



HAZARD-SPECIFIC ANNEX A — TAB B
TYPHOONS — AGENCY PREPARATIONS

I. Immediate Response Needs

The following is a list of response materials and supplies which were required as the Response Agency Coordinators (RAC) prepared and responded to Supertyphoon Pongsona after the All Clear signal was given on December 9, 2002.

These are the items required for every typhoon and should be sourced and purchased orders processed when Condition 2 is announced so that response efforts are not delayed before, during and immediately following the storm.

A. Immediate Needs Required PO s at Condition 2:

- Flashlights, Batteries
- Raingear
- Whistles, gloves
- Bottled Water
- Chainsaw, Chainsaw kits and Machetes

B. MOU s required with local vendors

- Communication equipment
- Generators at Critical Facilities (as identified on the Generator Plan)
- Portable Toilets
- Bottled Water
- Security for EOC, Shelters, DRCs
- Fuel for Response Vehicles and Generators (Gasoline and Diesel)
- Chainsaw, Chainsaw kits and Machetes
- Emergency Vehicles (4x4 or SUV)
- Ambulances (DoD Support)
- Specific Agency Requirements
 - a. GPA for power poles, bucket trucks, transformers, insulators, wires
 - b. GTA for T1 cards, generators
 - c. GPD/GFD generators for lab and communications
 - d. EPA generators for lab and PCB test kits, debris contractors
 - e. DPW/P&R dump trucks, front loaders, back hoes, debris contractors, traffic lights
 - f. GWA water tankers, Buffaloes, Bladders, Trailer trucks to pull tankers
 - g. DPHSS/GMH vaccines, medical supplies

C. Critical Facilities Requiring Backup Generators

- Guam Memorial Hospital
- Port Authority of Guam
- Communications, E911, GPD, GFD, EOC
- EAS Stations

D. Immediate Needs from FEMA Warehouse

- Tarps
- Cots/Blankets
- 5gal Water Containers
- Water Bladders
- Tents/tent Kits
- Diapers/Baby Food
- MREs

