CASE STUDY- DEEPWATER HORIZON INCIDENT

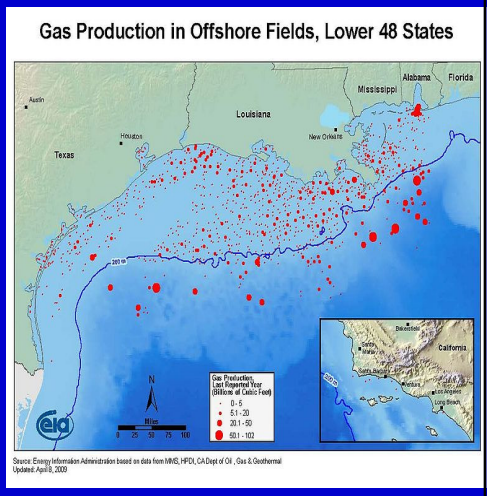
Commandant SK Singh
Pollution Response Team (East)
chennai

BACKGROUND

- US IS THE LARGEST ENERGY CONSUMER IN THE WORLD
- 60 PERCENT OF OIL IS IMPORTED
- PETROLEUM IN US HAS BEEN A MAJOR INDUSTRY EVER SINCE THE OIL DISCOVERY IN PENNSYLVANIA IN 1859
- US IS THE THIRD LARGEST OIL PRODUCER, PRODUCING 8.5 MILLION BARRELS OIL AND NATURAL GAS PER DAY.

BACKGROUND

- THE LEADING OIL PRODUCING AREAS ARE THE FEDERAL ZONE OF GULF OF MEXICO PRODUCING 1.5 MILLION BARRELS PER DAY FOLLOWED BY TEXAS, ALASKA AND CALIFORNIA



BACKGROUND

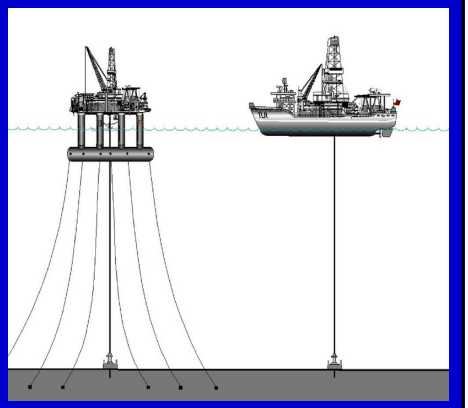
- ABOUT 30 PERCENT OF OIL AND 23 PERCENT OF GAS PRODUCED IN UNITED STATES COMES FROM FEDERAL OUTER CONTINENTAL SHELF,
- MOST OF THAT PRODUCTION IS FROM GULF OD MAXICO.
- DEPARTMENT OF INTERIOR'S MINERALS MANAGEMENT SERVICE ESTIMATES DEEP WATER REGIONS OF GULF OF MAXICO MAY CONTAINS 56 BILLION BARRELS OF OIL EQUIVALENT
- ENOUGH TO MEET U.S. DEMAND FOR 7-1/2 YEARS AT CURRENT RATES.

OIL DRILLING DEBATES

- THE US OFFSHORE DRILLING DEBATE HAS BEEN A SERIOUS POLITICAL ISSUE FOR THE PAST 28 YEARS.
- THE OFFSHORE AREAS ARE LEASED TO COMPANIES BY MINERAL MANAGEMENT SERVICES
- SAFETY AND ENRVIRONMENT CONCERN FROM STATES
- SHARING OF REVENUE ISSUES
- A BAN WAS IMPOSED IN EARLY NINETIES –EXCEPT IN GULF OF MEXICO
- US PRESIDENT LIFTED THE BAN ON 31 MAR 2010 TO REMOVE DEPENDENCY ON FOREIGN OIL
- POST DEEPWATER HORIZON INCIDENT THERE IS A MORATORIUM ON DRILLING IN ALL AREAS

DEEPWATER HORIZON

- IT IS AN ULTRA DEEPWATER DYNAMICALLY POSITIONED, SEMI-SUBMERSIBLE DRILLING RIG
- IT IS 121 M LONG AND 78 MTRS WIDE



DEEPWATER HORIZON

- IT WAS BUILT BY HYUNDAI HEAVY INDUSTRIES, KOREA IN 2001
- THE RIG IS OWNED BY TRANSOCEAN AND LEASED TO BP TILL 2013
- THE RIG CAN OPERATE AT MAX WATER DEPTH OF 2400 METRES AND DRILL UPTO 10000 METRES

DEEPWATER HORIZON

- THE GROSS TON IS 32,500 TONS
- THE RIG CAN BE TRANSPORTED BY HEAVY LIFT VESSELS
- THE RIG CAN OPERATE IN SEA STATE 7
- THE STABILITY IS CONTROLLED THROUGH COMPUTER CONTROLLED DYNAMIC TRIMMERS
- IT HAD ACCOMMODATION FOR 140 CREW AND CARRIED 4000 TONS OF FUEL OIL FOR OWN CONSUMPTION

