

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

COMBINED CYCLE STEAM TURBINE UNITS

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BALANCE OF PLANT

| TABLE B02-1 Balance of Plant: Auxiliary Systems - Auxiliary Steam | | | | | |
|---|------------------|-------------------|-----------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3830 | Auxiliary boiler |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3831 | Auxiliary steam piping |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3832 | Auxiliary steam valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3833 | Auxiliary steam controls and instruments |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3834 | Auxiliary boiler tube leaks |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3835 | Auxiliary boiler burner management system |

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|----------------|------------------|-------------------|-----------------|------|---|
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3836 | Steam transfer to other unit |
| CC steam units | Balance of Plant | Auxiliary Systems | Auxiliary Steam | 3839 | Other auxiliary steam problems (also see extraction steam codes 3520 to 3529; startup bypass codes 0630 to 0660; and soot blower steam code 0870) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-2 Balance of Plant: Auxiliary Systems - Closed Cooling Water Systems

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-3 Balance of Plant: Auxiliary Systems - Fire Protection System

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|------------------------|------------|---|
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3860 | Fire protection system pumps |
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3861 | Fire protection system piping |
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3862 | Fire protection system valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3863 | Fire protection system fouling |
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3864 | Fire protection system instrumentation and controls |
| CC steam units | Balance of Plant | Auxiliary Systems | Fire Protection System | 3869 | Other fire protection system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-4 Balance of Plant: Auxiliary Systems - Instrument Air

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|-----------|--------|-----------|---------------|------------|-------------|
|-----------|--------|-----------|---------------|------------|-------------|

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|----------------|------------------|-------------------|----------------|------|-------------------------------|
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3850 | Instrument air compressors |
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3851 | Instrument air piping |
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3852 | Instrument air valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3853 | Instrument air dryers |
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3854 | N2 backup to instrument air |
| CC steam units | Balance of Plant | Auxiliary Systems | Instrument Air | 3859 | Other instrument air problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-5 Balance of Plant: Auxiliary Systems - Low-pressure Gas Compression System

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|-------------------------------------|------------|--|
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3870 | Fuel Gas Compressor and Motors |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3871 | Fuel Gas Compressor Piping |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3872 | Fuel Gas Compressor Valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3873 | Fuel Gas Compressor Heat Exchangers |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3874 | Fuel Gas Compressor Controls and Instrumentation |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3875 | Fuel Gas Compressor Filters |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3876 | Fuel Gas Compressor Fire System |
| CC steam units | Balance of Plant | Auxiliary Systems | Low-pressure Gas Compression System | 3879 | Fuel Gas Compressor - other |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-6 Balance of Plant: Auxiliary Systems - Miscellaneous (Auxiliary Systems)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|-----------------------------------|------------|---|
| CC steam units | Balance of Plant | Auxiliary Systems | Miscellaneous (Auxiliary Systems) | 3898 | Miscellaneous plant auxiliary process and services instrumentation and controls |
| CC steam units | Balance of Plant | Auxiliary Systems | Miscellaneous (Auxiliary Systems) | 3899 | Other miscellaneous auxiliary system problems |

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|----------------|------------------|-------------------|-----------------------------------|------|---|
| CC steam units | 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.) |
| CC steam units | Balance of Plant | Auxiliary Systems | Miscellaneous (Auxiliary Systems) | 6399 | Other coal gasification equipment problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-7 Balance of Plant: Auxiliary Systems - Open Cooling Water System

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-8 Balance of Plant: Auxiliary Systems - Seal Air Fans

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-9 Balance of Plant: Auxiliary Systems - Service Air

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|---------------|------------|-------------------------|
| CC steam units | Balance of Plant | Auxiliary Systems | Service Air | 3840 | Service air compressors |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Air | 3841 | Service air piping |

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| CC steam units | Balance of Plant | Auxiliary Systems | Service Air | 3842 | Service air valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Air | 3843 | Service air dryers |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Air | 3849 | Other service air problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-10 Balance of Plant: Auxiliary Systems - Service Water (Open System) | | | | | |
|--|------------------|-------------------|-----------------------------|-------------------|--------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3810 | Service water pumps and motors |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3811 | Service water piping |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3812 | Service water valves |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3813 | Service water heat exchangers |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3814 | Service water system fouling |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3815 | Service water strainer |
| CC steam units | Balance of Plant | Auxiliary Systems | Service Water (Open System) | 3819 | Other service water problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-11 Balance of Plant: Circulating Water Systems | | | | | |
|---|------------------|---------------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3210 | Circulating water pumps |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3211 | Circulating water pump motors |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3220 | Circulating water piping |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3221 | Circulating water piping fouling |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3230 | Circulating water valves |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3231 | Waterbox |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3232 | Condenser tube cleaning system including debris filter |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3233 | Circulating water priming system |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3235 | Cooling tower booster pump |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3236 | Cooling tower booster motor |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3238 | Cooling tower fan motors |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3239 | Cooling tower fan motors - variable speed |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3240 | Cooling tower fans |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3241 | Cooling tower efficiency below design |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3242 | Cooling tower fill damage |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3243 | Cooling tower icing |

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| CC steam units | Balance of Plant | Circulating Water Systems | | 3244 | Cooling tower fires |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3245 | Other cooling tower problems |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3246 | Cooling tower fouling |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3247 | Cooling tower instrumentation |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3248 | Cooling Tower Overhaul |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3250 | Circulating water system instruments and controls |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3260 | Traveling screens |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3261 | Traveling screen fouling |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3269 | Circulating water biological conditions (ie, zebra mussels) |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3270 | Intake system problems other than traveling screens |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3271 | Intake grating fouling |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3272 | Circulating water screenwash system |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3273 | Debris in circulating water from outside sources (leaves, mud, etc.) |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3280 | High circulating water temperature (not due to season, tower efficiency below design, or other listed equipment problem) |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3281 | Circulating water tempering system |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3282 | Circulating water cooling ponds |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3285 | Circulating water chemistry |
| CC steam units | Balance of Plant | Circulating Water Systems | | 3299 | Other circulating water system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-12 Balance of Plant: Condensate System - Low/Intermediate Pressure Heater and Deaerators | | | | | |
|---|------------------|-------------------|---|-------------------|---------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3339 | LP heater head leaks |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3340 | LP heater tube leaks |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3341 | Other LP heater - general |

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| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3342 | IP heater tube leaks |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3343 | Other IP heater - general |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3344 | Deaerator (including level control) |
| CC steam units | Balance of Plant | Condensate System | Low/Intermediate Pressure Heater and Deaerators | 3345 | IP heater head leaks |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-13 Balance of Plant: Condensate System - Miscellaneous (Condensate System)

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-14 Balance of Plant: Condensate System - Polishers/Chemical Addition

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|-----------------------------|------------|--|
| CC steam units | Balance of Plant | Condensate System | Polishers/Chemical Addition | 3350 | Condensate polishing and filtering systems |
| CC steam units | Balance of Plant | Condensate System | Polishers/Chemical Addition | 3351 | Chemical addition systems |
| CC steam units | Balance of Plant | Condensate System | Polishers/Chemical Addition | 3352 | Feedwater chemistry (not specific to condenser, polishers, or chemical addition) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-15 Balance of Plant: Condensate System - Pumps, Piping, and Valves

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-16 Balance of Plant: Condensing System - Condenser Casing or Shell and Internals

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|---|------------|---|
| CC steam units | Balance of Plant | Condensing System | Condenser Casing or Shell and Internals | 3120 | Tube sheets |
| CC steam units | Balance of Plant | Condensing System | Condenser Casing or Shell and Internals | 3121 | Expansion joint |
| CC steam units | Balance of Plant | Condensing System | Condenser Casing or Shell and Internals | 3122 | Gaskets and seals |
| CC steam units | Balance of Plant | Condensing System | Condenser Casing or Shell and Internals | 3123 | Hot well |
| CC steam units | Balance of Plant | Condensing System | Condenser Casing or Shell and Internals | 3124 | Tube sheet fouling |
| CC steam units | 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 Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-17 Balance of Plant: Condensing System - Condenser Controls

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|--------------------|------------|--------------------------------------|
| CC steam units | Balance of Plant | Condensing System | Condenser Controls | 3150 | Hot well level controls |
| CC steam units | Balance of Plant | Condensing System | Condenser Controls | 3151 | Vacuum pump and air ejector controls |
| CC steam units | Balance of Plant | Condensing System | Condenser Controls | 3152 | Air-cooled condenser controls |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|-------------------|--------------------|------|--|
| CC steam units | Balance of Plant | Condensing System | Condenser Controls | 3159 | Other condensing system controls and instruments |
|----------------|------------------|-------------------|--------------------|------|--|

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-18 Balance of Plant: Condensing System - Condenser Tubes and Support Equipment

