‘HUDHUD’ Cyclone

(12th OCTOBER 2014)

Case Study
Hud Hud Cyclone on the day of crossing the coast

TROPICAL CYCLONE 03B (HUDHUD) WARNING #17
WTIO31 PCTW 120300
120000Z POSIT: NEAR 17.2N 84.2E
MOVING 330 DEGREES TRUE AT 07 KNOTS
MAXIMUM SIGNIFICANT WAVE HEIGHT: 28 FEET
12/00Z, WINDS 110 KTS, GUSTS TO 135 KTS
12/12Z, WINDS 095 KTS, GUSTS TO 115 KTS
13/00Z, WINDS 060 KTS, GUSTS TO 075 KTS
13/12Z, WINDS 030 KTS, GUSTS TO 040 KTS

CFA TO:  NM  DTG
KOLKATA        396  12/06Z
VISAKHAPATNAM  9    12/09Z

BEARING AND DISTANCE  DIR  DIST  TAU
VISAKHAPATNAM        321  154  24

< LESS THAN 34 KNOTS
> 34-63 KNOTS
≥ MORE THAN 63 KNOTS

PAST 6 HOURLY CYCLONE POSITS IN BLACK
FORECAST CYCLONE POSITS IN COLOR
Cyclone on the day of crossing the coast
Hud Hud Cyclone.....

• In the living memory of Visakhapatnam, a VERY SEVERE CYCLONIC STORM WITH CORE OF HURRICANE WINDS ‘HUDHUD’ crossed at Visakhapatnam on 12.10.2014 by 1300 hrs.

• Max sustained wind based on Satellite Cloud imageries – 167-185 kmph.

• Peak wind in gust – 220 kmph at 1012 hrs from N-NW direction.

• In a period of 144 years (since the start of observatory at Maharanipet), a record rainfall in 24 hrs – 400.6 mm was recorded at Visakhapatnam airport by 13.10.2014 morning as against the previous recorded high on 20.10.1958.

• Yelamanchili recorded the highest rainfall of 47 cms in association with storm.
Hud Hud Cyclone.....

• Tidal Wave or Storm Surge did not affect Vizag
  – Off shore bathymetry / bottom topography or slope of coast is steep at Vizag.
  – Max Storm surge of 1.4 m above astronomical tide has been reported at Tide Gauge at Visakhapatnam.
  – But Sea Waves can erode beaches.

• Visakhapatnam coast is practically STORM RESISTANT COAST.

• Even a SUPER CYCLONE INTENSITY STORM cannot create a storm surge of 2 metres above MSL.

• Three districts are located on north of the Storm Centre.

• Effect on southern half of the system is practically nil except EG district.

• This is the usual phenomena of October Storms in this area.
Hud Hud Cyclone.....

• The Hudhud storm dissipated over East up on 14.10.2014.

• It travelled 2600 km – 7.10.14 to 14.10.14 – 8 days.
  – 1450 km over sea – 6 days.
  – 1150 km over land - 2 days.

• Wrong belief that hills of Visakhapatnam can protect it from Cyclones
  – Cyclones normally extends to a height of 6 km and violent winds prevail up to a height of 3 km.
  – Hills cannot protect from cyclones., but act as a barrier.
  – Can reduce its strength to some extent after crossing.
Hud Hud Cyclone…..

• Past two major storms of Vizag
  – 4.10.1983 – crossed near Bheemunipatnam and caused heavy rains from Srikakulam to Guntur District.
  – 16.6.1996 – Cyclonic storm with gale wind of 85 kmph speed due to which Koida in Khammam district recorded a record rainfall of 675 mm on 17.6.1996 with average rainfall of 20 cm between Vizag to Krishna districts.

Comparision with two storms of Hudhud
  - Those are associated with more rain.
  - Hudhud cyclone affected with Hurricane winds.

• In the past, Vizag Airport recorded a max wind of 146 kmph in gust at 18.42 hrs on 1.6.1967.
Districts Effected

Mainly ULBs in 3 districts are worst effected.

