

Source Strength

ADIOS 3

“The philosophy of ADIOS₃ is to apply Occam's razor ruthlessly”

Debra. Simecek-Beatty@noaa.gov

ADIOS – Source Strength

1. Instantaneous release
2. Continuous release
3. Contained

4. Stranded Vessel
5. Pipeline
6. Well blowout
7. Aerial observations

More
Options

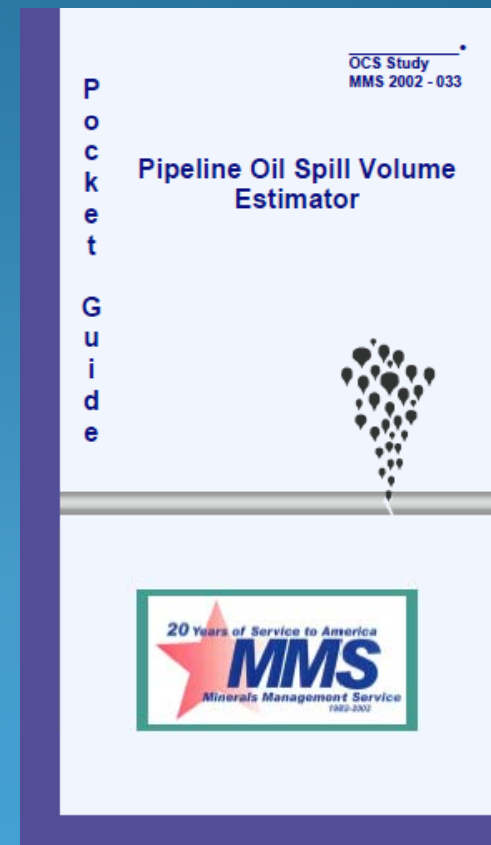
Stranded Vessel

- Gravity outflow
- Water ingestion
- Air ingestion
- Tidal changes on a stranded vessel
 - Pressure balance calculation at each tidal height



Pipeline (limited input data)

- ADIOS calculates assuming a single horizontal pipeline with a full rupture
 - Pipeline internal diameter
 - Pipeline length
 - Pipeline pressure
 - Gas-oil-ratio
 - Water depth at rupture location
 - Pipeline flow rate
 - Time before shut-in



Pipeline (more input data)

Single horizontal pipeline segment and a full break or rupture but more information is available.

- Pipeline temperature
- Ambient pressure
- Ambient temperature
- Gas-oil ratio
- Oil density
- Gas density



Well blowout - Discharge

- ADIOS calculates using radial single phase liquid version of Darcy's Law (DWH Plume Team July 2010 report)
 - Reservoir boundary pressure
 - Pressure inside at bottom of well
 - Permeability to reservoir fluid
 - Net reservoir thickness
 - Liquid formation factor
 - Viscosity of reservoir fluid
 - Well bore radius
 - Reservoir skin damage



Well blowout – Subsurface Plume (*Lex parsimoniae*)

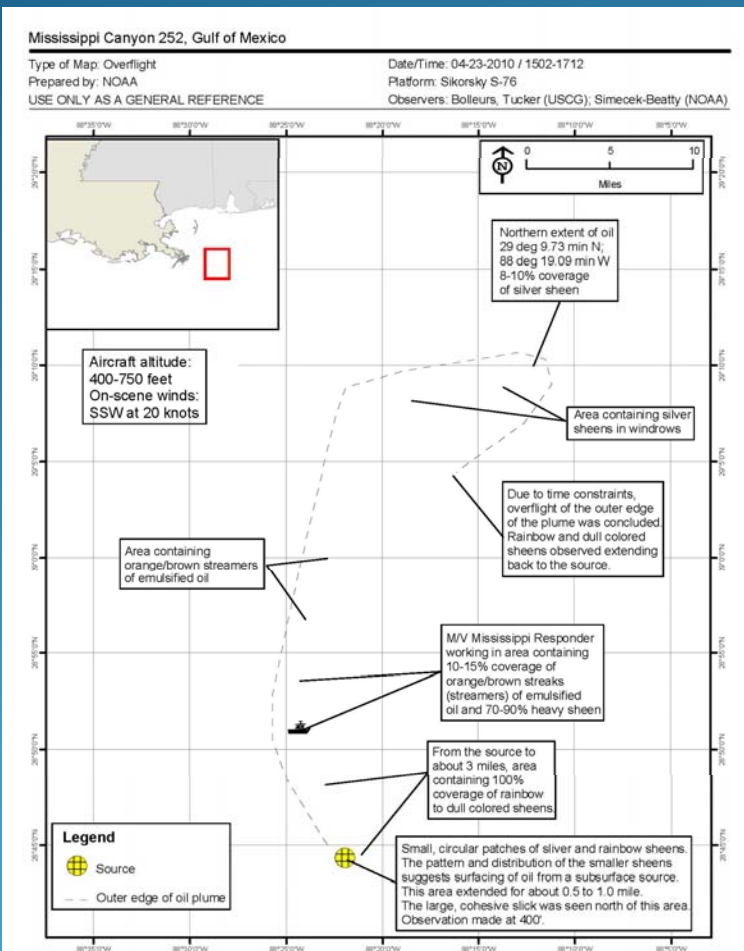
- Simple plume model
 - McDougal (1978) ???