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|---------------------------------------|------------|---|
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3110 | Condenser tube leaks |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3111 | Condenser tube fouling shell side |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3112 | Condenser tube fouling tube side |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3113 | Condenser tube and water box cleaning (including circulating water flow reversal) |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3114 | Air-cooled condenser tubes |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3115 | Air-cooled condenser pumps |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3116 | Air-cooled condenser fans |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3117 | Air-cooled condenser fan motors |
| CC steam units | Balance of Plant | Condensing System | Condenser Tubes and Support Equipment | 3118 | Other Air-cooled condenser problems |
| CC steam units | 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 Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-19 Balance of Plant: Condensing System - Miscellaneous (Condensing System)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|-------------------|-----------------------------------|------------|---|
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3170 | Condenser inspection (use code 3110 to report looking for tube leaks) |
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3171 | Air-cooled condenser inspections |
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3180 | Major condenser overhaul |
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3185 | Water side cathodic protection |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|------------------|-------------------|-----------------------------------|------|---|
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3186 | Auxiliary condenser and associated equipment |
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3190 | Air leakage (for losses not attributable to previously noted equipment related codes) |
| CC steam units | Balance of Plant | Condensing System | Miscellaneous (Condensing System) | 3199 | Other miscellaneous condensing system problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-20 Balance of Plant: Condensing System - Vacuum Equipment | | | | | |
|--|------------------|-------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3130 | Air ejectors |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3131 | Air ejector piping and valves |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3132 | Inter and after condensers |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3133 | Vacuum pumps |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3134 | Vacuum pump piping and valves |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3135 | Vacuum pump motor and auxiliaries |
| CC steam units | Balance of Plant | Condensing System | Vacuum Equipment | 3139 | Other air extraction system problems - general |
| CC steam units | 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 Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-21 Balance of Plant: Electrical | | | | | |
|--|------------------|------------------|----------------------|-------------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Electrical | | 3600 | Switchyard transformers and associated cooling systems - external (OMC) |
| CC steam units | Balance of Plant | Electrical | | 3601 | Switchyard transformers and associated cooling systems - external (not OMC) |
| CC steam units | Balance of Plant | Electrical | | 3610 | Switchyard circuit breakers - external (not OMC) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|------------|--|------|---|
| CC steam units | Balance of Plant | Electrical | | 3611 | Switchyard circuit breakers - external (OMC) |
| CC steam units | Balance of Plant | Electrical | | 3612 | Switchyard system protection devices - external (OMC) |
| CC steam units | Balance of Plant | Electrical | | 3613 | Switchyard system protection devices - external (not OMC) |
| CC steam units | Balance of Plant | Electrical | | 3618 | Other switchyard equipment - external (not OMC) |
| CC steam units | Balance of Plant | Electrical | | 3619 | Other switchyard equipment - external (OMC) |
| CC steam units | Balance of Plant | Electrical | | 3620 | Main transformer |
| CC steam units | Balance of Plant | Electrical | | 3621 | Unit auxiliaries transformer |
| CC steam units | Balance of Plant | Electrical | | 3622 | Station service startup transformer |
| CC steam units | Balance of Plant | Electrical | | 3623 | Auxiliary generators |
| CC steam units | Balance of Plant | Electrical | | 3624 | Auxiliary generator voltage supply system |
| CC steam units | Balance of Plant | Electrical | | 3629 | Other switchyard or high voltage system problems - external |
| CC steam units | Balance of Plant | Electrical | | 3630 | 400-700 volt transformers |
| CC steam units | Balance of Plant | Electrical | | 3631 | 400-700 volt circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3632 | 400-700 volt conductors and buses |
| CC steam units | Balance of Plant | Electrical | | 3633 | 400-700 volt insulators |
| CC steam units | Balance of Plant | Electrical | | 3634 | 400-700 volt protection devices |
| CC steam units | Balance of Plant | Electrical | | 3639 | Other 400-700 volt problems |
| CC steam units | Balance of Plant | Electrical | | 3640 | AC instrument power transformers |
| CC steam units | Balance of Plant | Electrical | | 3641 | AC Circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3642 | AC Conductors and buses |
| CC steam units | Balance of Plant | Electrical | | 3643 | AC Inverters |
| CC steam units | Balance of Plant | Electrical | | 3644 | AC Protection devices |
| CC steam units | Balance of Plant | Electrical | | 3649 | Other AC instrument power problems |
| CC steam units | Balance of Plant | Electrical | | 3650 | DC instrument power battery chargers |
| CC steam units | Balance of Plant | Electrical | | 3651 | DC circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3652 | DC conductors and buses |
| CC steam units | Balance of Plant | Electrical | | 3653 | DC protection devices |
| CC steam units | Balance of Plant | Electrical | | 3659 | Other DC power problems |
| CC steam units | Balance of Plant | Electrical | | 3660 | 4000-7000 volt transformers |
| CC steam units | Balance of Plant | Electrical | | 3661 | 4000-7000 volt circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3662 | 4000-7000 volt conductors and buses |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|------------|--|------|--|
| CC steam units | Balance of Plant | Electrical | | 3663 | 4000-7000 volt insulators |
| CC steam units | Balance of Plant | Electrical | | 3664 | 4000-7000 volt protection devices |
| CC steam units | Balance of Plant | Electrical | | 3669 | Other 4000-7000 volt problems |
| CC steam units | Balance of Plant | Electrical | | 3670 | 12-15kV transformers |
| CC steam units | Balance of Plant | Electrical | | 3671 | 12-15kV circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3672 | 12-15kV conductors and buses |
| CC steam units | Balance of Plant | Electrical | | 3673 | 12-15kV insulators |
| CC steam units | Balance of Plant | Electrical | | 3674 | 12-15kV protection devices |
| CC steam units | Balance of Plant | Electrical | | 3679 | Other 12-15kV problems |
| CC steam units | Balance of Plant | Electrical | | 3680 | Other voltage transformers |
| CC steam units | Balance of Plant | Electrical | | 3681 | Other voltage circuit breakers |
| CC steam units | Balance of Plant | Electrical | | 3682 | Other voltage conductors and buses |
| CC steam units | Balance of Plant | Electrical | | 3683 | Other voltage insulators |
| CC steam units | Balance of Plant | Electrical | | 3684 | Other voltage protection devices |
| CC steam units | Balance of Plant | Electrical | | 3689 | Other voltage problems |
| CC steam units | Balance of Plant | Electrical | | 3690 | Station Service Power Distribution System, General |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-22 Balance of Plant: Extraction Steam | | | | | |
|--|------------------|------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Extraction Steam | | 3520 | HP Extraction steam piping |
| CC steam units | Balance of Plant | Extraction Steam | | 3521 | HP Extraction steam valves |
| CC steam units | Balance of Plant | Extraction Steam | | 3522 | HP Extraction steam instruments and controls |
| CC steam units | Balance of Plant | Extraction Steam | | 3529 | Other HP extraction steam system problems |
| CC steam units | Balance of Plant | Extraction Steam | | 3530 | IP Extraction steam piping |
| CC steam units | Balance of Plant | Extraction Steam | | 3531 | IP Extraction steam valves |
| CC steam units | Balance of Plant | Extraction Steam | | 3532 | IP Extraction steam instruments and controls |
| CC steam units | Balance of Plant | Extraction Steam | | 3539 | Other IP extraction steam system problems |
| CC steam units | Balance of Plant | Extraction Steam | | 3540 | LP Extraction steam piping |
| CC steam units | Balance of Plant | Extraction Steam | | 3541 | LP Extraction steam valves |
| CC steam units | Balance of Plant | Extraction Steam | | 3542 | LP Extraction steam instruments and controls |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|------------------|--|------|---|
| CC steam units | Balance of Plant | Extraction Steam | | 3549 | Other LP extraction steam system problems |
|----------------|------------------|------------------|--|------|---|

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-23 Balance of Plant: Feedwater System

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|------------------|---------------|------------|--|
| CC steam units | Balance of Plant | Feedwater System | | 3401 | Startup feedwater pump |
| CC steam units | Balance of Plant | Feedwater System | | 3402 | Startup feedwater pump drives - all types |
| CC steam units | Balance of Plant | Feedwater System | | 3407 | Feedwater pump suction screens |
| CC steam units | Balance of Plant | Feedwater System | | 3408 | Feedwater pump drive - local controls |
| CC steam units | Balance of Plant | Feedwater System | | 3409 | Feedwater pump drive motor - variable speed |
| CC steam units | Balance of Plant | Feedwater System | | 3410 | Feedwater pump |
| CC steam units | Balance of Plant | Feedwater System | | 3411 | Feedwater pump drive - motor |
| CC steam units | Balance of Plant | Feedwater System | | 3412 | Feedwater pump drive - steam turbine |
| CC steam units | Balance of Plant | Feedwater System | | 3413 | Feedwater pump coupling and drive shaft |
| CC steam units | Balance of Plant | Feedwater System | | 3414 | Feedwater pump local controls |
| CC steam units | Balance of Plant | Feedwater System | | 3415 | Feedwater pump/drive lube oil system |
| CC steam units | Balance of Plant | Feedwater System | | 3416 | Other feedwater pump problems |
| CC steam units | Balance of Plant | Feedwater System | | 3417 | Feedwater pump drive - main shaft |
| CC steam units | Balance of Plant | Feedwater System | | 3418 | Feedwater pump drive - other |
| CC steam units | Balance of Plant | Feedwater System | | 3419 | Feedwater pump drive - gear |
| CC steam units | Balance of Plant | Feedwater System | | 3420 | Feedwater piping and supports |
| CC steam units | Balance of Plant | Feedwater System | | 3430 | Feedwater regulating (boiler level control) valve |
| CC steam units | Balance of Plant | Feedwater System | | 3431 | Other feedwater valves |
| CC steam units | Balance of Plant | Feedwater System | | 3439 | HP heater head leaks |
| CC steam units | Balance of Plant | Feedwater System | | 3440 | High pressure heater tube leaks |
| CC steam units | Balance of Plant | Feedwater System | | 3441 | Other high pressure heater problems (see condensate system for LP and IP heater codes) |
| CC steam units | Balance of Plant | Feedwater System | | 3451 | Feedwater booster pump suction screens |
| CC steam units | Balance of Plant | Feedwater System | | 3452 | Feedwater booster pump drive - local controls |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|------------------|--|------|---|
| CC steam units | Balance of Plant | Feedwater System | | 3453 | Feedwater booster pump drive motor - variable speed |
| CC steam units | Balance of Plant | Feedwater System | | 3454 | Feedwater booster pump |
| CC steam units | Balance of Plant | Feedwater System | | 3455 | Feedwater booster pump drive - motor |
| CC steam units | Balance of Plant | Feedwater System | | 3456 | Feedwater booster pump drive - steam turbine |
| CC steam units | Balance of Plant | Feedwater System | | 3457 | Feedwater booster pump coupling and drive shaft |
| CC steam units | Balance of Plant | Feedwater System | | 3458 | Feedwater booster pump local controls |
| CC steam units | Balance of Plant | Feedwater System | | 3459 | Feedwater booster pump/drive lube oil system |
| CC steam units | Balance of Plant | Feedwater System | | 3460 | Other feedwater booster pump problems |
| CC steam units | Balance of Plant | Feedwater System | | 3461 | Feedwater booster pump drive - main shaft |
| CC steam units | Balance of Plant | Feedwater System | | 3462 | Feedwater booster pump drive - other |
| CC steam units | Balance of Plant | Feedwater System | | 3463 | Feedwater booster pump drive - gear |
| CC steam units | Balance of Plant | Feedwater System | | 3499 | Other feedwater system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Excluding extraction or drain systems.