INCIDENT

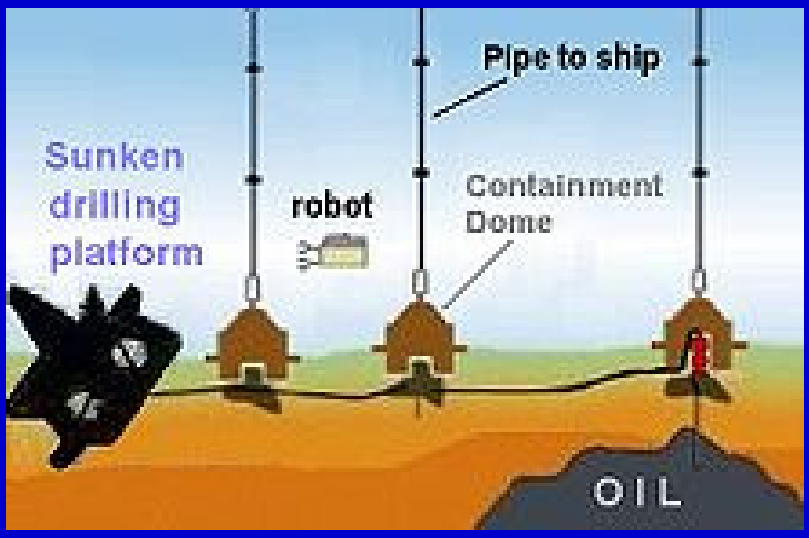
INCIDENT

- AT ABOUT 2000 HRS LOCAL TIME ON 20 APR 10, AN EXPLOSION OCCURRED ON THE RIG DUE TO HEAVY BUILD OF GAS PRESSURE AND FAILURE OF BLOW OUT PREVENTER.
- THE RIG CAUGHT FIRE
- 126 CREW WERE EMPLOYED AND 115 WERE RESCUED
- SUPPORT VESSELS SPRAYED THE RIG WITH WATER
- DEEP WATER HORIZON SANK IN DEPTH 1500 METRES
- THE RISER PIPE SNAPED AT THREE PLACES LEADING TO CONTINUOUS OIL ESCAPE

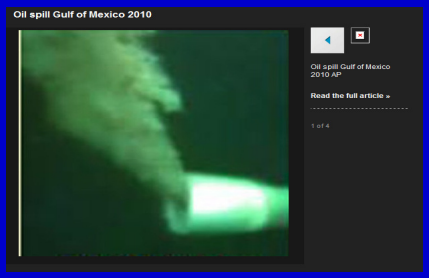
INVESTIGATION

- USCG AND MINERALS MANAGEMENT SERVICE (MMS) LAUNCHED AN INVESTIGATION ON POSSIBLE CAUSES OF EXPLOSION
- MMS FOUND THERE HAVE BEEN 39 FIRES IN GULF OF MAXICO IN 2009
- NUMEROUS SPILLS AND FIRE WERE REPORTED FROM DEEPWATER HORIZON
- ONE SERIOUS INCIDENT OF DEEPWATER HORIZON REPORTED IN 2008 WHERE 77 CREW WERE EVACUATED AFTER THE RIG LISTED OVER

