Appendix J: Cause Code Amplification Codes

The purpose of the amplification code is to further identify the cause of an outage by describing the failure mode. The amplification code is two alpha-numeric characters following the cause code (see Page III-25). Failure modes are leaks, corrosion, personnel error, fire, etc. They are almost identical to the GADS Failure Mechanism Codes (see *Appendix H*) except the Cause Code Amplification Code is just two-characters. Some existing cause codes contain these amplification codes as part of their description. The Cause Code Amplification Code allows all cause codes to be described with the set of failure modes without increasing the number of cause codes. It will also allow analysts to further explore the common causes of outages.

There are a few cases where the amplification code is limited to specific event types or conditions. The table below captures the specific limits. "None" means that the amplification codes can be used with any event types.

GADS Amplification Code	Description	Event Type Limits
01	Alignment/clearance not within limits – axial	None
02	Alignment/clearance not within limits – radial	None
03	Arced/flashover – electrical	None
04	Balance, not within limits	None
05	Binding – radial related contacts (use F670 if contact is in axial direction)	None
06	Broken	None
07	Burned/fire damage – initiated by component (ex. burned motor)	None
08	Burned/fire damage – not initiated by component (ex. pump fire damage due to motor fire)	None
09	Calibration, not within limits	None
10	Carbon, covered	None
11	Chemical excursion damage	None
C0	Cleaning	None
12	Clogged	None
13	Closed	None
14	Condensation - oil	None
15	Condensation - water	None
16	Connection, loose	None
17	Contaminated – liquid fluids (use F320 for air contamination)	None
18	Contaminated – metals and solids	None
20	Cooling, inadequate – air	None
19	Cooling, inadequate – liquid	None
22	Corrosion – caustic	None
23	Corrosion – fatigue	None
21	Corrosion – general	None
24	Corrosion – high temperature coal ash	None
25	Corrosion – high temperature oil ash	None
26	Corrosion – low temperature	None
27	Corrosion – waterwall fire-side	None
28	Cracked	None

GADS Amplification Code	Description	Event Type Limits
29	Creep, high temperature	None
30	Damaged, foreign object	None
31	Damaged, insulation	None
32	Dirty (use for air contamination or particulate/dirt buildup)	None
33	Disengage, failed to	None
E0	Emission/Environmental Restriction	None
34	Engage, failed to	None
35	Erosion – coal particle	None
36	Erosion – falling slag	None
38	Erosion – fly ash	None
37	Erosion – soot blower	None
39	Erosion – cause unknown	None
40	Erratic or unexplained operating behavior	None
41	Erratic, circuit	None
42	Error, operator	None
43	Error, wiring	None
44	Explosion damage – initiated by the component (ex. pump explosion)	None
45	Explosion damage – not initiated by the component (ex. pipe damage due to pump explosion)	None
X0	External equipment malfunction (outside plant management control)	None
R0	Fire	None
46	Flameout	None
47	Foaming	None
F0	Fouling	None
48	Frozen (temperature related)	None
FR	Fuel related	None
49	Grounded electrical component	None
50	Hydrogen damage	None
51	Impact damage	None
52	Indication, false	None
53	Inspection	None
54	Leaks	None
55	Loose	None
56	Lubrication – excessive	None
57	Lubrication – lack of	None
58	Maintenance – cleaning damage	None
59	Maintenance – general	None
60	Material defects	None
61	Modification(s)	None
62	Noisy	None
NF	No Fuel	None
63	Open	None

GADS Amplification Code	Description	Event Type Limits
NW	No Water – Run of River	Hydro only
64	Overload	None
U0	Parts unavailable	None
P0	Personnel error	None
65	Pitting (localized corrosion)	None
66	Pressure, not within limits	None
67	Rubbing damage – axial related contacts (use F050 if contact is in radial direction)	None
68	Secondary damage	None
69	Seized (not moving)	None
71	Short-term overheating	None
70	Shorted electrical component	None
A0	Silica restriction	None
S0	Slagging	None
ST	Steam transfer	None
72	Sticking	None
73	Stress corrosion cracking	None
H0	Temperature – high, not within limits	None
74	Temperature – compressor discharge, not within limits	None
75	Temperature – exhaust, not within limits	None
78	Temperature – general, not within limits	None
76	Temperature – oil, not within limits	None
77	Temperature – wheel spacers, not within limits	None
79	Testing	None
80	Thermal fatigue	None
81	Torn	None
82	Tripped/shutdown component – automatic	Deratings only
83	Tripped/shutdown component – manual	Deratings only
T1	Tripped/shutdown grid separation – automatic	In-service U1 outage only
T2	Tripped/shutdown grid separation – manual	In-service U1 outage only
84	Unknown – investigation underway (change this code once failure mechanism is determined)	In-service U1 outage only
V0	Vibration (other)	None
86	Vibration fatigue, leading to failure	None
85	Vibration, not within limits	None
87	Voltage, not within limits	None
D0	Water induction	None
89	Weld failure – broken weld	None
90	Weld failure – dissimilar metals	None
91	Weld failure – weld defects	None
88	Welded relay contacts	None
W0	Wet coal/frozen coal/debris	None
92	Wiped	None
93	Worn, excessively	None