• VISAKHAPATNAM
• SRIKAKULAM
• VIZIANAGARAM

ULBs in 2 districts are partially effected

• EAST GODAVARI
• WEST GODAVARI
Day of Storm

- Trees started falling since early morning of 12.10.2014 Sunday.
- Traffic is affected.
- Collectorate – Control Room is affected and leaking.
- Power is suspended since 11.10.2014 late evening and is the major Casualty of the cyclone.
- Connectivity is affected and hence, could not talk to those in RCs
  - Satellite phones function only when you come out and speak and we cannot come out in stormy winds.
  - Except land line phone at one place at Collectorate Control room, there was no contact with State HQ.
- Repeater Stations for Wireless sets have also blown.
- Radar Station at Vizag becomes dysfunctional since noon
  - Hence, no chance of real time monitoring of movement.
RELIEF OPERATIONS

- 2.23 Lakh people were evacuated from low lying areas under precautionary measures and 310 relief camps were organized.
- 29.05 lakh food packets were distributed in the relief camps.
- 16,24,572 persons were provided with food and drinking water outside relief camps.
- 7073 fallen trees were cleared and restored the normalcy in transportation.
- Ensured restoration of normalcy in drinking water supply through tankers by drawing tankers and personnel from neighboring Districts.
- Monitored the restoration of Power supply to Cyclone hit areas by drafting about 2000 technical staff from other Districts of the State.
- Monitored the activities of cell tower operators for restoration of communication system.
- Due to falling trees / wall collapse / electrical pole collapse, 61 deaths were reported in 3 districts.
- Ex-gratia of Rs.5.00 lakh to the kin of the deceased.
LEADERS VISIT

Hon’ble CM visit:

- Hon’ble CM has rushed to the affected districts immediately on 12th itself and did aerial survey on 13th morning and arrived in Visakhapatnam and monitored the rescue and relief operations and gave necessary directions.
- Relentless visits of the Hon’ble CM to the worst affected areas of the cyclone and staying amongst the people in the crisis has boosted the confidence of the people.
- Hon’ble CM’s presence at the actual affected places of cyclone and personally assessing the damage/loss, inspired the community around to actively participate in the rehabilitation/restoration works in an unprecedented manner.

Hon’ble PM visit:

- Hon’ble Prime Minister during his visit on 14.10.2014 visited Visakhapatnam Airport and reviewed the situation and visited the affected areas.
- The visit of Hon’ble Prime Minister and instantaneous announcement of immediate relief of Rs. 1,000 crore have boosted the spirit of the people who have lost their kith and kin.
- The visit of Hon’ble Prime Minister has created a sense of confidence among the people of cyclone affected areas, who have cheered and greeted him even in such an hour of crisis.
HON’BLE PM’S VISIT
Strengths

• People of North Coastal AP have some experience and knowledge on calamities
• CM’s presence and his continuous monitoring
• Coordination among departments
• Got resources from various states
• GoI’s help in ERS for power
• People across the State and Country – ready to contribute
Lessons – Day of Storm

• To have robust connectivity system which works in wind speeds of more than 200 KM
  – Underground cabling to important locations.
  – At all Block / Mandal / Tahsil locations.

• Huge public awareness among public for major calamities – complacent attitude of public defers early movement to RCs.

• District heads of departments are on field – could not contact control room or collector for directions.

• Blue book for different speeds of cyclone and various locations are wanting.

• Details of availability of JCBs, Power Saws, Tippers, Trucks, etc – the inventory should be readily available.

• W.r.t Power, necessary reserve of Poles, Transformers, Etc should be available at all times – especially in the scenario of New State Formation.
EXTENSIVE DAMAGE DUE TO HUDHUD CYCLONE

- Heavy Gales and heavy rains resulted in extensive damage to public and private properties. Agriculture and allied sectors such as Horticulture, Fisheries, Animal Husbandry and Handloom and Textiles were affected severely.

- The public infrastructure like Roads, Buildings, Irrigation, Drinking water, Power, etc., were damaged drastically in these Districts.

- Mainly power sector was damaged. power supply and the entire communication system failed and people in Visakhapatnam and other affected areas survived without power supply for more than one week resulting in disruption of Drinking water supply.
LOSS OF LIFE & PROPERTY

- **Human Loss**: 61
- **No. of Persons injured**: 102
- **Total No.of Districts affected**: 4
- **Total No.of Mandals affected**: 138
- **Population affected**: 92.77 Lakhs
- **Total No. of Villages affected**: 7285
- **No. of People evacuated**: 222460
- **Total Cropped area affected**: 3.30 lakh ha.
- **Total value of estimated crop loss**: Rs. 2287 cr
- **Area with more than 50% crop damage**: Rs.3.26 lakh ha.
LOSS OF LIFE & PROPERTY

Agriculture

- Total cropped area damaged: 2,37,854.00 ha.
- Total value of estimated loss: Rs. 947.9 Cr

Horticulture

- Horticultural Lands affected (in Ha): 87984 Ha
- Total Value of Horticulture crop losses: Rs. 1339.23 Cr

Sericulture

- Estimated loss of Sericulture: Rs. 1.73 Cr

Animal Husbandry

- Big animals: 1406
- Small animals: 4468
- Poultry: 4634706

Fisheries

- No.of Boats and Nets Lost: 956
- Estimated: Rs.98.29 Cr

R&B Dept.