CONTAINMENT OF OIL LEAKS



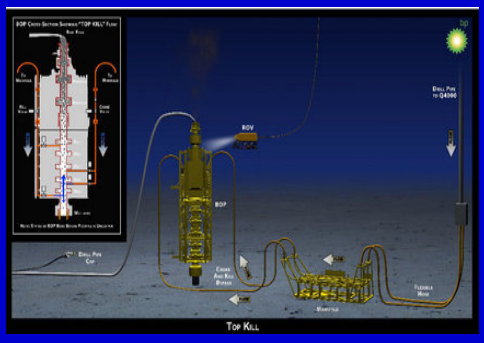
EFFORTS TO CONTAIN OIL DISCHARGE

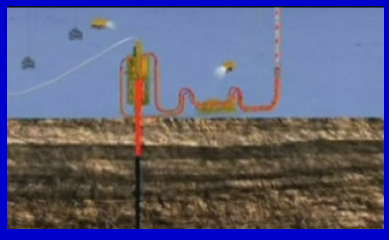


TOP HAT

INSERTION INTO RISER PIPES

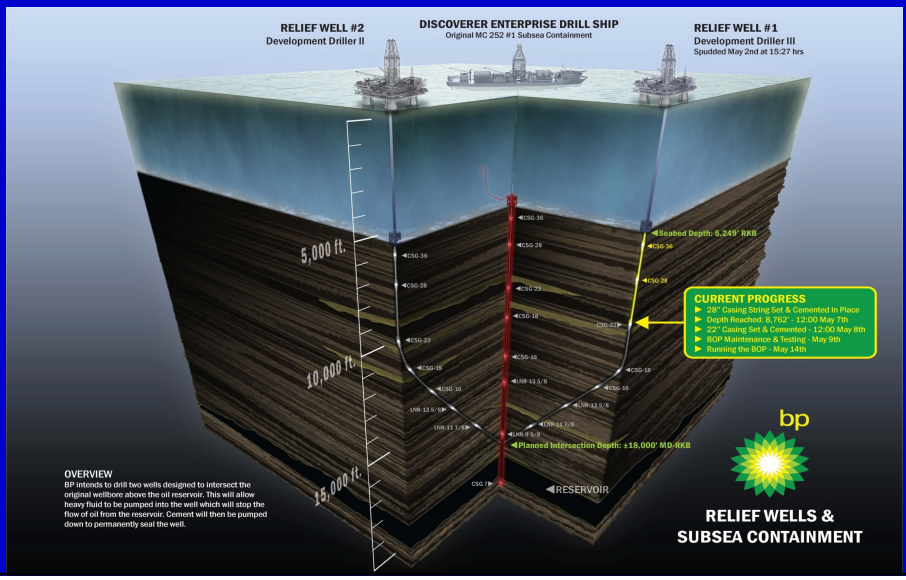
TOP KILL





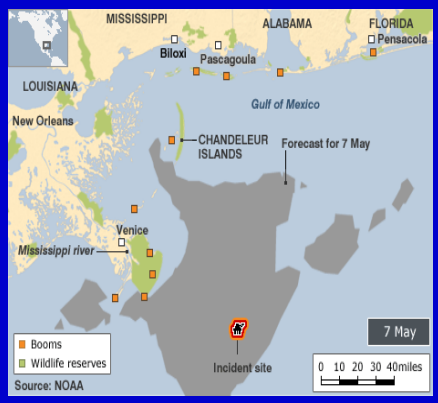
DOME OVER BOP

DRILLING OF RELIEF WELL

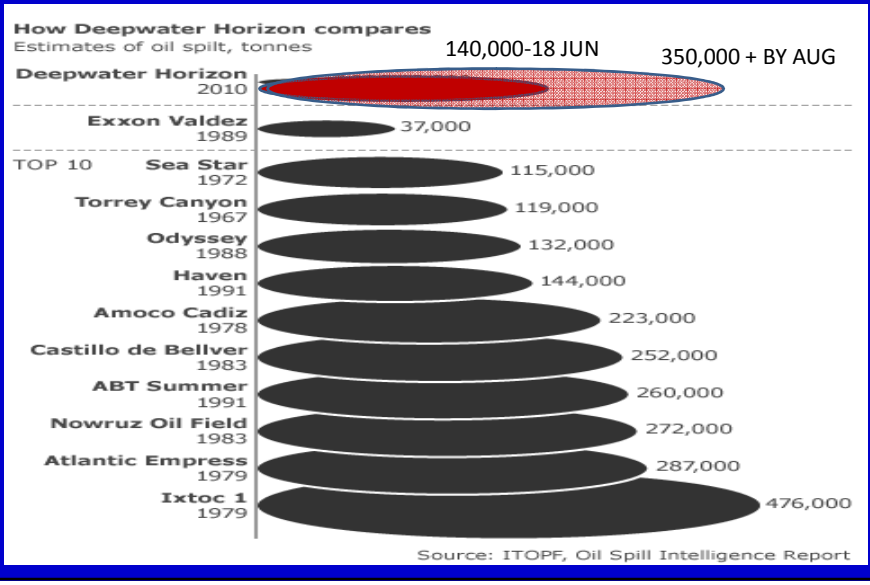


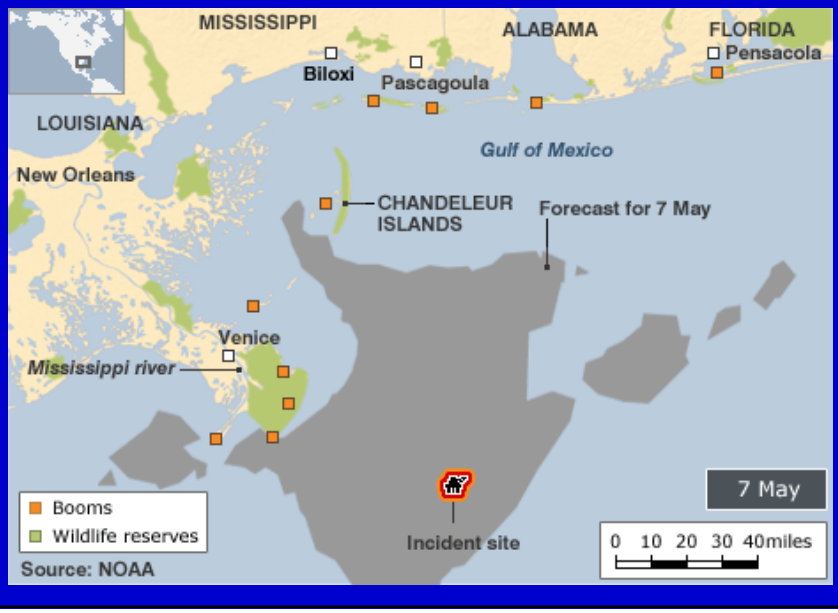
OIL SPILL

- ORIGINALLY ESTIMATED 1000 BARRELS A DAY
- REVISED ESTIMAT 5000 BARRELS A DAY
- FURTHER ESTIMATED 35000 BARRELS A DAY
- BY 15 JUN OIL SPREAD WAS 6400 SQ MILES
- IT CROSSED THE EXXON VALDEZ SPILL SIZE OF 40,000 TONS



SPILL SIZE COMPARISON





OIL SPILL RESPONSE

- SHORELINE PROTECTION
- OIL SPILL RECOVERY IN SHALLOW AREAS
- APLLICATION OF OSD IN DEEP SEA AREAS
- IN-SITU BURNING AT SEA UNDER SUPERVISION OF USCG
- UTILISATION OF ALL AVAILABLE BOOMS TO PROTECT THE SHORELINES- 900 KM
- UTILISATION OF ALL AVAILABLE CRAFT – EVEN FISHING VESSEL FOR SKIMMING OPERATION

