scrubber booster F.D. fan vibration (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8274	Scrubber booster F.D. fan blades (fan specific to the scrubber)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8275	Scrubber booster F.D. fan dampers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8280	Reagent feed piping

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Piping, Ducting, Dampers, and Fans	8290	Demister wash piping assembly
Multi-boiler/Multi-turbine	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. 2) 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 B13-104 Pollution Control Equipment: Wet Scrubbers - Waste Disposal and Recovery**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8300	Waste disposal/recovery tanks
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8310	Waste disposal/recovery pumps
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8320	Waste disposal ponds
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8325	Ash disposal problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8330	Dewatering equipment (thickener, centrifuge, etc.)
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8335	Dryers
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8340	Centrifuge/vacuum filter
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8345	Calciners
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8349	Other waste disposal and recovery problems
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Waste Disposal and Recovery	8399	Solids conveying and mixing system problems

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

**TABLE B13-105 Pollution Control Equipment: Wet Scrubbers - Wet Scrubber**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8100	Scrubber/absorber tower or module
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8110	Spray nozzles

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Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8115	Disc scrubber throats
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8120	Spray pumps and motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8125	Scrubber recycle (liquid) pumps
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8127	Scrubber recycle (liquid) pump motors
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8130	Recirculation tanks including agitators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8140	Reaction tanks including agitators
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8150	Tubes
Multi-boiler/Multi-turbine	Pollution Control Equipment	Wet Scrubbers	Wet Scrubber	8160	Mist eliminators/demisters and washdown
Multi-boiler/Multi-turbine	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 B13-106 Regulatory, Safety, Environmental: Other Operating Environmental Limitations					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9660	Thermal discharge limits - fossil and nuclear
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9663	Thermal discharge limits - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9664	Thermal discharge limits - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9665	Thermal discharge limits (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9670	Noise limits (not for personnel safety) - fossil and nuclear
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9673	Noise limits (not for personnel safety) - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9674	Noise limits (not for personnel safety) - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9675	Noise limits (not for personnel safety) (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9676	Noise limits (not for personnel safety) - hydro and pumped storage
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9680	Fish kill - fossil and nuclear
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9683	Fish kill - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9684	Fish kill - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9685	Fish kill (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9686	Fish kill - hydro and pumped storage
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9690	Other miscellaneous operational environmental limits - fossil and nuclear
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9693	Other miscellaneous operational environmental limits - gas turbines

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Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9694	Other miscellaneous operational environmental limits - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9695	Other miscellaneous operational environmental limits (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Other Operating Environmental Limitations		9696	Other miscellaneous operational environmental limits - hydro and pumped storage

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

**TABLE B13-107 Regulatory, Safety, Environmental: Regulatory**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Regulatory		9504	Regulatory (environmental) proceedings and hearings - regulatory agency initiated
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Regulatory		9506	Regulatory (environmental) proceedings and hearings - intervenor initiated
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Regulatory		9510	Plant modifications strictly for compliance with new or changed regulatory requirements (scrubbers, cooling towers, etc.)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Regulatory		9520	Oil spill in Gulf of Mexico (OMC)
Multi-boiler/Multi-turbine	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 B13-108 Regulatory, Safety, Environmental: Safety**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Safety		9700	OSHA-related retrofit or inspection
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Safety		9720	Other safety problems

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



TABLE B13-109 Regulatory, Safety, Environmental: Stack Emission					
UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9600	SO2 stack emissions - fossil
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9603	SO2 stack emissions - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9604	SO2 stack emissions - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9605	SO2 stack emissions (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9610	NOx stack emissions - fossil
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9613	NOx stack emissions - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9614	NOx stack emissions - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9615	NOx stack emissions (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9616	CO stack emissions - fossil
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9620	Particulate stack emissions - fossil
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9623	Particulate stack emissions - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9624	Particulate stack emissions - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9625	Particulate stack emissions (Internal Combustion/Reciprocating Engines)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9630	Opacity - fossil
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9633	Opacity - gas turbines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9634	Opacity - jet engines
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9635	Opacity (Internal Combustion/Reciprocating Engines)

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9650	Other stack/exhaust emissions - fossil (use codes 9200 to 9290 if fuel quality causes pollution control equipment problems that result in excess stack emissions)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9653	Other stack or exhaust emissions - gas turbines (use codes 9200 to 9290 if fuel quality causes pollution control equipment problems that result in excess stack emissions)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9654	Other stack or exhaust emissions - jet engines (use codes 9200 to 9290 if fuel quality causes pollution control equipment problems that result in excess stack emissions)
Multi-boiler/Multi-turbine	Regulatory, Safety, Environmental	Stack Emission		9656	Other stack or exhaust emissions testing - fossil

**Notes: 1) For use with Unit Codes 800–899. 2) Include exhaust emissions.**

## 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 B13-110 Steam Turbine: Controls**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4290	Hydraulic system pumps
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4291	Hydraulic system coolers
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4292	Hydraulic system filters
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4293	Hydraulic system pipes and valves
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4299	Other hydraulic system problems
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4300	Turbine supervisory system (use codes 4290 to 4299 for hydraulic oil)
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4301	Turbine governing system