- Buoyancy
 - Droplet size distribution (Aliseda, 2012?)
- Methane Hydrates
 - Bishnoi et al (1989) ????

Aerial Observation - Oil Volume Estimate

Based on Color, Percent Coverage and Area



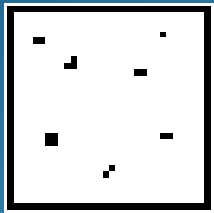
Oil Volume Estimate - Color

ASTM F2534-06

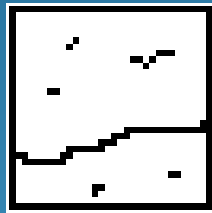
Visually Estimating Oil Spill Thickness on Water

	Minimum Observable Thickness	Silvery	Rainbow	Dark Rainbow	Dark
Typical Range	0.08	0.1	0.5	3	>3
	0.05 to 0.2	0.1 to 0.3	0.2	to 3	>3

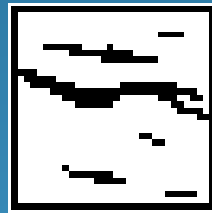
Oil Volume Estimate - Coverage



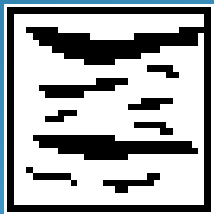
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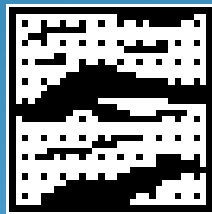
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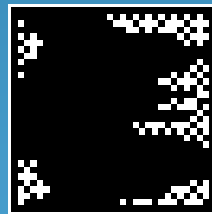
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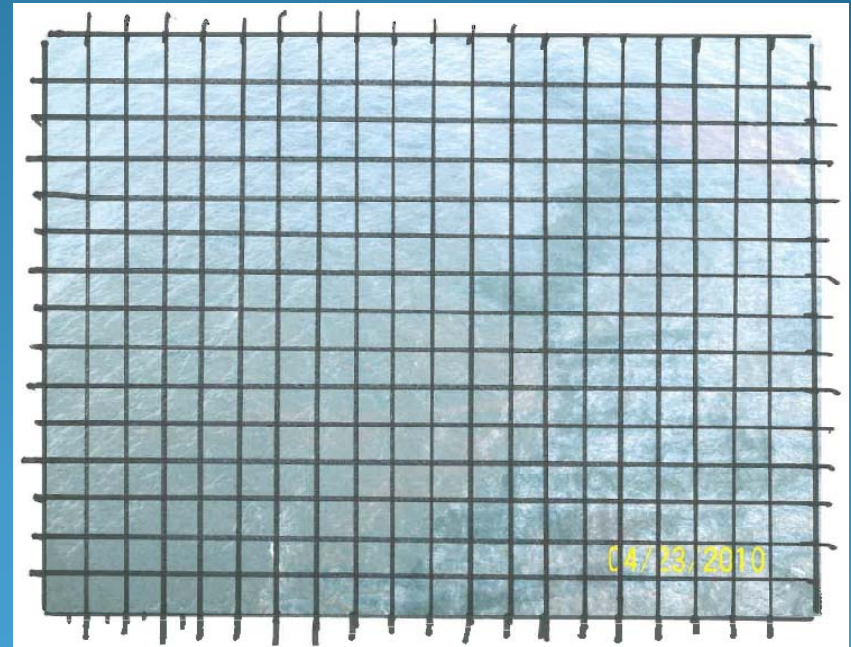
23%



31% black oil
69% Sheen



74% black oil
26% sheen



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- Well Blowout
- Pipeline
- Aerial Observations