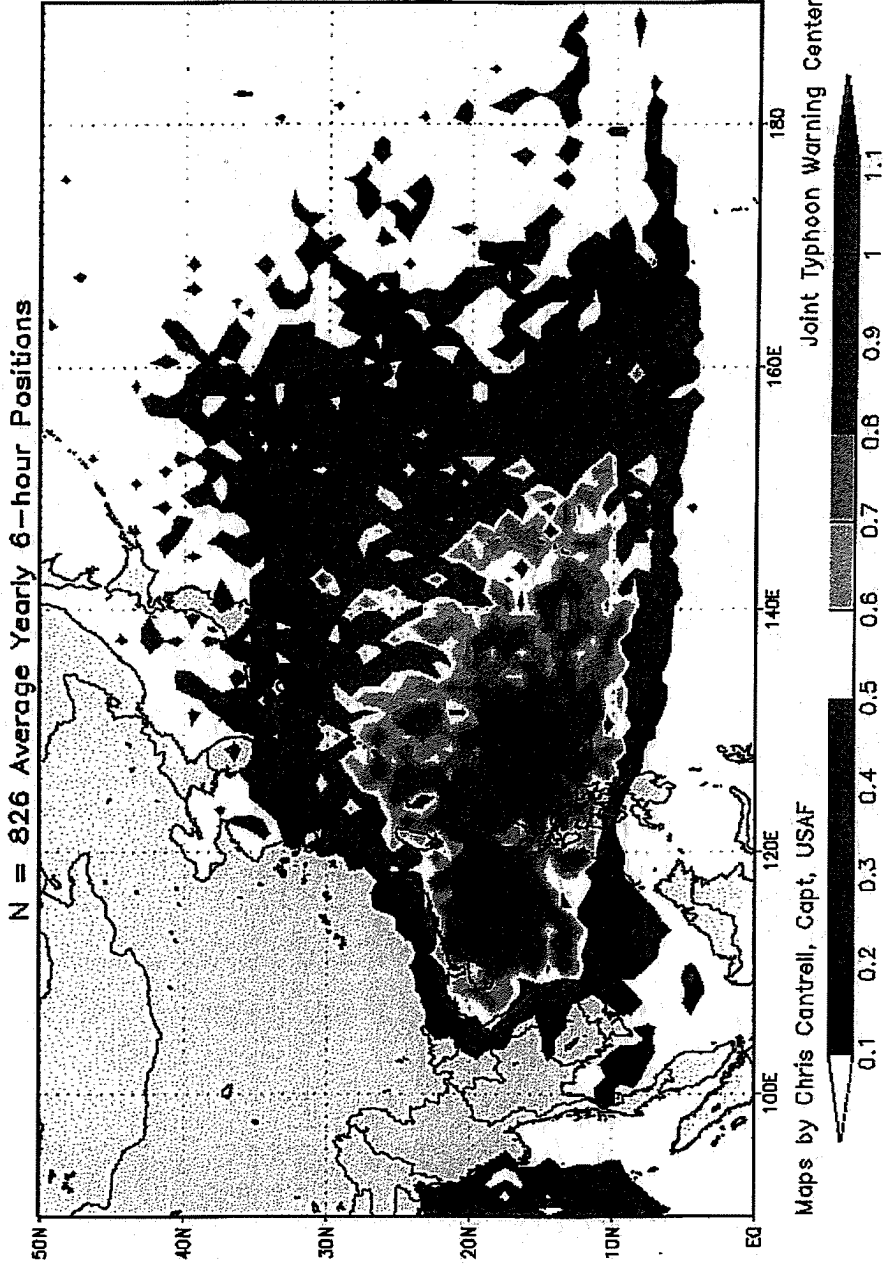
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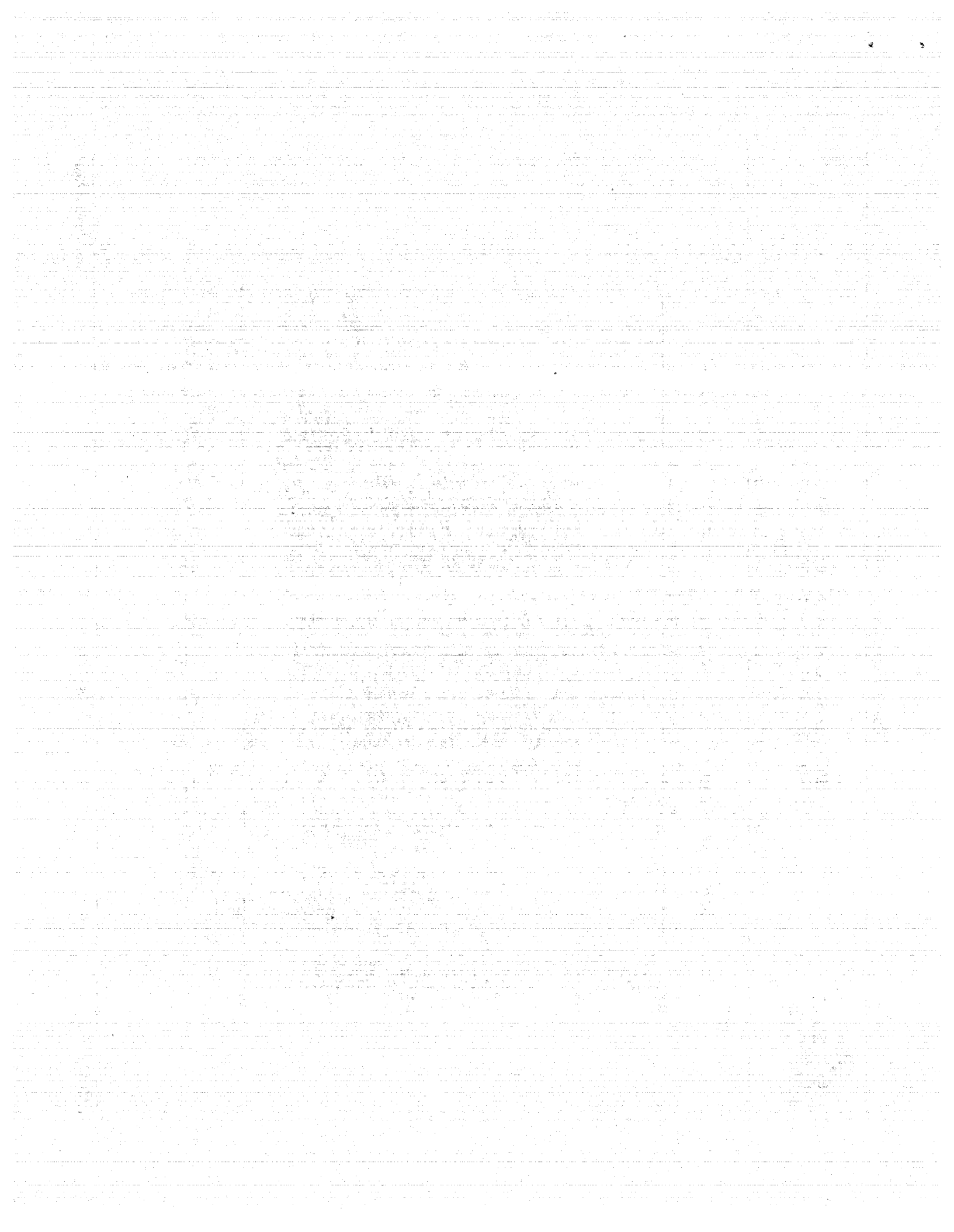
HAZARD-SPECIFIC ANNEX A - TAB C TOTAL TROPICAL STORM OCCURRENCES