- Damages to R&B Roads (In Kms): 3880
- No. of Buildings Damaged: 53
- Estimated loss: Rs. 1111.80 Cr.
LOSS OF LIFE & PROPERTY

Panchayat Raj Dept :
- No. of PR Roads Damaged : 2274
- No. of PR Buildings Damaged : 375
- Estimated loss : Rs. 995.20 Cr.

Gram Panchayat Roads :
- GP internal roads Damaged (in KM) : 4831
- No of GP Buildings Damaged : 1108
- No of Street lights & Fixtures : 2.5 Lakhs
- Estimated loss : Rs. 410.00 Cr

MA & UD Dept :
- Municipal roads damaged(in Km) : 1345
- Municipal Buildings Damaged (Nos.) : 24138
- Damages in Municipal Street Lights/etc (Nos.) : 40614
- Estimated loss : Rs. 3621.56 Cr.

House Damages
- Total no. of houses damaged : 200673
- Estimated value of damaged houses : Rs.3236.32 crores
LOSS OF LIFE & PROPERTY

Rural Water Supply & Sanitation:
- Total no. of works damaged: 1163
- Estimated loss: 126.9

Irrigation:
- No of irrigation sources damaged: 3180
- Damages to Flood banks: 59
- Damages to buildings: 51
- Estimated loss: Rs. 317.05 Cr

School Education:
- Class rooms damaged: 1269
- Estimated Value of Damages: Rs. 51.29 Cr

Social Welfare:
- No. of hostel buildings damaged: 156
- Estimated loss: Rs. 4.93 Cr

BC Welfare:
- No. of hostel buildings damaged: 117
- Estimated loss: Rs. 40.87 Cr

Tribal Welfare:
- No. of hostel buildings damaged: 253
- Estimated loss: Rs. 52.01 Cr
LOSS OF LIFE & PROPERTY

Intermediate Education:
- No. of Govt. Jr. Colleges damaged: 38
- Estimated loss: Rs. 1.02 Cr.

Health Infrastructure:
- Estimated loss to VIMS, RIMS, DoH, APVVP:
- Medical Education and Family Welfare: Rs. 308.79 Cr.

Power Sector:
- Estimated loss to power sector: Rs. 1290.08 Cr.

AP Housing Corporation Ltd:
- No. of house buildings damaged: 15303
- Estimated loss: Rs. 5.07 Cr.

Revenue Infrastructure (Visakhapatnam)
- No. of buildings damaged: 4
- Estimated loss: Rs. 3.60 Cr

✓ Push Carts damaged: 824
✓ Rickshaws damaged: 3635
✓ No of Auto Rickshaws damaged: 160
LOSS OF LIFE & PROPERTY

Forest Dept. :
- Estimated loss to Parks, Plantations, Infrastructure, Natural Forests, APFDC Coffee etc., : Rs. 315.00 Cr.

Fire Services :
- Estimated loss : Rs. 1.39 Cr

Commandant 5th Btn, APSP :
- Estimated loss of damages : Rs. 3.89 Cr

AP Beverage Corporation Ltd :
- Estimated loss of depots & stock damaged : Rs. 0.80 Cr

Industries (Pvt):
- Damages to APIIC parks : Rs. 1275.00 Cr
- Damages to Private Industries : Rs. 6136.20 Cr
Key learnings

- Early Warning System
- Effective Response
- Planning & Coordination
- Resource Management
- Preparedness & Evacuation
- Organization
- Effective Communication
- Inter-departmental convergence
- External agencies involvement
Relief Camps

Relief Camp @ Kotkur, Chepaluppada Bheemunipatnam

Lunch arrangements in relief Camp @ Chepaluppada, Bheemunipatnam
Food Packets
Water Restoration
Drinking Water
• More tankers are mobilized from neighbouring districts

Food – in larger quantity were moved from other districts
• Air lifted from other District HQs
• Moved through roads
• Both rural and urban areas are covered
• Directly served by NGOs and various associations

Hospitals
• Made to run immediately

Buses and Autos
• Put on road at the earliest
Essential Commodities
Enumeration of damages

• Team from other districts deployed to enumerate
  – Housing Damages
  – Damages to Cattlesheds
  – Damages to petty shops / street vendors / rickshaws / push carts
  – Agricultural
  – Horticultural
  – Coffee
  – Animal Husbandry including poultry
  – Fisheries
Post enumeration checks

