GUAM POWER AUTHORITY Standard Operating Procedure	No.: *SOP-138	Issued: 5/01/2007
	Prepared By: ANDRIANO E. BALAJADIA, Assistant General Manager, Operations	
Title: Outage Classification and Reporting	Approved By: JOAQUIN C. FLORES, P.E., General Manager	
Effective Date: **May 7, 2007** Supersedes No. **None**		Page 1 of 4

1. PURPOSE

This Standard Operating Procedure (SOP) is provided to establish guidelines for the proper classification of outage causes.

2. SCOPE

This procedure shall be executed by the Power Systems Control Center (PSCC) Division who is responsible for receiving outage/trouble calls, recording outages for reporting purposes, and dispatching repair crews for power restoration. Depending on the source of the outage, the Transmission & Distribution Division or the Generation Division shall report any findings leading to the outage to PSCC. Engineering in collaboration with the respective parties shall interpret the findings and make final recommendations as to the cause of the outage.

3. OBJECTIVE

The objectives of this SOP are to ensure outages are accurately classified on outage reports and to ensure problem areas can be easily identified and addressed for effective planning of system improvements.

4. PROCEDURES

4.1 Outage causes are to be classified by PSCC in accordance with Table 1. Every outage must be provided a category code with details on the outage.

4.2 Outage causes shall be reported by PSCC on a daily basis to the Assistant General Manager, Operations, as well as the Transmission & Distribution, Generation, and Engineering Managers. Daily outage reports shall include but are not limited to the following.

1. Circuit designation(s) and location of outage
2. Date and time of outage
3. Duration of outage

4. Corrective action(s) to restore outaged area(s)
5. Protective devices that cleared the problem (generator breaker, transmission breaker, distribution breaker, line fuse, etc.)
6. Category and cause code of the outage (e.g. D - Animals, Snakes - 39)

4.3 The AGMO as well as the Transmission and Distribution, Generation, and Engineering Division Managers shall have two weeks to review any outage data from the publish date and provide comments and corrections to be reflected on the PSCC daily outage report as well as the monthly report.

4.4 Depending on the source of the outage, Generation and T&D shall provide generation controller, relay sequence of event reports, targets, and breaker status data to Engineering. Generation controller and devices reports shall be provided in color format in order to distinguish particular information.

4.5 PSCC shall prepare a monthly outage report for the Assistant General Manager, Operations. Copies of the report shall also be provided to the Transmission & Distribution, Generation, and Engineering Division Managers. Monthly outage reports shall include a graphical representation of the System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), and Customer Average Interruption Duration Index (CAIDI). The SAIFI, SAIDI, and CAIDI shall be graphed against annual targets on a moving 12 month timeline. Monthly reports shall also include a summary of the outages on a moving 12 month timeline. The outage causes shall be graphed and presented in a Pareto Chart format.

TABLE 1, CLASSIFICATION OF INTERRUPTION CAUSES

ITEM	CATEGORY	CAUSE	CODE
A.	ADVERSE ENVIRONMENT – GPA Equipment subjected to abnormal environmental conditions.	Salt Spray	1
		Industrial contamination such as pollution	2
		Earthquakes	3
		Fire	4
B.	ADVERSE WEATHER – Unusual climatic conditions such as:	Rain	5
		Flooding	6
		Wind – Outages caused by unusually high winds that propel sagged lines together causing line shorts. This can also include wind borne objects such as vegetation, and flying debris. Provide details.	7
		Lightning - Lightning striking the electrical system, resulting in an insulation breakdown and/or flashovers.	8
		Typhoon/Tropical Storm	9
C.	EQUIPMENT FAILURE	CUSTOMER EQUIPMENT FAILURES - Failures due to customer causes including the failures with the metering provisions, panel boards and disconnect switches outside of GPA's scope of responsibility.	10
		UTILITY EQUIPMENT FAILURE - Failures due to deterioration, overload, or mechanical or electrical breakdown of utility owned equipment.	
		GENERATION	
		Generator	11

C.	EQUIPMENT FAILURE (Continued)	Prime Mover	12
		Auxiliary Systems (provide details)	13
		TRANSMISSION AND SUBSTATION	
		Line Insulator (insulators on overhead line systems)	14
		Station Insulator (insulators within a power substation)	15
		Power Pole or Structures	16
		Overhead Conductors	17
		Underground Conductors	18
		Underground Splices	19
		Static Wire	20
		Cable Terminations (Where insulated cables terminate to electrical equipment or transition to overhead lines)	21
		Power Circuit Breakers	22
		Switches	23
		Power Transformer	24
		Current/Potential Transformers	25
		Lightning Arresters	26
		Substation Capacitors	27
		Substation Control Devices and Wiring (Lockouts, Relays, Coils & Test Switches)	28
		Relay Miscoordination	29
		Bus Piping and Connections	30
		Line Connectors (connectors on overhead line systems)	31
		DISTRIBUTION	
		Line Insulators (insulators on overhead line systems)	32
		Power Poles and Structures	33
		Lightning Arresters	34
		Cable Terminations	35
		Cutouts	36
		Fuses	37
		Transformers – To include the whole unit (Including high and low side insulation bushings, mounting brackets, enclosures, etc.).	38
		Capacitor Banks	39
		Overhead Conductors	40
		Underground Conductors	41
		Underground Splices	42
		Switches	43
		Connectors (connectors on overhead line systems)	44
D.	ANIMALS - Interaction of animals with the electrical system.	Snakes	45
		Rodents	46
		Birds	47
		Other Animals, Specify	48
E.	EXTERNAL INTERFERENCE – Interference with the electrical system external to the utility.	Dig-ins	49
		Vehicles	50
		Accidental contact – This includes contact from humans, devices such as poles used to harvest fruit, and extension tools used in painting and building maintenance.	51
		Vandalism – Defined as the conspicuous willful damaging or defacing of Authority property as an expression of contempt or creativity.	52
		Sabotage – Defined as a deliberate action aimed at weakening the Authority through subversion, obstruction, disruption, and/or destruction. Acts of terrorism.	53

F.	HUMAN/OPERATOR ERROR – Improper interaction of the utility staff with the system.	Incorrect use of Equipment – This includes use of tools and equipment not intended or rated for application or manufacturers recommended uses.	54
		Incorrect Construction or Installation – Where construction or installation was not followed as per drawings and specifications.	55
		Accidental Worker Contact	56
		Incorrect Protection Settings	57
		Switching Errors	58
G.	LOSS OF SUPPLY- Problems related to the bulk electricity supply systems.	Load shedding due to system overload	59
H.	SCHEDULED OUTAGES – Disconnection at a predetermined time for the purpose of:	Construction	60
		Preventive Maintenance	61
		Repair	62
		Public/Customer Accommodation	63
I.	VEGETATION – When cause is not attributed to adverse weather.	Faults due to trees or tree limbs contacting energized circuits under normal climatic conditions	64
J.	UNKNOWN - Circuit interruptions in which no apparent cause or reason is discovered. This is to be used **only** when an outage cause cannot be determined. These outages are to be listed individually along with all known information regarding the outage.		65