MOBILISATION OF BOOMS

BOOM DEPLOYMENT

BOOM DEPLOYMENT

BOOM DEPLOYMENT

SHORELINE PROTECTION

SHORELINE PROTECTION

OIL RECOVERY AT SEA

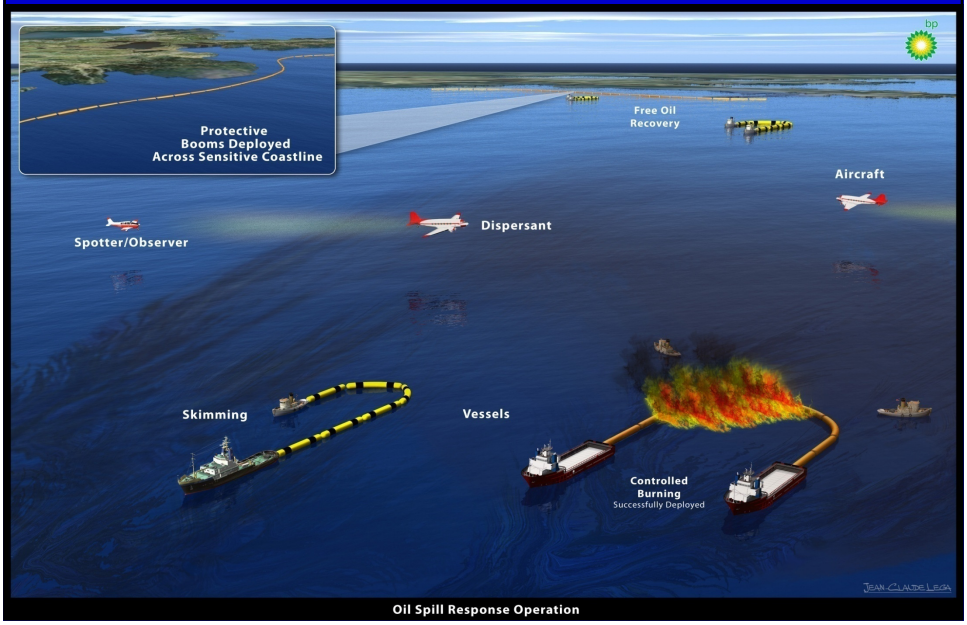
SKIMMING OIL USING TRAWLERS

SKIMMING USING FISHING VESSEL

IN –SITU BURNING

APPLICATION OF OSD

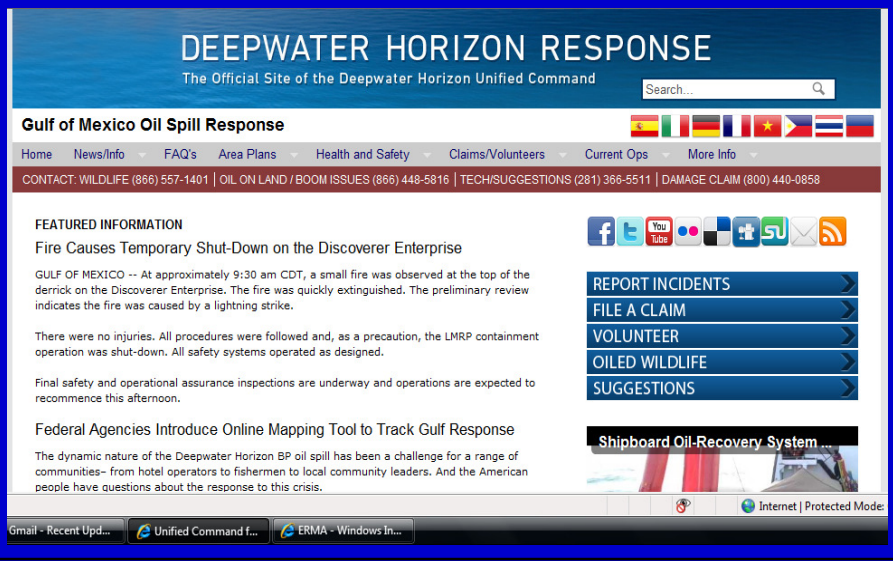
OVERALL PICTURE



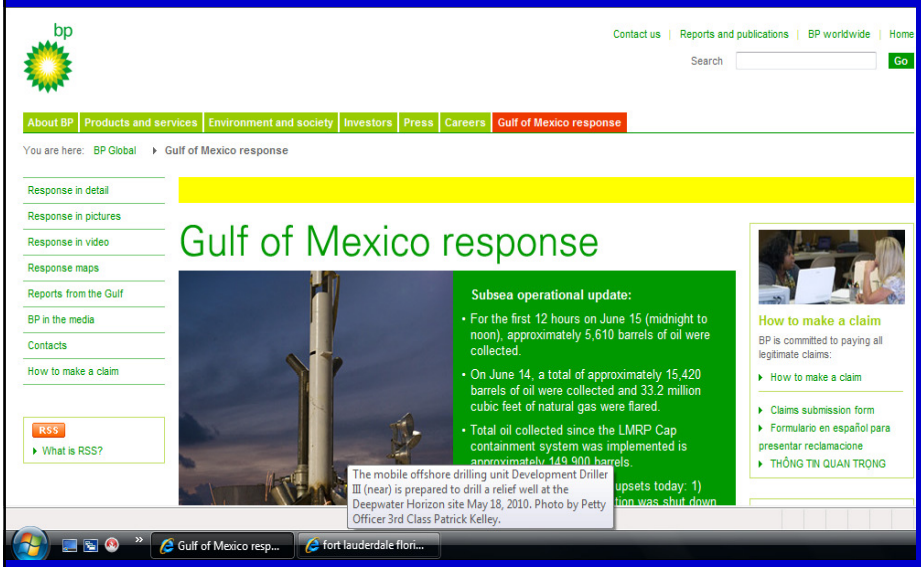
COORDINATION ISSUES

- AGENCIES INVOLVED- WHITE HOUSE, CONGRESS, EPA, HOMELAND SECURITY, INTERIOR, USCG, US NAVY, US ARMY NOAA, NATIONAL GUARDS, FISHERIES & WILDLIFE DEPT
- WEBSITE- www.deepwaterresponse.com CREATED
- JOINT INFORMATION CENTRE ESTABLISHED FOR PRESS BRIEFING
- HOTLINE FOR PUBLIC FOR INFORMING SIGHTING OF OIL SPILL
- HOTLINE FOR WILD LIFE PROTECTION
- CLAIMS AND COMPENSATION CAMPS ESTABLISHED BY BP
- USCG WEBSITE BLOCKED SINCE 02 MAY 10