TABLE B02-24 Balance of Plant: Heater Drain Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|----------------------|---------------|------------|------------------------------------|
| CC steam units | Balance of Plant | Heater Drain Systems | | 3501 | Heater drain pumps |
| CC steam units | Balance of Plant | Heater Drain Systems | | 3502 | Heater level control |
| CC steam units | Balance of Plant | Heater Drain Systems | | 3503 | Heater drain piping |
| CC steam units | Balance of Plant | Heater Drain Systems | | 3504 | Heater drain valves |
| CC steam units | Balance of Plant | Heater Drain Systems | | 3505 | Heater drain pump drive |
| CC steam units | Balance of Plant | Heater Drain Systems | | 3509 | Other heater drain system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-25 Balance of Plant: Miscellaneous (Balance of Plant)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|----------------------------------|---------------|------------|------------------|
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3950 | Process computer |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|----------------------------------|--|------|---|
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3960 | Thermal derating (thermal efficiency losses in balance of plant when specific cause(s) unknown) |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3970 | Distributive Control System (DCS) - process computer |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3971 | DCS - data highway |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3972 | DCS - hardware problems (including card failure) |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3973 | DCS - internal and termination wiring |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3974 | DCS - logic problems |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3975 | DCS - upgrades |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3979 | Other DCS problems |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3980 | Programmable Logic Controller (PLC) |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3981 | PLC - data highway |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3982 | PLC - hardware problems (including card failure) |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3983 | PLC - internal and termination wiring |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3984 | PLC - logic problems |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3985 | PLC - upgrades |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3989 | Other PLC problems |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3995 | Powerhouse heating and ventilating systems |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3996 | Air conditioning systems - rooms and areas |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3998 | Balance of plant overhaul/outage |
| CC steam units | Balance of Plant | Miscellaneous (Balance of Plant) | | 3999 | Other miscellaneous balance of plant problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-26 Balance of Plant: Power Station Switchyard | | | | | |
|--|------------------|--------------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Balance of Plant | Power Station Switchyard | | 3700 | Power Station switchyard (non generating unit equipment) |
| CC steam units | Balance of Plant | Power Station Switchyard | | 3710 | Transmission line (connected to powerhouse switchyard to 1st Substation) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|--------------------------|--|------|--|
| CC steam units | Balance of Plant | Power Station Switchyard | | 3720 | Transmission equipment at the 1st substation (see code 9300 if applicable) |
| CC steam units | Balance of Plant | Power Station Switchyard | | 3730 | Transmission equipment beyond the 1st substation (see code 9300 if applicable) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-27 Balance of Plant: Waste Water (zero discharge) Systems

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

EXPANDER TURBINE

TABLE B02-28 Expander Turbine: Expander Turbine

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------------|------------------|---------------|------------|-------------------|
| CC steam units | Expander Turbine | Expander Turbine | | 7800 | Couplings |
| CC steam units | Expander Turbine | Expander Turbine | | 7810 | Shaft |
| CC steam units | Expander Turbine | Expander Turbine | | 7820 | Bearings |
| CC steam units | Expander Turbine | Expander Turbine | | 7830 | Blades |
| CC steam units | Expander Turbine | Expander Turbine | | 7840 | Discs |
| CC steam units | Expander Turbine | Expander Turbine | | 7850 | Spacers |
| CC steam units | Expander Turbine | Expander Turbine | | 7860 | Nozzles/vanes |
| CC steam units | Expander Turbine | Expander Turbine | | 7870 | Heat shields |
| CC steam units | Expander Turbine | Expander Turbine | | 7880 | Exhaust diffusers |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------------|------------------|--|------|---------------------------------|
| CC steam units | Expander Turbine | Expander Turbine | | 7890 | Seal oil system and seals |
| CC steam units | Expander Turbine | Expander Turbine | | 7900 | Inner casing |
| CC steam units | Expander Turbine | Expander Turbine | | 7910 | Outer exhaust casing |
| CC steam units | Expander Turbine | Expander Turbine | | 7920 | Lube oil system |
| CC steam units | Expander Turbine | Expander Turbine | | 7930 | Controls and instrumentation |
| CC steam units | Expander Turbine | Expander Turbine | | 7940 | Evactor |
| CC steam units | Expander Turbine | Expander Turbine | | 7950 | Major overhaul |
| CC steam units | Expander Turbine | Expander Turbine | | 7960 | Other expander turbine problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

EXTERNAL

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

| TABLE B02-29 External: Catastrophe | | | | | |
|---|----------|-------------|---------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | External | Catastrophe | | 9000 | Flood |
| CC steam units | External | Catastrophe | | 9001 | Drought |
| CC steam units | External | Catastrophe | | 9010 | Fire including wildfires, not related to a specific component |
| CC steam units | External | Catastrophe | | 9020 | Lightning |
| CC steam units | External | Catastrophe | | 9025 | Geomagnetic disturbance |
| CC steam units | External | Catastrophe | | 9030 | Earthquake |
| CC steam units | External | Catastrophe | | 9031 | Tornado |
| CC steam units | External | Catastrophe | | 9035 | Hurricane |
| CC steam units | External | Catastrophe | | 9036 | Storms (ice, snow, etc) |
| CC steam units | External | Catastrophe | | 9040 | Other catastrophe |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-30 External: Economic | | | | | |
|--|----------|-----------|---------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | External | Economic | | 0 | Reserve shutdown |
| CC steam units | External | Economic | | 9130 | Failure of fuel supplier to fulfill contractual obligations or a pre- |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|----------|----------|--|------|---|
| | | | | | 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.) |
| CC steam units | External | Economic | | 9131 | Lack of fuel – due to contractual or tariff provisions that allow for service interruption or price fluctuations during peak demand periods. |
| CC steam units | External | Economic | | 9134 | Fuel conservation |
| CC steam units | External | Economic | | 9136 | Problems with Primary Fuel for Units with Secondary Fuel Operation |
| CC steam units | External | Economic | | 9137 | Ground water or other water supply problems |
| CC steam units | External | Economic | | 9140 | Plant modifications to burn different fuel that are not regulatory mandated |
| CC steam units | 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. |
| CC steam units | External | Economic | | 9151 | Labor strikes direct plant management grievances that result in a walkout or strike are under plant management control. |
| CC steam units | External | Economic | | 9160 | Other economic problems |
| CC steam units | External | Economic | | 9180 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9181 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9182 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9183 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9184 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9185 | Economic (for internal use at plants only) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|----------|----------|--|------|--|
| CC steam units | External | Economic | | 9186 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9187 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9188 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9189 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9190 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9191 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9192 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9193 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9194 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9195 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9196 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9197 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9198 | Economic (for internal use at plants only) |
| CC steam units | External | Economic | | 9199 | Economic (for internal use at plants only) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-31 External: Fuel Quality | | | | | |
|--|---------------|------------------|----------------------|-------------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | External | Fuel Quality | | 9200 | High ash content (OMC) |
| CC steam units | External | Fuel Quality | | 9201 | High ash content (not OMC) |
| CC steam units | External | Fuel Quality | | 9205 | Poor quality natural gas fuel, low heat content |
| CC steam units | External | Fuel Quality | | 9220 | High sulfur content (OMC) |
| CC steam units | External | Fuel Quality | | 9221 | High sulfur content (not OMC) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|----------|--------------|--|------|---------------------------------------|
| CC steam units | External | Fuel Quality | | 9230 | High vanadium content (OMC) |
| CC steam units | External | Fuel Quality | | 9231 | High vanadium content (not OMC) |
| CC steam units | External | Fuel Quality | | 9240 | High sodium content (OMC) |
| CC steam units | External | Fuel Quality | | 9241 | High sodium content (not OMC) |
| CC steam units | External | Fuel Quality | | 9260 | Low BTU oil (OMC) |
| CC steam units | External | Fuel Quality | | 9261 | Low BTU oil (not OMC) |
| CC steam units | External | Fuel Quality | | 9290 | Other fuel quality problems (OMC) |
| CC steam units | External | Fuel Quality | | 9291 | Other fuel quality problems (not OMC) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier 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 B02-32 External: Miscellaneous (External)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|----------|--------------------------|---------------|------------|--|
| CC steam units | 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) |
| CC steam units | External | Miscellaneous (External) | | 9310 | Operator training |
| CC steam units | External | Miscellaneous (External) | | 9320 | Other miscellaneous external problems |
| CC steam units | External | Miscellaneous (External) | | 9340 | Synchronous Condenser Operation |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

