



HAZARD-SPECIFIC ANNEX B
EARTHQUAKES & LANDSLIDES

Primary Agency: OCD, GFD, GPD, DPW, Mayors' Council
Support Agency: All Agencies

I. Nature of the Hazard

A sudden, violent shaking or movement of part of the earth's surface caused by the abrupt displacement of rock masses, usually within the upper 10 to 20 miles of the earth's surface. The earthquake hazard may consist of:

- A. Ground Motion - Vibration and shaking of the ground during an earthquake is the most far reaching effect and causes the most damage to buildings, structures, lifelines, etc.
- B. Ground Surface Fault Rupture - The ground shaking is the result of a rupture of a fault beneath the surface. When the ground shaking results in a rupture of the surface of ground, an opening of up to 20 feet may occur.
- C. Liquefaction -The ground temporarily loses its strength and behaves as a viscous fluid (similar to quicksand) rather than a solid.
- D. Landslides - Sometimes an earthquake causes a landslide to occur. This involves a rock fall and slides of rock fragments on steep slopes.
- E. Tsunamis - Tsunamis are sea waves produced by an undersea earthquake. These sea waves caused by the earthquake can reach 80 feet and can devastate coastal cities and low-lying coastal areas.
- F. Secondary Hazards - Consequences of earthquakes may include fire, HAZMAT release, or structural failure, among others.

II. Purpose

The purpose of this annex is to provide an outline of activities that would be implemented in response to an Earthquake/Landslide emergency. This annex establishes a format that identifies actions to be taken before, during and immediately following an event.

III. Situation and Assumptions

A. Situation

Earth tremors are common to the Northern Mariana Island chain, and the potential for a major earthquake is high. Although the Mariana Island groups are relatively small landforms above sea level, the sub-sea mountain range, which supports these islands, is the earth's tallest; and the Marianas Trench, which parallels the range, is the earth's deepest valley. Earthquake risk in Guam is caused by the island's proximity to the Mariana Trench, where the subduction of the Pacific Plate beneath the Philippine Plate occurs. This motion leads to earthquakes throughout the Mariana Island chain.

The 1849 Guam earthquake and tsunami caused extensive damage to Agana, the largest city on Guam, as did the 1902, 1975, and 1978 earthquakes. The 1993 Guam earthquake measured Mw7.8, which was larger than the maximum event estimated by most scientists for that area at the time. Some high-rise buildings in Tumon Bay, mostly hotels, sustained enough damage to warrant demolition, while liquefaction and lateral spreading resulted in an estimated \$8-10 million in repair costs to the main port for Guam.

B. Assumptions

1. Earthquakes will come with no warning.
2. The threat of landslides and tsunami may accompany seismic activity. Both public and private sectors will be effected
3. Disruption of the infrastructure will delay immediate response.

IV. Concept of Operations

Following the event, all Response Agency Coordinators (RAC) are to report immediately to the Emergency Operations Center (EOC) to coordinate initial damage reports. Also, EAS will be activated for residents living in low lying coastal areas. The RAC in conjunction with Office of Civil Defense (OCD) will form assessment teams to initiate a Rapid Damage Assessment. OCD will make a course of action recommendation to the Governor based on the Assessment team's assessment of damage.

The OCD will coordinate the activation of the RAC and manage the Emergency Operations Center following the event. If warranted, a Declaration of Emergency will be issued by the Governor. Implementation of the appropriate Functional Annexes will follow the RAC activation.

Debris removal operations and shelter & mass care.

If warranted, the Governor will request FEMA's deployment of the Federal Emergency Response Team to conduct an assessment and verify damage in anticipation of a request for a Presidential Disaster Declaration.

V. Organization and Assignment of Responsibilities

A. Organization

The Response Agencies will upon activation of the Emergency Operation Center report to the EOC to receive initial status of the incident, provide an initial damage assessment, Annex A, receive initial instructions and begin to coordinate a response effort. The EOC Director will then coordinate all agency tasking and action items under the Unified Command System.

B. Assignment of Responsibilities

The activities required to address all emergencies or disasters have been identified as either primary or support functions. The assignment of Response Agency functions has been identified in the Functional Annex Section.

It is anticipated that all Response Agencies will be activated.

VI. Administration and Logistics

Upon the activation of Response Agencies, the Department of Administration (DOA) will manage and track all emergency/disaster related expenses. The Administration and Logistics function of the Unified Command System will be the lead in coordinating requirements in the response effort.

DOA will establish emergency accounts for all response agencies to accommodate pre-event preparedness expenditures and activities up to deactivation of the response effort following the emergency or disaster.

The General Services Administration (GSA) will provide the logistics to source, acquire and distribute all response related materials and resources. Along with the Office of Civil Defense, GSA will receive, inventory and manage all response related resources and request for materials by establishing areas to collect, stage and distribute all requests for response materials and resources.

VII. Plan Development and Maintenance

The Administrator of the Office of Civil Defense is responsible for the maintenance and revision of this annex.

The Office of Civil Defense will review and exercise this Annex on a bi-annual basis. Updates and revisions to the Annex will be made accordingly.

An earthquake exercise will be conducted in the 2nd or 3rd quarter as a part of Response Agency readiness activities.

VIII. Direction and Control

All issues of policy, coordination of operations and the direction and control of preparation and response efforts rests with the Office of Civil Defense. All Response Agencies will, by their activation, coordinate activities within the structure and organization of the Operations Section.

IX. Authorities and References

A. Authorities

This plan is issued under the authority of, and in accordance with the provisions of the Guam Civil Defense Act of 1951, and supersedes the Territorial Emergency Plan of October 1978. References governing the enactment and implementation of this are:

- The Organic Act of Guam, as amended and related statutes, Chapter 8A-Guam-Title-48 U.S.C.A. 1422
- Public Law 93-288, Disaster Relief Act of 1974
- Guam Government Code 8501-8515, (Public Law 1-21)
- Guam Government Code 62020
- Executive Order of the Governor 91-09, dated March 25, 1991.
- Guam Government Code 40400

B. References

- The following publications/planning documents were utilized in formulating this Plan:
- The Federal Response Plan (9230.1 PL, FEMA)
- Guide for All-Hazard Emergency Operations Planning (SLG 101, FEMA)

X. Appendices

- A. Annex A - Damage Assessment
- B. Annex E - Communication & Warning
- C. Annex K - Sheltering & Mass Care
- D. Annex H - Federal Response Coordination

XI. Tabs

A. Seismicity of Guam

THIS PAGE IS INTENTIONALLY LEFT BLANK.