For the years of 1972 to 2001

Best track positions with an intensity of 25 kts or greater

Average Annual TC Occurrence for 1972 to 2001





A

HAZARD-SPECIFIC ANNEX A — TAB A TYPHOON CHECKLIST

I. Pre-Event

Condition 3 —

- The Governor in coordination with Commander, U.S. Naval Forces Marianas, will jointly issue notices to alert the public to make preparations for the incoming storm and changes of conditions.
 - Activate Emergency Alert System (EAS).
 - NWS Heavy Weather Briefing for all Mayors and Vice Mayors.
 - NWS Heavy Weather Briefing for all RACs.
 - Response agencies begin agency specific pre-event preparations.
- RAC initiate contact with vendors and make emergency procurements in preparation for post-event response needs (see attached Tab B immediate needs requiring purchase orders).*
- Initiate MOUs & MOAs in preparation for post-event support and supply needs.*
- EOC prepares for activation of Life Support System.
- All emergency communication equipment (hand-held radios and cellular phones) tested and ready for emergency use.
- *Information & Planning initiate the situation status report, update RAC data base, implement EOC recording and documentation process.*
- Notify /Contact FEMA Region IX.
- The Joint Information Center is activated and maintains contact with all media sources.
- Shelters identified.
- Implement Functional Annex G (Evacuation Plan).

Guam Emergency Response Plan

- Governor may issue a Declaration of Emergency allowing GovGuam agencies to make emergency procurements from their Operating Budgets.

Condition 2 –

- EOC RAC activated for a 12hour shift work period.
- Emergency Alert System (EAS) activated.
- Emergency shelters opened (if conditions warrant).
- All vulnerable and critical public facilities secured.
- EVAC operations implemented.
- Activate EOC security.
- Emergency vehicles (buses & vans) deployed to pre-designated locations.
- All non-essential vehicles are to be turned in to DPW (4x4, trucks).
- Emergency road and debris clearing equipment deployed to pre-designated locations.
- Response materials, supplies, manpower and equipment identified.
- Emergency generators fueled and tested.
- Water tankers prepared and deployed to pre-designated locations.
- Staging areas identified for management and collection of debris.
 - *Identify response needs & shortfalls continue to make emergency procurements.*
- Compile list of initial immediate needs not available on island and transmit to FEMA Region IX.*