GAS TURBINE

TABLE B02-33 Gas Turbine: Auxiliary Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-------------|-------------------|---------------|------------|-------------------------------------|
| CC steam units | Gas Turbine | Auxiliary Systems | | 5110 | Lube oil system - general |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5111 | Lube oil pumps |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5112 | Lube oil coolers |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5113 | Lube oil valves/piping |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5114 | Lube oil filters |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5115 | Oil vapor extractor |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5116 | Power Augmentation System Equipment |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5117 | Power augmentation piping |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5118 | Power augmentation valves |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-------------|-------------------|--|------|------------------------------------|
| CC steam units | Gas Turbine | Auxiliary Systems | | 5119 | Power augmentation controls |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5120 | Hydraulic oil system |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5121 | Hydraulic oil system pumps |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5122 | Hydraulic oil system piping/valves |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5130 | Starting system (including motor) |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5140 | Battery and charger system |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5150 | Turning gear and motor |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5151 | Load gear compartment |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5160 | Cooling and seal air system |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5170 | Cooling water system |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5180 | Anti-icing system |
| CC steam units | Gas Turbine | Auxiliary Systems | | 5190 | Other auxiliary system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-34 Gas Turbine: Exhaust Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-------------|-----------------|---------------|------------|---|
| CC steam units | Gas Turbine | Exhaust Systems | | 5100 | Chamber |
| CC steam units | Gas Turbine | Exhaust Systems | | 5101 | Hoods |
| CC steam units | Gas Turbine | Exhaust Systems | | 5102 | Vanes/nozzles |
| CC steam units | Gas Turbine | Exhaust Systems | | 5103 | Silencer |
| CC steam units | Gas Turbine | Exhaust Systems | | 5104 | Cones |
| CC steam units | Gas Turbine | Exhaust Systems | | 5105 | Diverter Dampers |
| CC steam units | Gas Turbine | Exhaust Systems | | 5106 | Exhaust Stack |
| CC steam units | Gas Turbine | Exhaust Systems | | 5108 | High engine exhaust temperature |
| CC steam units | Gas Turbine | Exhaust Systems | | 5109 | Other exhaust problems (including high exhaust system temperature not attributable to a specific problem) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-35 Gas Turbine: Fuel, Ignition, and Combustion Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-------------|--|---------------|------------|------------------------|
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5040 | Fuel tanks |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5041 | Fuel piping and valves |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-------------|--|--|------|--|
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5042 | Fuel nozzles/vanes |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5043 | Fuel filters |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5044 | Liquid fuel oil pump |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5046 | Liquid fuel oil transfer/forwarding pump |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5047 | Liquid fuel purge system |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5048 | Gas fuel system including controls and instrumentation |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5049 | Other fuel system problems |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5050 | Ignition system |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5051 | Pilot fuel piping and valves |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5052 | Pilot fuel nozzles/vanes |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5053 | Pilot fuel filters |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5054 | Water injection system |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5060 | Atomizing air system |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5065 | NOx water injection system including pump |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5066 | NOx steam injection system |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5070 | Combustor casing |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5071 | Combustor liner |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5072 | Combustor caps |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5073 | Flame scanners |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|-------------|--|--|------|-------------------------------------|
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5074 | Flashback including instrumentation |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5075 | Blade path temperature spread |
| CC steam units | Gas Turbine | Fuel, Ignition, and Combustion Systems | | 5079 | Other combustor problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-36 Gas Turbine: Inlet Air System and Compressors - Compressors | | | | | |
|--|---------------|----------------------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5010 | High pressure shaft |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5011 | High pressure bearings |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5012 | High pressure blades/buckets |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5013 | Compressor casing and bolts |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5014 | Compressor diaphragms |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5015 | Compressor seals |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5016 | High pressure compressor bleed valves |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5017 | Low pressure compressor bleed valves |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5019 | Other high pressure problems |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5020 | Low pressure shaft |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5021 | Low pressure bearings |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5022 | Low pressure blades/buckets |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5029 | Other low pressure problems |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5030 | Supercharging fans |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5035 | Compressor washing |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5036 | Compressor shaft and bearings for two-shaft machines |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5037 | Inlet bleed heat valve |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Compressors | 5039 | Other compressor problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-37 Gas Turbine: Inlet Air System and Compressors - Ducts and Filters | | | | | |
|---|---------------|----------------------------------|----------------------|-------------------|--------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5000 | Inlet air ducts |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-------------|----------------------------------|-------------------|------|-------------------------------|
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5001 | Inlet air vanes/nozzles |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5002 | Inlet air filters |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5003 | Inlet cone |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5004 | Inlet air chillers |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5005 | Inlet air evaporative coolers |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5006 | Inlet air foggers |
| CC steam units | Gas Turbine | Inlet Air System and Compressors | Ducts and Filters | 5009 | Other inlet air problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-38 Gas Turbine: Miscellaneous (Gas Turbine)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-------------|-----------------------------|---------------|------------|--|
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5200 | Reduction gear |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5201 | Load shaft and bearings |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5205 | Main coupling between the turbine and generator |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5206 | Clutch |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5210 | Intercoolers |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5220 | Regenerators |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5230 | Heat shields |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5240 | Fire detection and extinguishing system (including hazardous gas detection system) |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5241 | Fire in unit |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5245 | Gas Turbine Control System - data highway |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5246 | Gas Turbine Control System - hardware problems (including card failure) |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5247 | Gas Turbine Control System - internal and termination wiring |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5248 | Gas Turbine Control System - logic problems |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5249 | Gas Turbine Control System - upgrades |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5250 | Other controls and instrumentation problems |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5255 | Computer |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-------------|-----------------------------|--|------|---|
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5260 | Major overhaul (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5261 | Gas turbine/compressor washing |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5262 | Gas turbine exchange |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5269 | Combustion Inspection (CI) |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5270 | Hot end inspection |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5272 | Boroscope inspection |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5274 | General unit inspection |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5280 | Vibration (not engine) in unit not attributable to bearings or other components |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5285 | Gas turbine vibration |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5286 | Gas turbine lockout |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5290 | Gas turbine performance testing - individual engines (use code 9999 for total unit performance testing) |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5292 | Turbine Overspeed Trip Test - Gas Turbine |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5295 | Synchronous condenser equipment |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5298 | Main gas filter |
| CC steam units | Gas Turbine | Miscellaneous (Gas Turbine) | | 5299 | Other miscellaneous gas turbine problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-39 Gas Turbine: Turbine | | | | | |
|--|---------------|------------------|----------------------|-------------------|---------------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Gas Turbine | Turbine | | 5080 | High pressure shaft |
| CC steam units | Gas Turbine | Turbine | | 5081 | High pressure bearings |
| CC steam units | Gas Turbine | Turbine | | 5082 | High pressure blades/buckets |
| CC steam units | Gas Turbine | Turbine | | 5083 | High pressure nozzles/vanes |
| CC steam units | Gas Turbine | Turbine | | 5084 | High pressure casing/expansion joints |
| CC steam units | Gas Turbine | Turbine | | 5085 | Interstage gas passages - HP |
| CC steam units | Gas Turbine | Turbine | | 5086 | High pressure shaft seals |
| CC steam units | Gas Turbine | Turbine | | 5087 | Thrust bearing |
| CC steam units | Gas Turbine | Turbine | | 5088 | Gas turbine cooling system |
| CC steam units | Gas Turbine | Turbine | | 5089 | Other high pressure problems |
| CC steam units | Gas Turbine | Turbine | | 5090 | Low pressure shaft |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-------------|---------|--|------|--------------------------------------|
| CC steam units | Gas Turbine | Turbine | | 5091 | Low pressure bearings |
| CC steam units | Gas Turbine | Turbine | | 5092 | Low pressure blades/buckets |
| CC steam units | Gas Turbine | Turbine | | 5093 | Low pressure nozzles/vanes |
| CC steam units | Gas Turbine | Turbine | | 5094 | Low pressure casing/expansion joints |
| CC steam units | Gas Turbine | Turbine | | 5095 | Interstage gas passages - LP |
| CC steam units | Gas Turbine | Turbine | | 5096 | Low pressure shaft seals |
| CC steam units | Gas Turbine | Turbine | | 5097 | Other low pressure problems |
| CC steam units | Gas Turbine | Turbine | | 5098 | Expansion joints |
| CC steam units | Gas Turbine | Turbine | | 5099 | HP to LP coupling |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier 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 B02-40 Generator: Controls

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-41 Generator: Cooling System

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-----------|----------------|---------------|------------|---|
| CC steam units | Generator | Cooling System | | 4610 | Hydrogen cooling system piping and valves |
| CC steam units | Generator | Cooling System | | 4611 | Hydrogen coolers |
| CC steam units | Generator | Cooling System | | 4612 | Hydrogen storage system |
| CC steam units | Generator | Cooling System | | 4613 | Hydrogen seals |
| CC steam units | Generator | Cooling System | | 4619 | Other hydrogen system problems |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-----------|----------------|--|------|-------------------------------|
| CC steam units | Generator | Cooling System | | 4620 | Air cooling system |
| CC steam units | Generator | Cooling System | | 4630 | Liquid cooling system |
| CC steam units | Generator | Cooling System | | 4640 | Seal oil system and seals |
| CC steam units | Generator | Cooling System | | 4650 | Other cooling system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Report failures caused by water leaks into generator as codes 4500, 4510, etc.