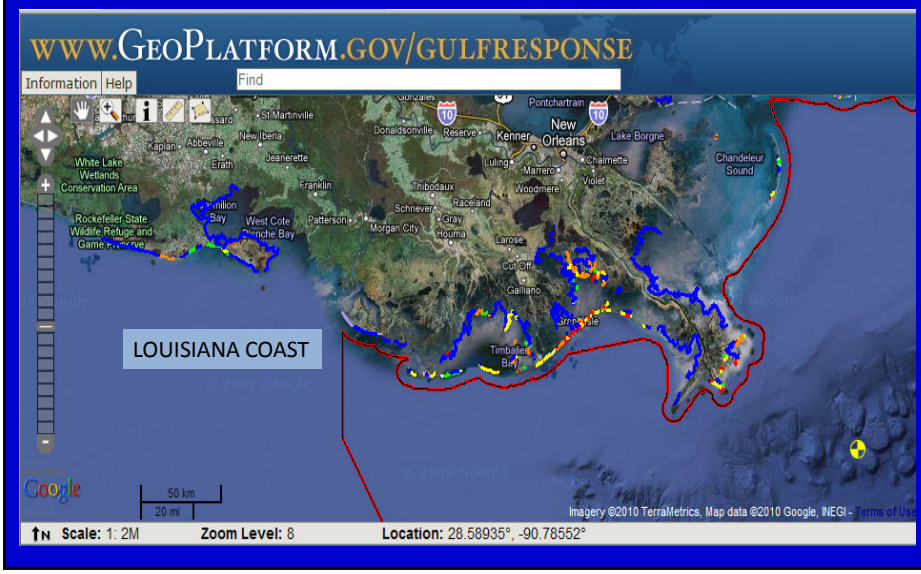
DEDICATED WEBSITE



WEBSITE OF BP



GOVERNMENT INTERACTIVE -WEBSITE



FACT SHEET OF THE INCIDENT

- APPROXIMATELY 47,000 PEOPLE AND 7,000 VESSELS WERE INVOLVED IN THE RESPONSE WORK
- EVEN TILL NOW ABOUT 900 PERSONNEL ARE STILL ENGAGED IN RESPONSE ACTIVITIES IN THE REGION.
- IN TOTAL, DURING THE CRISIS 9,100,000 FEET (2,800 KM) ONE-TIME USE SORBANT BOOMS AND 4,200,000 FEET (1,300 KM) OF CONTAINMENT BOOMS WERE DEPLOYED
- ALTOGETHER, 1.84 MILLION US GALLONS (7,000 M^3) OF DISPERSANTS WERE USED; OF THIS 771,000 US GALLONS (2,920 M^3) WERE USED SUBSEA AT THE WELLHEAD

FACT SHEET OF THE INCIDENT

- ABOUT33,000,000 US GALLONS (120,000 M^3) OF TAINTED WATER WAS RECOVERED, WITH 5,000,000 US GALLONS (19,000 M^3) OF THAT CONSISTING OF OIL. BP ESTIMATED 826,800 BARRELS (131,450 M^3) OF OIL HAD BEEN RECOVERED OR FLARED
- THE DISASTER COSTED BP AN ESTIMATED $32 BILLION TO DATE, INCLUDING $14 BILLION IN CLEANUP COSTS.
- IT ALSO PAID OUT NEARLY $8 BILLION IN COMPENSATION TO GULF COAST RESIDENTS
- PAID $4 BILLION FINE FOR THE DEATHS ON THE RIG.

INDIAN SCENARIO

INDIAN SCENARIO

- MOPNG IS COORDINATING MINISTRY FOR OFFSHORE OIL AND GAS
- MOEF PROVIDES APPROVAL FOR ENVIRONMENT CLEARANCE
- OIL INDUSTRY ESTABLISH ONLY TIER-I RESPONSE, FOR TIER-II FEW COMPANIES HAVE AGREEMENT WITH OSRL SINGAPORE
- TOTAL AVAILABLE BOOMS LESS THAN 18 KM (ICG 4.6 KM)

INDIAN SCENARIO

- UNLIKE OIL SPILL FROM SHIPS – NO INTERNATIONAL CONVENTION GOVERNS OIL SPILL LIABILITY AND COMPENSATION
- NO LIMITATION OF LIABILITY APPLIES
- OIL COMPANIES WILL BE TOTALLY RESPONSIBLE FOR CLEAN-UP AND COMPENSATION

INDIAN COAST GUARD

- PRESERVATION AND PROTECTION OF MARINE ENVIRONMENT AND PREVENTION AND CONTROL OF POLLUTION (P3 C)IN INDIAN WATERS IS A STATUTORY DUTY OF THE COAST GUARD UNDER THE COAST GUARD ACT 1978
- COAST GUARD IS THE CENTRAL COORDINATING AUTHORITY (CCA) FOR OIL POLLUTION RESPONSE IN INDIAN WATERS
- COAST GUARD PUBLISHED AND PROMULGATED THE NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN (NOS-DCP) IN JUL 1996.

INDIAN COAST GUARD

- THE NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN PROVIDES A FRAMEWORK FOR RESPONDING PROMPTLY AND EFFICIENTLY TO MARINE POLLUTION INCIDENTS BY DESIGNATING COMPETENT NATIONAL AND LOCAL AUTHORITIES TO RESPOND TO MARINE POLLUTION INCIDENTS WHEREVER THEY OCCUR IN INDIAN WATERS.
- THE RESPONSIBILITIES OF NOS-DCP PARTICIPANTS ARE CLEARLY DEFINED IN THE NATIONAL PLAN ADMINISTRATIVE ARRANGEMENTS.
- ALL OIL HANDLING AGENCIES AND OIL INDUSTRY ARE REQUIRED TO HAVE THEIR OIL SPILL CONTINGENCY PLAN IN PLACE ALONG WITH TIER-I RESPONSE EQUIPMENT STOCKPILE AS PER THEIR THREAT PERCEPTION.