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Steam Turbine	Controls		4302	Turbine trip devices (including instruments)
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4303	Exhaust hood and spray controls
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4304	Automatic turbine control systems - mechanical
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4305	Automatic turbine control systems - mechanical - hydraulic
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4306	Automatic turbine control systems - electro-hydraulic - analog
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4307	Automatic turbine control systems - electro-hydraulic - digital
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4308	Automatic turbine control systems - digital control and monitoring
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4309	Other turbine instrument and control problems
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4310	Steam Turbine Control System - data highway
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4311	Steam Turbine Control System - hardware problems (including card failure)
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4312	Steam Turbine Control System - internal and termination wiring
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4313	Steam Turbine Control System - logic problems
Multi-boiler/Multi-turbine	Steam Turbine	Controls		4314	Steam Turbine Control System - upgrades

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

<b>TABLE B13-111 Steam Turbine: High Pressure Turbine</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4000	Outer casing
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4001	Inner casing
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4009	Nozzle bolting
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4010	Nozzles and nozzle blocks

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4011	Diaphragms
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4012	Buckets or blades
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4013	Diaphragms unit and shroud type
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4014	Bucket or blade fouling
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4015	Wheels or spindles
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4020	Shaft seals
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4021	Dummy rings
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4022	Gland rings
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4030	Rotor shaft
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4040	Bearings
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4041	Thrust bearings
Multi-boiler/Multi-turbine	Steam Turbine	High Pressure Turbine		4099	Other high pressure turbine problems

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

<b>TABLE B13-112 Steam Turbine: Intermediate Pressure Turbine</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4100	Outer casing
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4101	Inner casing
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4109	Nozzle bolting
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4110	Nozzles and nozzle blocks
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4111	Diaphragms

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4112	Buckets or blades
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4113	Bucket or blade fouling
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4115	Wheels or spindles
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4120	Shaft seals
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4121	Dummy rings
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4122	Gland rings
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4130	Rotor shaft
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4140	Bearings
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4141	Thrust bearings
Multi-boiler/Multi-turbine	Steam Turbine	Intermediate Pressure Turbine		4199	Other intermediate pressure turbine problems

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

<b>TABLE B13-113 Steam Turbine: Low Pressure Turbine</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4200	Outer casing
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4201	Inner casing
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4209	Nozzle bolting
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4210	Nozzles and nozzle blocks
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4211	Diaphragms
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4212	Buckets or blades
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4213	Bucket or blade fouling

**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4215	Wheels or spindles
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4220	Shaft seals
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4221	Dummy rings
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4222	Gland rings
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4230	Rotor shaft
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4240	Bearings
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4241	Thrust bearings
Multi-boiler/Multi-turbine	Steam Turbine	Low Pressure Turbine		4250	Other low pressure turbine problems

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

**TABLE B13-114 Steam Turbine: Lube Oil**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
Multi-boiler/Multi-turbine	Steam Turbine	Lube Oil		4280	Lube oil pumps
Multi-boiler/Multi-turbine	Steam Turbine	Lube Oil		4281	Lube oil coolers
Multi-boiler/Multi-turbine	Steam Turbine	Lube Oil		4282	Lube oil conditioners
Multi-boiler/Multi-turbine	Steam Turbine	Lube Oil		4283	Lube oil system valves and piping
Multi-boiler/Multi-turbine	Steam Turbine	Lube Oil		4284	Lube oil pump drive
Multi-boiler/Multi-turbine	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 B13-115 Steam Turbine: Miscellaneous (Steam Turbine)**

UNIT TYPE	SYSTEM	COMPONENT	SUB-COMPONENT	CAUSE CODE	DESCRIPTION
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**Appendix B13: Index To Multi-boiler/Multi-turbine Unit Cause Codes**

Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4400	Major turbine overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4401	Inspection
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4402	Minor turbine overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2)
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4410	Turning gear and motor
Multi-boiler/Multi-turbine	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)
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4430	Gland seal system
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4440	Moisture separator/reheater (nuclear including MSR drains, controls, etc.)
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4445	Steam reheater
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4450	Water induction
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4460	Turbine overspeed trip test
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4470	Differential expansion
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4490	Turbine performance testing (use code 9999 for total unit performance testing)
Multi-boiler/Multi-turbine	Steam Turbine	Miscellaneous (Steam Turbine)		4499	Other miscellaneous steam turbine problems

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

<b>TABLE B13-116 Steam Turbine: Piping</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Steam Turbine	Piping		4270	Crossover or under piping
Multi-boiler/Multi-turbine	Steam Turbine	Piping		4279	Miscellaneous turbine piping

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

<b>TABLE B13-117 Steam Turbine: Valves</b>					
<b>UNIT TYPE</b>	<b>SYSTEM</b>	<b>COMPONENT</b>	<b>SUB-COMPONENT</b>	<b>CAUSE CODE</b>	<b>DESCRIPTION</b>
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4260	Main stop valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4261	Control valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4262	Intercept valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4263	Reheat stop valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4264	Combined intercept valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4265	Miscellaneous drain and vent valves
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4266	Main stop valve testing
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4267	Control valve testing
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4268	Reheat/intercept valve testing
Multi-boiler/Multi-turbine	Steam Turbine	Valves		4269	Other turbine valves (including LP steam admission valves)

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