TABLE B02-42 Generator: Exciter

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-43 Generator: Generator

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-----------|-----------|---------------|------------|---|
| CC steam units | Generator | Generator | | 4500 | Rotor windings (including damper windings and fan blades on hydro units) |
| CC steam units | Generator | Generator | | 4510 | Rotor collector rings |
| CC steam units | Generator | Generator | | 4511 | Rotor, General |
| CC steam units | Generator | Generator | | 4512 | Retaining Rings |
| CC steam units | Generator | Generator | | 4520 | Stator windings, bushings, and terminals |
| CC steam units | Generator | Generator | | 4530 | Stator core iron |
| CC steam units | Generator | Generator | | 4535 | Stator, General |
| CC steam units | Generator | Generator | | 4536 | Generator Heaters |
| CC steam units | Generator | Generator | | 4540 | Brushes and brush rigging |
| CC steam units | Generator | Generator | | 4550 | Generator bearings and lube oil system (including thrust bearings on hydro units) |
| CC steam units | Generator | Generator | | 4551 | Generator bearings |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|-----------|-----------|--|------|--|
| CC steam units | Generator | Generator | | 4552 | Generator lube oil system |
| CC steam units | Generator | Generator | | 4555 | Bearing cooling system |
| CC steam units | Generator | Generator | | 4560 | Generator vibration (excluding vibration due to failed bearing and other components) |
| CC steam units | Generator | Generator | | 4570 | Generator casing |
| CC steam units | Generator | Generator | | 4580 | Generator end bells and bolting |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-44 Generator: Miscellaneous (Generator) | | | | | |
|--|---------------|---------------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Generator | Miscellaneous (Generator) | | 4800 | Generator main leads |
| CC steam units | Generator | Miscellaneous (Generator) | | 4805 | Generator Bus Duct Cooling System |
| CC steam units | Generator | Miscellaneous (Generator) | | 4810 | Generator output breaker |
| CC steam units | Generator | Miscellaneous (Generator) | | 4830 | Major generator overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Generator | Miscellaneous (Generator) | | 4831 | Minor generator overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Generator | Miscellaneous (Generator) | | 4840 | Inspection |
| CC steam units | Generator | Miscellaneous (Generator) | | 4841 | Generator dole testing |
| CC steam units | Generator | Miscellaneous (Generator) | | 4842 | Reactive and capability testing |
| CC steam units | Generator | Miscellaneous (Generator) | | 4850 | Core monitor alarm |
| CC steam units | Generator | Miscellaneous (Generator) | | 4860 | Generator neutral grounding equipment |
| CC steam units | Generator | Miscellaneous (Generator) | | 4899 | Other miscellaneous generator problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

HEAT RECOVERY STEAM GENERATOR (HRSG)

(Waste Heat Boiler)

| TABLE B02-45 Heat Recovery Steam Generator (HRSG): HRSG Boiler Air and Gas Systems - Air Supply | | | | | |
|--|---------------|------------------|----------------------|-------------------|--------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|---------------------------------|------------|------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1400 | Forced draft fans |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1401 | Forced draft fan dampers |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1407 | Forced draft fan lubrication system |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1410 | Forced draft fan motors |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1411 | Forced draft fan motors - variable speed |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1412 | Forced draft fan drives (other than motor) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1415 | Forced draft fan controls |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1420 | Other forced draft fan problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Air Supply | 1456 | Induced draft fan dampers |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-46 Heat Recovery Steam Generator (HRSG): HRSG Boiler Air and Gas Systems - Miscellaneous (Boiler Air and Gas Systems)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|---------------------------------|--|------------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Miscellaneous (Boiler Air and Gas Systems) | 1590 | Stacks (use code 8430 for stack problems due to pollution control equipment) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Miscellaneous (Boiler Air and Gas Systems) | 1591 | Stack damper and linkage |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Air and Gas Systems | Miscellaneous (Boiler Air and Gas Systems) | 1592 | Stack damper linkage motors |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG 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 Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-47 Heat Recovery Steam Generator (HRSG): HRSG Boiler Control Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|-----------|--------|-----------|---------------|------------|-------------|
|-----------|--------|-----------|---------------|------------|-------------|

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|-----------------------------|--|------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1700 | Feedwater controls (report local controls - feedwater pump, feedwater regulator valve, etc., - with component or system) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1710 | Combustion/steam condition controls (report local controls - burners, pulverizers, etc., - with component or system) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1720 | Desuperheater/attemperator controls |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1730 | Boiler explosion or implosion |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1740 | Boiler drum gage glasses / level indicator |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1750 | Burner management system |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1760 | Feedwater instrumentation (not local controls) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1761 | Combustion/Steam condition instrumentation (not local controls) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1762 | Desuperheater/attemperator instrumentation (not local controls) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Control Systems | | 1799 | Other boiler instrumentation and control problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Including instruments which input to the controls.

TABLE B02-48 Heat Recovery Steam Generator (HRSG): HRSG Boiler Design Limitations

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|--------------------------------|---------------|------------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Design Limitations | | 1900 | Improper balance between tube sections not due to fouling or plugging |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Design Limitations | | 1910 | Inadequate air not due to equipment problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-49 Heat Recovery Steam Generator (HRSG): HRSG Boiler Fuel Supply - Burners (Duct Burners) | | | | | |
|--|--------------------------------------|-------------------------|------------------------|-------------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 358 | Oil burner piping and valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 359 | Gas burner piping and valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 360 | Burners |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 361 | Burner orifices |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 370 | Burner instruments and controls (except light off) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 380 | Light off (igniter) systems (including fuel supply) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 385 | Igniters |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Burners (Duct Burners) | 410 | Other burner problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-50 Heat Recovery Steam Generator (HRSG): HRSG Boiler Fuel Supply - Oil and Gas Systems (except light off) | | | | | |
|--|--------------------------------------|-------------------------|--|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 440 | Fuel oil pumps (general) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 441 | Fuel oil pumps (burner supply) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 442 | Fuel oil pumps (forwarding/transfer) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 443 | Fuel oil (burner supply) pump drives |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 444 | Fuel oil (forwarding/transfer) pump drives |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 450 | Fuel oil heaters |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 460 | Fuel oil atomizers |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|--------------------------------------|-------------------------|--|-----|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 470 | Oil and gas fires |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Fuel Supply | Oil and Gas Systems (except light off) | 480 | Other oil and gas fuel supply problems (see codes 0360-0410 for burner problems) |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-51 Heat Recovery Steam Generator (HRSG): HRSG Boiler Internals and Structures | | | | | |
|--|--------------------------------------|--------------------------------------|----------------------|-------------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 800 | Drums and drum internals (single drum only) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 801 | HP Drum (including drum level trips not attributable to other causes) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 802 | IP Drum (including drum level trips not attributable to other causes) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 803 | LP Drum (including drum level trips not attributable to other causes) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 810 | Boiler supports and structures (use code 1320 for tube supports) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 820 | Casing |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 830 | Doors |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 840 | Refractory and insulation |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 845 | Windbox expansion joints |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 847 | Other expansion joints |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 848 | Inlet panel |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 850 | Other internal or structural problems |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|--------------------------------------|--|-----|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 855 | Drum relief/safety valves (single drum only) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 856 | HP Drum relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 857 | IP Drum relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 858 | LP Drum relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Internals and Structures | | 859 | Tube external fins/membranes |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-52 Heat Recovery Steam Generator (HRSG): HRSG Boiler Overhaul and Inspections

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|--------------------------------------|---------------|------------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1800 | Major boiler overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1801 | Minor boiler overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1810 | Other boiler inspections |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1811 | Boiler Inspections - problem identification / investigation |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1812 | Boiler Inspections - scheduled or routine |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Overhaul and Inspections | | 1820 | Chemical cleaning/steam blows |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-53 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - Boiler Recirculation

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|-----------|--------|-----------|---------------|------------|-------------|
|-----------|--------|-----------|---------------|------------|-------------|

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|---------------------------|----------------------|-----|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Boiler Recirculation | 740 | Boiler recirculation pumps |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Boiler Recirculation | 741 | Boiler recirculation pumps - motors |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Boiler Recirculation | 750 | Boiler recirculation piping including downcomers |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Boiler Recirculation | 760 | Boiler recirculation valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Boiler Recirculation | 770 | Other boiler recirculation problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-54 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - Feedwater and Blowdown

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|---------------------------|------------------------|------------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 670 | Feedwater piping downstream of feedwater regulating valve |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 680 | Feedwater valves (not feedwater regulating valve) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG 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) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 700 | Blowdown system valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 710 | Blowdown system piping |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 720 | Blowdown system controls / instrumentation |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Feedwater and Blowdown | 730 | Other blowdown system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-55 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - HRSG Cold and Hot Reheat Steam