WAY AHEAD MEASURES

- ESTABLISHMENT OF OIL SPILL RESPONSE CENTRES FOR MORE THAN 700 TONS UNDER A MOU
- IMPORTANCE TO SHORE-LINE PROTECTION AND AVAILABILITY OF BOOMS ON SHORT NOTICE
- INNOVATION TO CONVERT VESSELS OF OPPORTUNITY INTO PR VESSELS
- ON-SHORE LOGISTICS TO RECEIVE WASTE OIL AND ITS DISPOSAL
- SUITABLE LEGISLATION FOR CLAIMS AND COMPENSATION FOR OIL SPILL ARISING FROM OFFSHORE INSTALLATIONS

QUESTIONS???

THANK YOU
for
YOUR ATTENTION

INCIDENT RESPONSE

- INCIDENT RESPONSE IS AN ORGANIZED APPROACH TO ADDRESSING AND MANAGING THE AFTERMATH OF A SECURITY BREACH OR EVENTUALITY (ALSO KNOWN AS AN INCIDENT). THE GOAL IS TO HANDLE THE SITUATION IN A WAY THAT LIMITS DAMAGE AND REDUCES RECOVERY TIME AND COSTS. AN INCIDENT RESPONSE PLAN INCLUDES A POLICY THAT DEFINES, IN SPECIFIC TERMS, WHAT CONSTITUTES AN INCIDENT AND PROVIDES A STEP-BY-STEP PROCESS THAT SHOULD BE FOLLOWED WHEN AN INCIDENT OCCURS

RESPONSIBILITY FOR RESPONSE

- Lead Agency
- Resource Agency
- Industry

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RESPONSE ORGANISATIONS

- NATIONAL CONTINGENCY PLAN
- LOCAL CONTINGENCY PLAN

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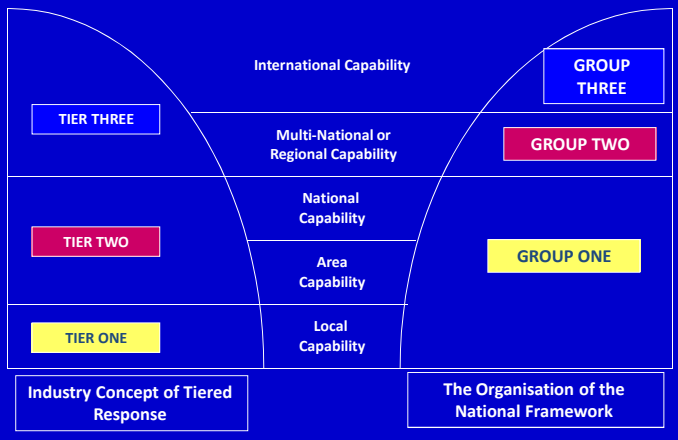
THE GLOBAL FRAMEWORK FOR POLLUTION RESPONSE



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TIERED RESPONSE APPROACH

- Tier 1: Local resources
- Tier 2: Local plus some external resources
- Tier 3: For spills of national interest

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RISK ASSESSMENT

- Historical
- Sources
- Oil Types
- Potential Size
- Scenarios

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SENSITIVITY MAPPING

- Fisheries
- Mariculture
- Birds & other wildlife
- Wetlands
- Power plants
- Desalination plants
- Amenity beaches
- Yachting / recreational areas
- Cultural / archeological sites
- Shoreline types

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PRIORITIES FOR PROTECTION

- Where to deflect
- Local knowledge
- Practicality
- Competing demands
- Seasonal variations / Varying priorities

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RESPONSE MEASURES

- Mitigate at source
- Cargo removal
- Recover at sea
- Dispersants at sea
- Shoreline clean-up
- Containment

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INITIAL RESPONSE ACTIONS

- Contact polluter
- Will polluter respond
- Will polluter pay
- Are costs reimbursable
- Activate contingency plan
- Call-out

continued.