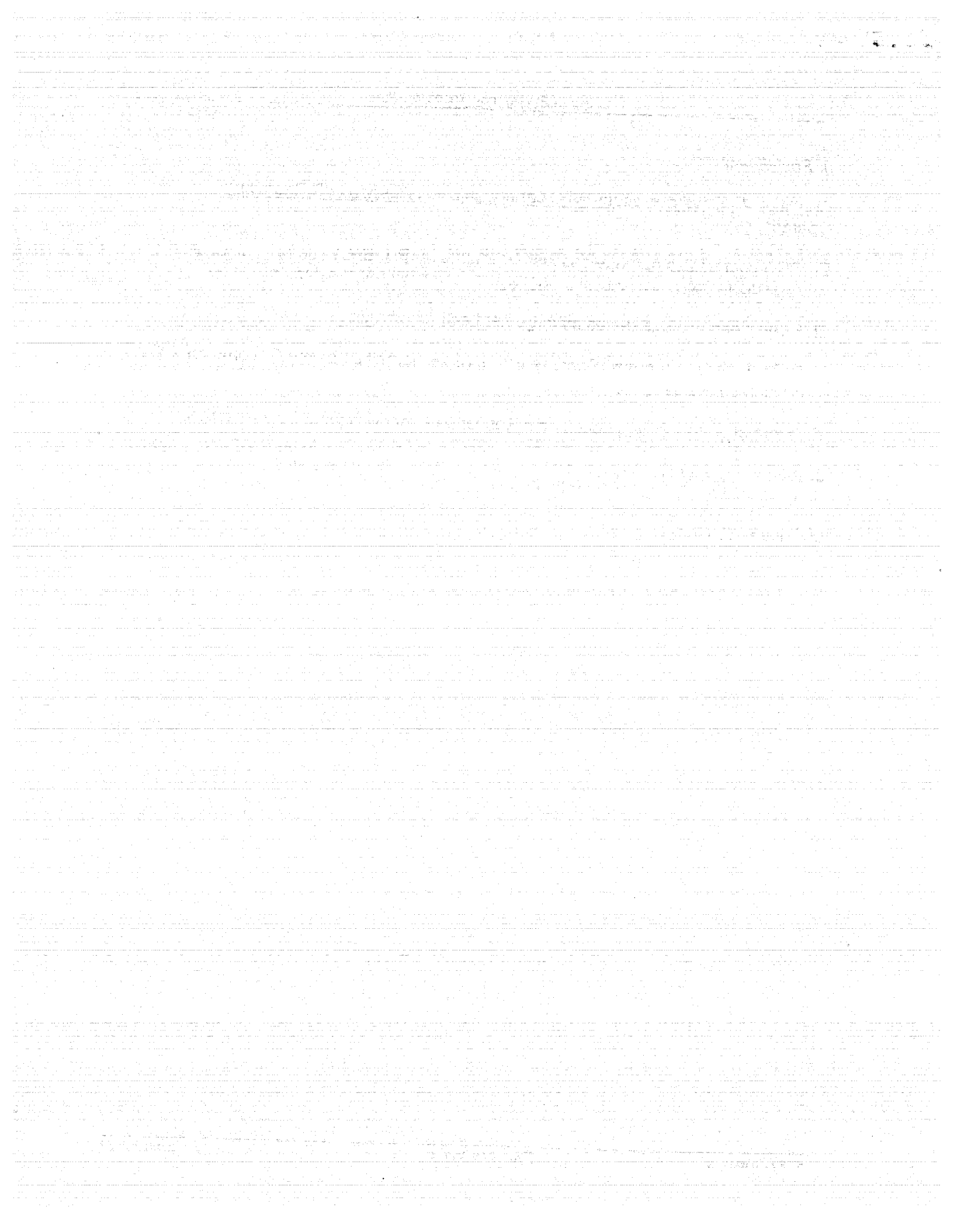
Condition 1 - TAKE COVER

- All Response Agencies lock down at the EOC and prepare for post-event activities. EOC 24hr operations (RAC plan Shift Work).
- EVAC operations review and update Functional Annex E.

II. Post-Event

Condition 4 - Governor issues All Clear and initiates Response & Recovery Operations

- OCD coordinates damage assessment with GHURA, DPW, Commerce and Agriculture. Agencies and Departments conduct own assessments.
- Road clearance and debris management activities begin.
- A Governor's Authorized Representative (GAR) identified by the Governor as OCD prepares Presidential Disaster Declaration Request if warranted by PDA.
- Information & Planning documents Response Agency request for assistance.
- Federal Response Coordination Annex H implemented in anticipation of a Presidential Disaster Declaration.
- Close out shelters.





HAZARD-SPECIFIC ANNEX A TROPICAL CYCLONES (I.E., STORMS AND TYPHOONS)

Primary Agency: All Agencies

Support Agency: All Agencies

I. Nature of the Hazard

Severe weather systems include thunderstorms and tropical cyclones. A tropical cyclone is a general term for all large circulating weather systems over tropical waters. Tropical cyclones are classified by their intensity and include Tropical Depressions, Tropical Storms, Typhoons and Super Typhoons. 70% of the world's tropical cyclones form in this region of the Pacific. Tropical cyclones can strike Guam anytime throughout the year. A tropical cyclone becomes "significant" with the issuance of the first numbered warning by Joint Typhoon Warning Center as reported by the National Weather Service, Guam. Tropical cyclones in the intensity classifications of Tropical Storms, Typhoons and especially Super Typhoons can cause severe damage and destruction to property and infrastructure as well as cause injuries or death. The longer a tropical cyclone remains near or over Guam the more potential exists for severe damages as structures weaken from extended wind stress, flooding increases and storm surges batter the shores. A tropical storm lingering over Guam for ten hours can sometimes cause more damage and destruction than a typhoon that quickly passes over Guam.