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|--|--------------------------------------|---------------------------|--------------------------------|------------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 540 | Hot reheat steam piping up to turbine stop valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 541 | Cold reheat steam piping up to boiler |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 550 | Reheat steam relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 560 | Other hot reheat steam valves (not including turbine stop or intercept valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 561 | Other cold reheat steam valves (not including turbine stop or intercept valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Cold and Hot Reheat Steam | 570 | Other reheat steam problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-56 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - HRSG Desuperheaters/Attemperators | | | | | |
|---|--------------------------------------|---------------------------|-----------------------------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6140 | HP Desuperheater/attemperator piping - Greater than 600 PSIG. |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6141 | HP Desuperheater/attemperator valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6142 | HP Desuperheater/attemperator spray nozzles |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6143 | HP Desuperheater/attemperator drums |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6144 | Other HP desuperheater/attemperator problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6145 | IP Desuperheater/attemperator piping - Between 200-600 PSIG |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6146 | IP Desuperheater/attemperator valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6147 | IP Desuperheater/attemperator spray nozzles |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|---------------------------|-----------------------------------|------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6148 | IP Desuperheater/attemperator drums |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6149 | Other IP desuperheater/attemperator problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6150 | LP Desuperheater/attemperator piping - Less than 200 PSIG |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6151 | LP Desuperheater/attemperator valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6152 | LP Desuperheater/attemperator spray nozzles |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6153 | LP Desuperheater/attemperator drums |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Desuperheaters/Attemperators | 6154 | Other LP desuperheater/attemperator problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-57 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - HRSG Main Steam

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|---------------------------|-----------------|------------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 500 | Main steam piping up to turbine stop valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 510 | Main steam relief/safety valves off superheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 520 | Other main steam valves (including vent and drain valves but not including the turbine stop valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 530 | Other main steam system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6110 | HP steam piping up to turbine stop valves - Greater than 600 PSIG (see 0790 for piping supports) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6111 | HP steam relief/safety valves |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|---------------------------|-----------------|------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6112 | Other HP steam valves (including vent and drain valves but not including the turbine stop valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6113 | Other HP steam system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6114 | HP steam isolation/boundary valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6120 | IP steam piping up to turbine stop valves - Between 200 & 600 PSIG (see 0790 for piping supports) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6121 | IP steam relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6122 | Other IP steam valves (including vent and drain valves but not including the turbine stop valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6123 | Other IP steam system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6124 | IP steam isolation/boundary valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6130 | LP steam piping up to turbine stop valves - Less than 200 PSIG (see 0790 for piping supports) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6131 | LP steam relief/safety valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6132 | Other LP steam valves (including vent and drain valves but not including the turbine stop valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6133 | Other LP steam system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6134 | Other main steam valves (including vent and drain valves but not including the turbine stop valves) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Main Steam | 6135 | LP steam isolation/boundary valves |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-58 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - HRSG Startup Bypass | | | | | |
|---|--------------------------------------|---------------------------|----------------------|-------------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6160 | HP Startup bypass system piping (including drain lines up to heaters or condenser) - Greater than 600 PSIG |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6161 | HP Startup bypass system valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6162 | HP Startup bypass tanks or flash tanks |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6163 | Other HP startup bypass system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6164 | HP startup bypass instrumentation and controls |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6170 | IP Startup bypass system piping (including drain lines up to heaters or condenser) - Between 200-600 PSIG |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6171 | IP Startup bypass system valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6172 | IP Startup bypass tanks or flash tanks |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6173 | Other IP startup bypass system problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6174 | IP startup bypass instrumentation and controls |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6180 | LP Startup bypass system piping (including drain lines up to heaters or condenser) - Less than 200 PSIG |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6181 | LP Startup bypass system valves |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6182 | LP Startup bypass tanks or flash tanks |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6183 | Other LP startup bypass system problems |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|---------------------------|---------------------|------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | HRSG Startup Bypass | 6184 | LP startup bypass instrumentation and controls |
|----------------|--------------------------------------|---------------------------|---------------------|------|--|

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-59 Heat Recovery Steam Generator (HRSG): HRSG Boiler Piping System - Miscellaneous (Piping)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|---------------------------|------------------------|------------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Miscellaneous (Piping) | 775 | Economizer piping |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Miscellaneous (Piping) | 780 | Headers between tube bundles |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Miscellaneous (Piping) | 782 | Headers and caps |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Miscellaneous (Piping) | 790 | Pipe hangers, brackets, supports (general) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Piping System | Miscellaneous (Piping) | 799 | Other miscellaneous piping system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-60 Heat Recovery Steam Generator (HRSG): HRSG Boiler Tube Leaks

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|------------------------|---------------|------------|---------------------|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6005 | HP Evaporator tubes |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6006 | IP Evaporator tubes |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6007 | LP Evaporator tubes |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6010 | HP superheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6011 | HP reheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6012 | HP economizer |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6020 | IP superheater |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|--------------------------------------|------------------------|--|------|--------------------------|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6021 | IP reheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6022 | IP economizer |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6030 | LP reheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6031 | LP superheater |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6032 | LP economizer |
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Tube Leaks | | 6090 | Other HRSG tube problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use code 0859 for tube/membrane failures.

TABLE B02-61 Heat Recovery Steam Generator (HRSG): HRSG Boiler Water Condition

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|-----------------------------|---------------|------------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | HRSG Boiler Water Condition | | 1850 | Boiler water condition (not feedwater water quality) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-62 Heat Recovery Steam Generator (HRSG): Miscellaneous (HRSG Boiler)

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|-----------------------------|---------------|------------|---|
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous (HRSG Boiler) | | 1980 | Boiler safety valve test |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous (HRSG Boiler) | | 1990 | Boiler performance testing (use code 9999 for total unit performance testing) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous (HRSG Boiler) | | 1999 | Boiler, miscellaneous |
| CC steam units | 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. |
| CC steam units | 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. |
|--|--|--|--|--|--|

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use more specific codes - other slugging and fouling problems, other control problems, etc. whenever possible. Describe miscellaneous problems in the verbal description.

TABLE B02-63 Heat Recovery Steam Generator (HRSG): Miscellaneous HRSG Boiler Tube Problems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|--------------------------------------|---|---------------|------------|--|
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1300 | Water side fouling |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1305 | Fireside cleaning (which requires a full outage) Use code 1200 for cleanings that cause deratings. |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1310 | Water side cleaning (acid cleaning) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1320 | Tube supports/attachments |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1330 | Slag fall damage |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1340 | Tube modifications (including addition and removal of tubes) |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1350 | Other miscellaneous boiler tube problems |
| CC steam units | Heat Recovery Steam Generator (HRSG) | Miscellaneous HRSG Boiler Tube Problems | | 1360 | Boiler drains system |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

INACTIVE STATES

TABLE B02-64 Inactive States: Inactive States

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-----------------|-----------------|---------------|------------|---------------------------|
| CC steam units | Inactive States | Inactive States | | 2 | Inactive Reserve Shutdown |
| CC steam units | Inactive States | Inactive States | | 9990 | Retired unit |
| CC steam units | Inactive States | Inactive States | | 9991 | Mothballed unit |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

JET ENGINE

TABLE B02-65 Jet Engine: Auxiliary Systems

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------|-------------------|---------------|------------|-------------------------------------|
| CC steam units | Jet Engine | Auxiliary Systems | | 5510 | Lube oil system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5516 | Power Augmentation System Equipment |
| CC steam units | Jet Engine | Auxiliary Systems | | 5520 | Hydraulic oil system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5530 | Starting system (including motor) |
| CC steam units | Jet Engine | Auxiliary Systems | | 5540 | Battery and charger system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5550 | Turning gear and motor |
| CC steam units | Jet Engine | Auxiliary Systems | | 5551 | Load gear compartment |
| CC steam units | Jet Engine | Auxiliary Systems | | 5560 | Cooling and seal air system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5570 | Cooling water system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5580 | Anti-icing system |
| CC steam units | Jet Engine | Auxiliary Systems | | 5590 | Other auxiliary system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-66 Jet Engine: Exhaust Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------|-----------------|---------------|------------|--|
| CC steam units | Jet Engine | Exhaust Systems | | 5500 | Chamber |
| CC steam units | Jet Engine | Exhaust Systems | | 5501 | Hoods |
| CC steam units | Jet Engine | Exhaust Systems | | 5502 | Vanes/nozzles |
| CC steam units | Jet Engine | Exhaust Systems | | 5503 | Silencer |
| CC steam units | Jet Engine | Exhaust Systems | | 5504 | Cones |
| CC steam units | Jet Engine | Exhaust Systems | | 5505 | Diverter Dampers |
| CC steam units | Jet Engine | Exhaust Systems | | 5508 | High engine exhaust temperature |
| CC steam units | Jet Engine | Exhaust Systems | | 5509 | Other exhaust problems (including high exhaust temperature not attributable to a specific problem) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-67 Jet Engine: Fuel, Ignition, and Combustion Systems

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------|--|---------------|------------|------------------------|
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5440 | Fuel tanks |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5441 | Fuel piping and valves |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------|--|--|------|--|
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5442 | Fuel nozzles/vanes |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5443 | Fuel filters |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5444 | Liquid fuel oil pump |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5445 | Liquid fuel oil transfer/forwarding pump |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5446 | Liquid fuel purge system |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5447 | Gas fuel system including controls and instrumentation |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5449 | Other fuel system problems |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5450 | Ignition system |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5451 | Pilot fuel piping and valves |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5452 | Pilot fuel nozzles/vanes |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5453 | Pilot fuel filters |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5454 | Water injection system |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5455 | Fuel nozzle/vane cooling air system |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5460 | Atomizing air system |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5470 | Combustor casing |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5471 | Combustor liner |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5472 | Combustor caps |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5473 | Flame scanners |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5474 | Flashback (including instrumentation) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|------------|--|--|------|-------------------------------|
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5475 | Blade path temperature spread |
| CC steam units | Jet Engine | Fuel, Ignition, and Combustion Systems | | 5479 | Other combustor problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-68 Jet Engine: Inlet Air System and Compressors - Compressors

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------|----------------------------------|---------------|------------|--|
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5410 | High pressure shaft |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5411 | High pressure bearings |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5412 | High pressure blades/buckets |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5413 | Other high pressure problems |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5414 | Compressor diaphragms/vanes |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5420 | Low pressure shaft |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5421 | Low pressure bearings |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5422 | Low pressure blades/buckets |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5429 | Other low pressure problems |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5430 | Supercharging fans |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5435 | Compressor washing |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5436 | Compressor shaft and bearings for two-shaft machines |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Compressors | 5439 | Other compressor problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use HP compressor if only one.