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INITIAL RESPONSE ACTIONS

- Assemble team
- Gather information
- Communications system
- Prepare SITREP
- Assign responsibilities
- Assess health and safety risks

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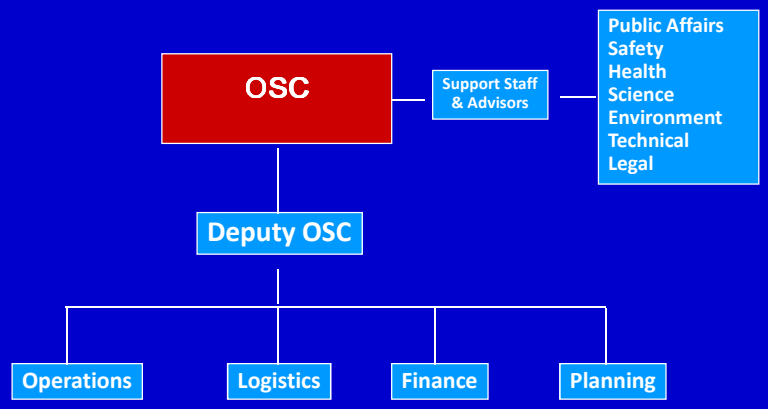
TYPICAL LOCAL RESPONSE TEAM ORGANISATION



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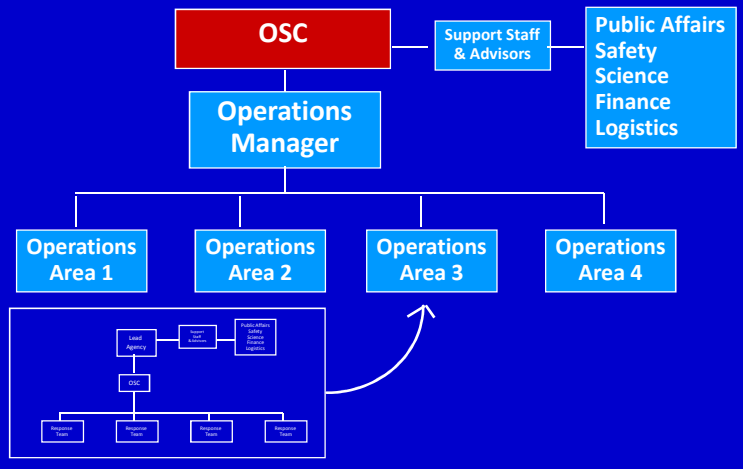
INCORPORATION OF LOCAL RESPONSE ORGANISATION INTO A LARGER (NATIONAL OR AREA) ORGANISATION



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COMMAND AND CONTROL

- Gathering information
- Response decisions
- Availability of resources
- Command centres
- Length of response
- Communications
- Public information

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COMMAND CENTRE COMPONENTS

- Communications
- Information display boards
- Charts
- Oil sighting reports
- Weather reports
- Situation reports / updates
- Equipment status - location
- Security

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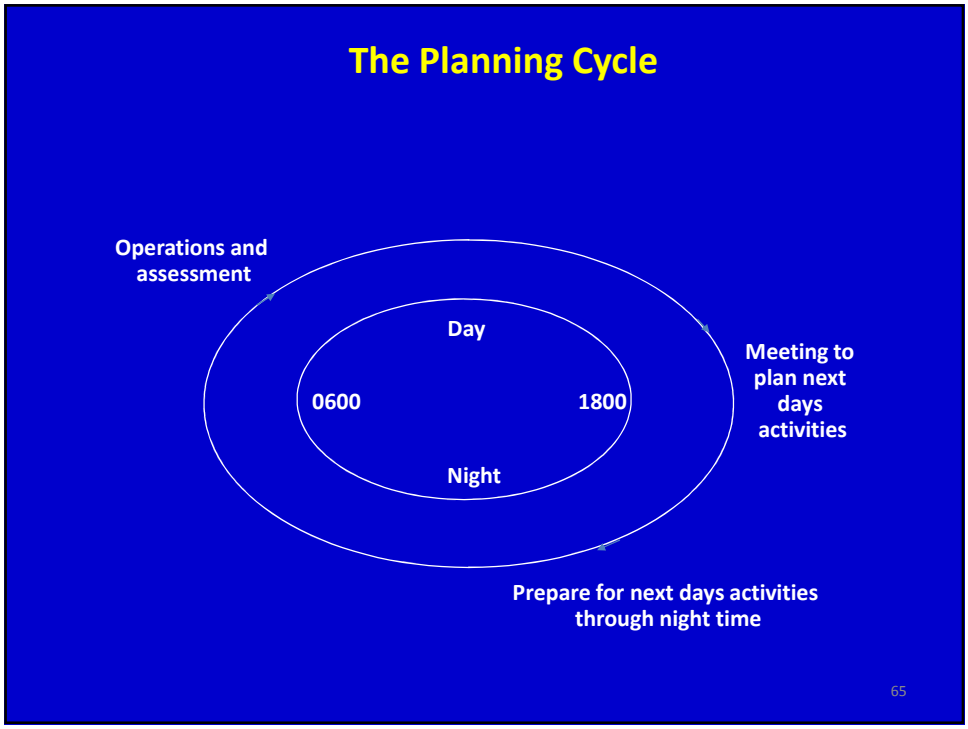
The Planning Cycle
Operations and assessment
Day
0600
1800
Night
Meeting to plan next days activities
Prepare for next days activities through night time
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