Severe winds are generally categorized into two groups, "damaging wind" and "destructive wind". "Damaging wind" is defined as sustained wind with average speeds between 39 and 57 miles per hour (mph). "Destructive wind" has an average sustained wind speeds 58MPH and above. Weak Tropical Storms generate damaging winds. Severe Tropical Storms, Typhoons and Super Typhoons generate damaging winds.

As a typhoon approaches, the weather could be clear until just a few hours before it strikes Guam, at which time the skies will begin to darken and winds will grow in strength. As a typhoon nears land, in addition to damaging winds, we are very concerned about the dangers of torrential rains and storm surges. A single typhoon can last for more than 2 weeks over open waters and can run a path across the entire length of the Western Pacific. Typhoon season runs from the first of June until the end of November. Yet, typhoons have occurred in every month of the year. Typhoon winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide with the "eye wall", the immediate perimeter of the "eye", having the strongest winds. However, with large typhoons damaging winds may extend outward 400 miles. Although the weather can be calm within the "eye", the backside of the "eye wall" can be expected without warning with damaging winds coming from the opposite direction.

A. Hazard Agents

The primary hazard agents associated with tropical cyclones are the high, sustained winds; flooding from storm surge or heavy rains; battering from heavy waves; and a variety of secondary hazards.

- **High Winds:** The high winds impose significant stress loads on structures, both direct wind pressure and drag, and tend to propel loose objects at high velocity.
- **Flooding:** Tropical cyclones can cause many different types of flooding. Along the shoreline, the flooding may occur from storm surge, wind-driven water in estuaries and rivers, or torrential rain. The flooding can be still water flooding or velocity flooding caused by wave action associated with wind driven water along the shoreline. The rainfall associated with some tropical cyclones is on the order of 6 to 12 inches, with higher levels common. The rain may precede tropical cyclone landfall by hours and may persist for many hours after landfall, causing severe flooding
- **Heavy Waves:** The tropical cyclone may generate waves up to 25 feet high. These can batter the shoreline, causing devastating damage to the shoreline itself and to structures near the shore. The velocity of the water moving back and forth undermines the foundations of building and piers by removing the soil from around them. Debris driven inland by the waves can cause severe structural damage; persons exposed to the moving water and debris are likely to receive severe injuries.
- **Secondary Hazards:** Tropical cyclones can also cause numerous secondary hazards. Electric power outages are common. Contamination of water supplies, flooding of sewage treatment facilities, and even telephone system failure may occur.

II. Purpose

The purpose of this annex is to provide and identify actions to take

- Prior to
- During, and
- Immediately following a tropical cyclone forecasted to or already impacting the island.

III. Situation and Assumptions

A. Situation

The formation of a Tropical Disturbance can intensify into a Tropical Cyclone (e.g., Tropical Depression, Tropical Storm (Categories A or B), or Typhoon (Categories 1 through 5)) impacting Guam in less than 72 hours (3 days). However, there have been cases of intensification into a typhoon in only 30 hours. Tropical cyclone development and intensification can begin right over Guam. The premise of this annex starts with the understanding that Guam may receive damaging winds (39 mph sustained winds or higher) any time of the year within 72 hours of a tropical cyclone development. The threshold for activation of this plan and annex for government-wide preparedness and response actions is based on the landfall of damaging winds on Guam. However, the Office of Civil Defense, under case-specific direction of the Governor, may provide limited warnings or department/activity specific precautionary actions on a lower threshold such as the onset of damaging winds (39-57 mph sustained winds) or a severe thunderstorm.

The Joint Typhoon Warning Center (JTWC), based in Hawaii, provides track and intensity forecasts for all tropical cyclones in our region. The National Weather Service (NWS), Guam evaluates JTWC forecasts for potential effects upon United States interests in the region, and issues public announcements/advisories about these threats, including thunderstorms. NWS broadcasted information and public media releases include classification (i.e., Thunderstorm, Tropical Disturbance, Tropical Depression, Tropical Storm categories, or Typhoon categories), position, wind strength, precipitation, wave height, and forecast of direction and intensity. The NWS uses the key words, Alert, Watch and Warning, in this order, to describe the increasing concern of a severe weather system approaching Guam. A NWS "alert" announcement indicates a severe weather system formation has started. A NWS "watch" announcement indicates that the severe weather system poses a possible threat generally within 48 hours. A NWS "warning" announcement indicates that severe weather impacts are expected from the approaching weather system within 24 hours. The general public, especially those living in substandard constructed homes, and organizations with planned events may pay special attention to these NWS Alerts, Watches and Warnings.