TABLE B02-69 Jet Engine: Inlet Air System and Compressors - Ducts and Filters

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|------------|----------------------------------|-------------------|------------|-------------------------------|
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5400 | Inlet air ducts |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5401 | Inlet air vanes/nozzles |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5402 | Inlet air filters |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5403 | Inlet and exhaust cones |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5404 | Inlet air chillers |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5405 | Inlet air evaporative coolers |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5406 | Inlet air foggers |
| CC steam units | Jet Engine | Inlet Air System and Compressors | Ducts and Filters | 5409 | Other inlet air problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use HP compressor if only one.

| TABLE B02-70 Jet Engine: Miscellaneous (Jet Engine) | | | | | |
|---|------------|----------------------------|---------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5600 | Reduction gear |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5601 | Load shaft and bearings |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5605 | Main coupling between the turbine and generator |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5606 | Clutch |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5610 | Intercoolers |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5620 | Regenerators |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5630 | Heat shields |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5640 | Fire detection and extinguishing system |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5641 | Fire in unit |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5645 | Jet Engine Control System - data highway |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5646 | Jet Engine Control System - hardware problems (including card failure) |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5647 | Jet Engine Control System - internal and termination wiring |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5648 | Jet Engine Control System - logic problems |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5649 | Jet Engine Control System - upgrades |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5650 | Other controls and instrumentation problems |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5660 | Major overhaul (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5661 | Engine/compressor washing |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5662 | Engine exchange |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5665 | Engine shafts and bearings |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5670 | Hot end inspection |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5672 | Boroscope inspection |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5674 | General unit inspection |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5680 | Vibration (not engine) in unit not attributable to bearings or other components |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5685 | Engine vibration |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5686 | Jet engine lockout |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|------------|----------------------------|--|------|--|
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5690 | Engine performance testing - individual engines (use code 9999 for total unit performance testing) |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5692 | Turbine Overspeed Trip Test - Jet Engine |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5695 | Synchronous condenser equipment |
| CC steam units | Jet Engine | Miscellaneous (Jet Engine) | | 5699 | Other miscellaneous jet engine problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-71 Jet Engine: Turbine | | | | | |
|---|---------------|------------------|----------------------|-------------------|--------------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Jet Engine | Turbine | | 5480 | High pressure shaft |
| CC steam units | Jet Engine | Turbine | | 5481 | High pressure bearings |
| CC steam units | Jet Engine | Turbine | | 5482 | High pressure blades/buckets |
| CC steam units | Jet Engine | Turbine | | 5483 | High pressure nozzles/vanes |
| CC steam units | Jet Engine | Turbine | | 5484 | High pressure casing/expansion joint |
| CC steam units | Jet Engine | Turbine | | 5485 | Interstage gas passages |
| CC steam units | Jet Engine | Turbine | | 5486 | High pressure shaft seals |
| CC steam units | Jet Engine | Turbine | | 5487 | Thrust bearing |
| CC steam units | Jet Engine | Turbine | | 5489 | Other high pressure problems |
| CC steam units | Jet Engine | Turbine | | 5490 | Low pressure shaft |
| CC steam units | Jet Engine | Turbine | | 5491 | Low pressure bearings |
| CC steam units | Jet Engine | Turbine | | 5492 | Low pressure blades/buckets |
| CC steam units | Jet Engine | Turbine | | 5493 | Low pressure nozzles/vanes |
| CC steam units | Jet Engine | Turbine | | 5494 | Low pressure casing/expansion joints |
| CC steam units | Jet Engine | Turbine | | 5497 | Other low pressure problems |
| CC steam units | Jet Engine | Turbine | | 5498 | Expansion joints |
| CC steam units | Jet Engine | Turbine | | 5499 | Shaft seals |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use HP if only one. | | | | | |

MISCELLANEOUS

| TABLE B02-72 Miscellaneous: Instruments and Controls | | | | | |
|---|---------------|------------------|----------------------|-------------------|--------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|---------------|--------------------------|--|------|---|
| CC steam units | 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 Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

PERFORMANCE

| TABLE B02-73 Performance: Performance | | | | | |
|--|-------------|-------------|---------------|------------|---|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Performance | Performance | | 9997 | NERC Reliability Standard Requirement |
| CC steam units | Performance | Performance | | 9998 | Black start testing |
| CC steam units | Performance | Performance | | 9999 | Total unit performance testing (use appropriate codes for individual component testing) |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

PERSONNEL OR PROCEDURAL ERRORS

| TABLE B02-74 Personnel or Procedural Errors: Personnel or Procedural Errors | | | | | |
|--|--------------------------------|--------------------------------|---------------|------------|-----------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9900 | Operator error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9910 | Maintenance personnel error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9920 | Contractor error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9930 | Operating procedure error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9940 | Maintenance procedure error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9950 | Contractor procedure error |
| CC steam units | Personnel or Procedural Errors | Personnel or Procedural Errors | | 9960 | Staff shortage |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

POLLUTION CONTROL EQUIPMENT

| TABLE B02-75 Pollution Control Equipment: CO Reduction | | | | | |
|--|-----------------------------|--------------|---------------|------------|-----------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Pollution Control Equipment | CO Reduction | | 8840 | CO Active catalyst |
| CC steam units | Pollution Control Equipment | CO Reduction | | 8841 | CO Support materials |
| CC steam units | Pollution Control Equipment | CO Reduction | | 8842 | CO Plugging |
| CC steam units | Pollution Control Equipment | CO Reduction | | 8845 | Other CO reduction problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-76 Pollution Control Equipment: Continuous Emissions Monitoring Systems (CEMS) | | | | | |
|--|-----------------------------|--|---------------|------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8700 | CEMS Certification and Recertification |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8710 | SO2 analyzer problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8720 | NOx analyzer problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8730 | CO analyzer problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8740 | CO2 analyzer problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8750 | O2 analyzer problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8760 | Opacity monitor problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8770 | Flow monitor problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8780 | Data acquisition system problems |
| CC steam units | Pollution Control Equipment | Continuous Emissions Monitoring Systems (CEMS) | | 8790 | Miscellaneous CEMS problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-77 Pollution Control Equipment: NOx Reduction Systems - Catalytic Air Heaters | | | | | |
|---|--|--|--|--|--|
|---|--|--|--|--|--|

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|--|-----------------------------|-----------------------|-----------------------|------------|---------------------------|
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Catalytic Air Heaters | 8830 | CAH NOx Active catalyst |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Catalytic Air Heaters | 8831 | CAH NOx Support materials |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Catalytic Air Heaters | 8832 | CAH NOx Plugging |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Catalytic Air Heaters | 8835 | Other CAH problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-78 Pollution Control Equipment: NOx Reduction Systems - Selective Catalytic Reduction Systems | | | | | |
|--|-----------------------------|-----------------------|---------------------------------------|------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8810 | SCR NOx Reactor |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8811 | SCR NOx Reagent |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8812 | SCR NOx Catalyst |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8813 | SCR NOx Injection grid piping/valves |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8814 | SCR NOx Catalyst support material |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8815 | SCR NOx Soot blowers |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8816 | SCR NOx Plugging |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8817 | SCR NOx Control system |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8820 | SCR NOx Ammonia injection grid piping/valves |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8821 | SCR NOx Ammonia tanks, piping and valves (not injection) |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8822 | SCR NOx Ammonia air blowers |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8823 | SCR NOx Other ammonia system problems |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Catalytic Reduction Systems | 8825 | Other SCR NOx problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-79 Pollution Control Equipment: NOx Reduction Systems - Selective Non-Catalytic Reduction Systems | | | | | |
|--|-----------------------------|-----------------------|---|------------|--------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Non-Catalytic Reduction Systems | 8800 | SNCR NOx Reagent |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Non-Catalytic Reduction Systems | 8801 | SNCR NOx Carrier gas |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Non-Catalytic Reduction Systems | 8802 | SNCR NOx Control system |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Non-Catalytic Reduction Systems | 8803 | SNCR Performance Testing |
| CC steam units | Pollution Control Equipment | NOx Reduction Systems | Selective Non-Catalytic Reduction Systems | 8809 | Other SNCR NOx problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Use code 0360 for Low NOx Burners. | | | | | |