• All collected data are ported in website specially designed for this purpose
  – With photo of the individual damages
  – Aadhaar numbers
  – Bank accounts numbers

• Aadhaar validation is must

• The compensation is being released to the bank accounts of the individual directly on the cases where Aadhaar validation is done

• In case of no-aadhaar cases and no-bank account cases, the same are collected and then the amounts are released
HUDHUD PORTAL

HUDHUD DAMAGE ASSESSMENT & RELIEF MONITORING SYSTEM
Government of Andhra Pradesh

Updates
- an initial central assistance of 1000 Cr.
- Train services are partially restored in the affected districts and the road blockages are being removed on top priority.
- Full pledged power supply is expected in 36 hours in the affected districts.

ABOUT HUDHUD CYCLONE

Cyclone Hudhud pounded the coastal districts of Andhra Pradesh and Odisha with heavy rain and winds of almost 200 kmph on Sunday leaving a trail of devastation with Visakhapatnam where the very severe storm made landfall bearing the brunt.

Lakhs of people have been evacuated from towns and villages through which the cyclone has passed amid massive rain and wind. The cyclone is similar to last year’s Phailin that crossed the Odisha coast leaving behind a trail of destruction.
Unique Actions

• Huge quantity of vegetables are supplied from other districts to contain inflation.
• Under AP State Skills Up-gradation Mission, skilled manpower like electricians, plumbers, carpenters, etc. are supplied to necessary households for repairing free of cost duly maintaining a call centre.
• Power saws are supplied to villages to help them to cut the fallen trees and put the field for next crops.
• Under NREGA, per tree amount is calculated at district level and paid for the fallen trees to clear the field and under convergence, next horticultural crops are given.
• Under 75% subsidy, the seeds are supplied.
• The insurance companies are regularly reviewed on the claim settlement.
• The industry department has released the pending incentives and reimbursement amounts immediately.
Availability of Vegetables at Rytubazars
Delayed Actions

Telecom companies took lot of time to respond to the situation
  • They did not store enough fuel despite instructions from Cab Sec / CS / Collectors

Bank – ATMs took some time to restore to normalcy due to affect of the online service cables
Way ahead

• GoI help and assistance – liberal help as the damages deserve to declare this incident as National Calamity as more than a Crore population is affected
  – to rebuild the infra structure
  – To help the farmers
  – To help the tribal – PVTGs having their livelihood on Coffee
• Separate package for industries
• Robust Blue Book with regular drill for bigger cyclones on par with election procedures
DEVASTATION OF HUDHUD
DEVASTATION OF HUDHUD
DECCAN CHRONICLE
VISAKHAPATNAM
BEFORE & AFTER
HUDHUD CYCLONE
After Hud-Hud - Collectorate, Vizag
Visakhapatnam

Before Hud-Hud - G.V.M.C. Junction
After Hud-Hud - G.V.M.C. Junction
Before Hud-Hud - A.U. Gate
After Hud-Hud - A.U Gate
Before Hud-Hud - A.U. Junction
After HUDHUD
After HUDHUD
After Hud-Hud - Vizag View
Before Hud-Hud - Vizag Rly. Station Road
After Hud-Hud - Vizag Rly. Station Road
Before Hud-Hud - Andhra University
Visakhapatnam

After Hud-Hud - Andhra University
Before Hud-Hud - Kursura submarine
After Hud-Hud - Kursura submarine
Before Hud-Hud - Old Jail Road
After Hud-Hud - Old Jail Road
Before Hud-Hud - Kailasagiri
After Hud-Hud - Kailasagiri
Before Hud-Hud - Kailasagiri
After Hud-Hud - Kailasagiri
After Hud-Hud - Radar Station, Kailasagiri
Before Hud-Hud - Steel Plant view
After Hud-Hud - Steel Plant view
Before Hud-Hud - Steel Plant Panoramic view
After Hud-Hud - Steel Plant Panoramic view
Before Hud-Hud - Steel Plant Township Ponnaramic view
After Hud-Hud - Steel Plant Township Panoramic view
Before Hud-Hud - A.P. Tourism Boat
Before Hud-Hud - Lumbini Park, Vizag
After Hud-Hud - Lumbini Park, Vizag
Before HUDHUD
After HUDHUD
Before HUDHUDP
After HUDHUD

After Hud-Hud - Dewali in Vizag
DEVASTATION OF HUDHUD
Mandal: Anantagiri
Village: Kothuru
VAA ROAD km 69/10
Nature of damage: Breach
Mandal: Anantagiri
Village: Kothuru
VAA ROAD km 69/10
Nature of damage: Breach
Thank You