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 B02-80 Regulatory, Safety, Environmental: Other Operating Environmental Limitations | | | | | |
|---|-----------------------------------|---|---------------|------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9660 | Thermal discharge limits - fossil and nuclear |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9663 | Thermal discharge limits - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9664 | Thermal discharge limits - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9670 | Noise limits (not for personnel safety) - fossil and nuclear |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9673 | Noise limits (not for personnel safety) - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9674 | Noise limits (not for personnel safety) - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9677 | Noise limits testing - fossil |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-----------------------------------|---|--|------|---|
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9678 | Noise limits testing - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9679 | Noise limits testing - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9680 | Fish kill - fossil and nuclear |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9683 | Fish kill - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9684 | Fish kill - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9690 | Other miscellaneous operational environmental limits - fossil and nuclear |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9693 | Other miscellaneous operational environmental limits - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Other Operating Environmental Limitations | | 9694 | Other miscellaneous operational environmental limits - jet engines |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-81 Regulatory, Safety, Environmental: Regulatory

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

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|--|--|--|--|---|
| | | | | | factor contributed to the primary cause of the event) |
|--|--|--|--|--|---|

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-82 Regulatory, Safety, Environmental: Safety

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-----------------------------------|-----------|---------------|------------|-------------------------------------|
| CC steam units | Regulatory, Safety, Environmental | Safety | | 9700 | OSHA-related retrofit or inspection |
| CC steam units | Regulatory, Safety, Environmental | Safety | | 9720 | Other safety problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-83 Regulatory, Safety, Environmental: Stack Emission

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|-----------------------------------|----------------|---------------|------------|--|
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9600 | SO2 stack emissions - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9603 | SO2 stack emissions - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9604 | SO2 stack emissions - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9610 | NOx stack emissions - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9613 | NOx stack emissions - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9614 | NOx stack emissions - jet engines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9616 | CO stack emissions - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9620 | Particulate stack emissions - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9623 | Particulate stack emissions - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9624 | Particulate stack emissions - jet engines |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|-----------------------------------|----------------|--|------|--|
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9630 | Opacity - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9633 | Opacity - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9634 | Opacity - jet engines |
| CC steam units | 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) |
| CC steam units | 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) |
| CC steam units | 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) |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9656 | Other stack or exhaust emissions testing - fossil |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9657 | Other stack or exhaust emissions testing - gas turbines |
| CC steam units | Regulatory, Safety, Environmental | Stack Emission | | 9658 | Other stack or exhaust emissions testing - jet engines |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier 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 B02-84 Steam Turbine: Controls

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|---------------|-----------|---------------|------------|------------------------|
| CC steam units | Steam Turbine | Controls | | 4290 | Hydraulic system pumps |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|---------------|----------|--|------|---|
| CC steam units | Steam Turbine | Controls | | 4291 | Hydraulic system coolers |
| CC steam units | Steam Turbine | Controls | | 4292 | Hydraulic system filters |
| CC steam units | Steam Turbine | Controls | | 4293 | Hydraulic system pipes and valves |
| CC steam units | Steam Turbine | Controls | | 4299 | Other hydraulic system problems |
| CC steam units | Steam Turbine | Controls | | 4300 | Turbine supervisory system (use codes 4290 to 4299 for hydraulic oil) |
| CC steam units | Steam Turbine | Controls | | 4301 | Turbine governing system |
| CC steam units | Steam Turbine | Controls | | 4302 | Turbine trip devices (including instruments) |
| CC steam units | Steam Turbine | Controls | | 4303 | Exhaust hood and spray controls |
| CC steam units | Steam Turbine | Controls | | 4304 | Automatic turbine control systems - mechanical |
| CC steam units | Steam Turbine | Controls | | 4305 | Automatic turbine control systems - mechanical - hydraulic |
| CC steam units | Steam Turbine | Controls | | 4306 | Automatic turbine control systems - electro-hydraulic - analog |
| CC steam units | Steam Turbine | Controls | | 4307 | Automatic turbine control systems - electro-hydraulic - digital |
| CC steam units | Steam Turbine | Controls | | 4308 | Automatic turbine control systems - digital control and monitoring |
| CC steam units | Steam Turbine | Controls | | 4309 | Other turbine instrument and control problems |
| CC steam units | Steam Turbine | Controls | | 4310 | Steam Turbine Control System - data highway |
| CC steam units | Steam Turbine | Controls | | 4311 | Steam Turbine Control System - hardware problems (including card failure) |
| CC steam units | Steam Turbine | Controls | | 4312 | Steam Turbine Control System - internal and termination wiring |
| CC steam units | Steam Turbine | Controls | | 4313 | Steam Turbine Control System - logic problems |
| CC steam units | Steam Turbine | Controls | | 4314 | Steam Turbine Control System - upgrades |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-85 Steam Turbine: High Pressure Turbine

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|---------------|-----------------------|---------------|------------|--------------|
| CC steam units | Steam Turbine | High Pressure Turbine | | 4000 | Outer casing |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

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

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

TABLE B02-86 Steam Turbine: Intermediate Pressure Turbine

| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
|----------------|---------------|-------------------------------|---------------|------------|--|
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4100 | Outer casing |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4101 | Inner casing |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4109 | Nozzle bolting |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4110 | Nozzles and nozzle blocks |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4111 | Diaphragms |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4112 | Buckets or blades |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4113 | Bucket or blade fouling |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4115 | Wheels or spindles |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4120 | Shaft seals |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4121 | Dummy rings |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4122 | Gland rings |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4130 | Rotor shaft |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4140 | Bearings |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4141 | Thrust bearings |
| CC steam units | Steam Turbine | Intermediate Pressure Turbine | | 4199 | Other intermediate pressure turbine problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-87 Steam Turbine: Low Pressure Turbine | | | | | |
|--|---------------|----------------------|---------------|------------|-------------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4200 | Outer casing |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4201 | Inner casing |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4209 | Nozzle bolting |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4210 | Nozzles and nozzle blocks |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4211 | Diaphragms |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4212 | Buckets or blades |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4213 | Bucket or blade fouling |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4215 | Wheels or spindles |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4220 | Shaft seals |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4221 | Dummy rings |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4222 | Gland rings |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4230 | Rotor shaft |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4240 | Bearings |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4241 | Thrust bearings |
| CC steam units | Steam Turbine | Low Pressure Turbine | | 4250 | Other low pressure turbine problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.

| TABLE B02-88 Steam Turbine: Lube Oil | | | | | |
|--------------------------------------|---------------|-----------|---------------|------------|-----------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Steam Turbine | Lube Oil | | 4280 | Lube oil pumps |
| CC steam units | Steam Turbine | Lube Oil | | 4281 | Lube oil coolers |
| CC steam units | Steam Turbine | Lube Oil | | 4282 | Lube oil conditioners |
| CC steam units | Steam Turbine | Lube Oil | | 4283 | Lube oil system valves and piping |
| CC steam units | Steam Turbine | Lube Oil | | 4284 | Lube oil pump drive |
| CC steam units | Steam Turbine | Lube Oil | | 4289 | Other lube oil system problems |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. 2) Do not include bearing failures due to lube oil.

| TABLE B02-89 Steam Turbine: Miscellaneous (Steam Turbine) | | | | | |
|---|---------------|-------------------------------|---------------|------------|--|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4400 | Major turbine overhaul (720 hours or longer) (use for non-specific overhaul only; see page B-CCGT-2) |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|--|---------------|-------------------------------|--|------|--|
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4401 | Inspection |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4402 | Minor turbine overhaul (less than 720 hours) (use for non-specific overhaul only; see page B-CCGT-2) |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4410 | Turning gear and motor |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4411 | Steam turbine gear box (single shaft configuration) |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4412 | Steam turbine clutch (single shaft configuration) |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4415 | Shaft coupling mechanism |
| CC steam units | 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) |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4430 | Gland seal system |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4450 | Water induction |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4460 | Turbine overspeed trip test |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4470 | Differential expansion |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4490 | Turbine performance testing (use code 9999 for total unit performance testing) |
| CC steam units | Steam Turbine | Miscellaneous (Steam Turbine) | | 4499 | Other miscellaneous steam turbine problems |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-90 Steam Turbine: Piping | | | | | |
|--|---------------|------------------|----------------------|-------------------|------------------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Steam Turbine | Piping | | 4270 | Crossover or under piping |
| CC steam units | Steam Turbine | Piping | | 4279 | Miscellaneous turbine piping |
| Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899. | | | | | |

| TABLE B02-91 Steam Turbine: Valves | | | | | |
|---|---------------|------------------|----------------------|-------------------|--------------------|
| UNIT TYPE | SYSTEM | COMPONENT | SUB-COMPONENT | CAUSE CODE | DESCRIPTION |
| CC steam units | Steam Turbine | Valves | | 4260 | Main stop valves |
| CC steam units | Steam Turbine | Valves | | 4261 | Control valves |
| CC steam units | Steam Turbine | Valves | | 4262 | Intercept valves |
| CC steam units | Steam Turbine | Valves | | 4263 | Reheat stop valves |

Appendix B02: Index to Combined Cycle Steam Turbine Unit Cause Codes

| | | | | | |
|----------------|---------------|--------|--|------|--|
| CC steam units | Steam Turbine | Valves | | 4264 | Combined intercept valves |
| CC steam units | Steam Turbine | Valves | | 4265 | Miscellaneous drain and vent valves |
| CC steam units | Steam Turbine | Valves | | 4266 | Main stop valve testing |
| CC steam units | Steam Turbine | Valves | | 4267 | Control valve testing |
| CC steam units | Steam Turbine | Valves | | 4268 | Reheat/intercept valve testing |
| CC steam units | Steam Turbine | Valves | | 4269 | Other turbine valves (including LP steam admission valves) |

Notes: 1) For use with Gas Turbine Codes 300-399 or 700-799, Steam Turbine Codes 100-199, and Block Identifier Codes 800-899.