Environmental & Operational Monitoring Technologies for In-Situ Burring

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Technology<> Engineering<> Environment

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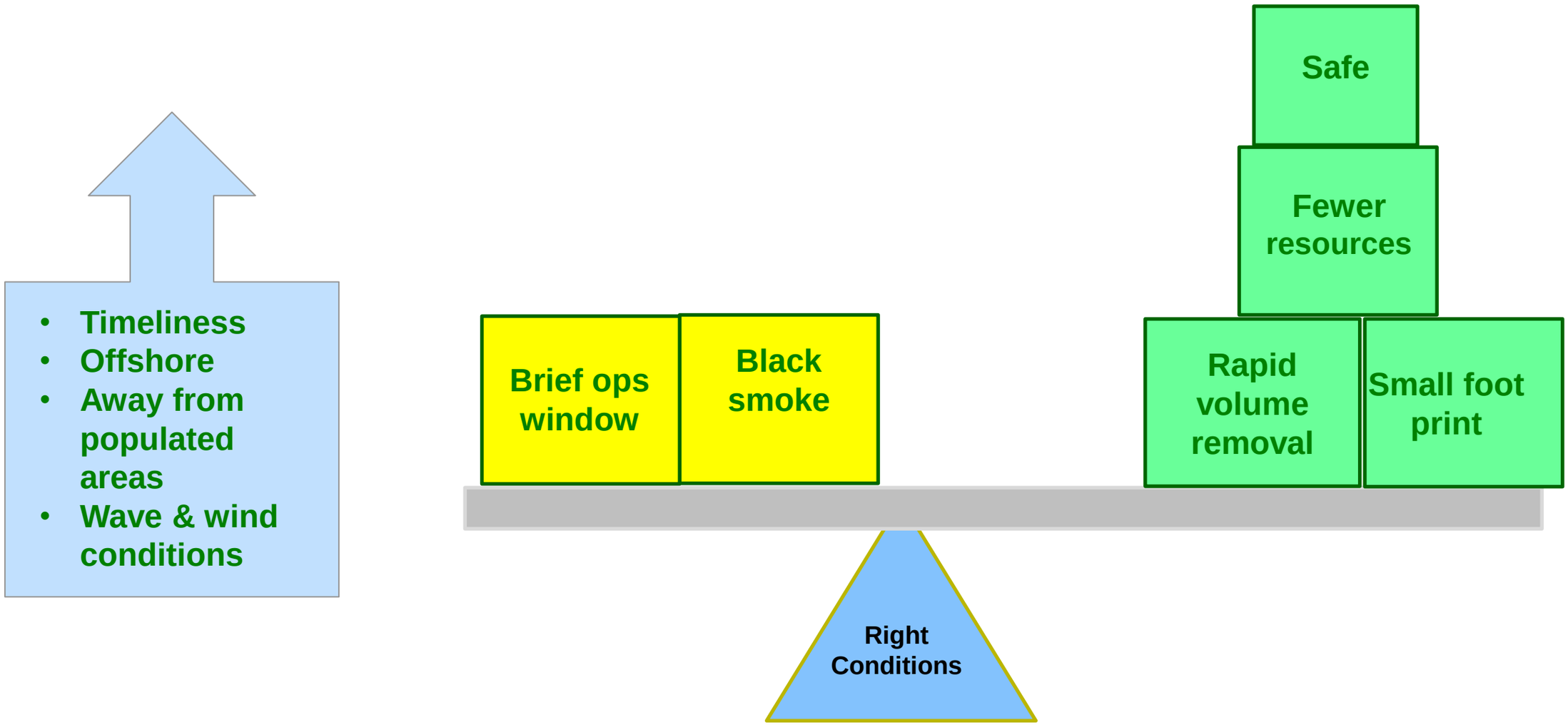
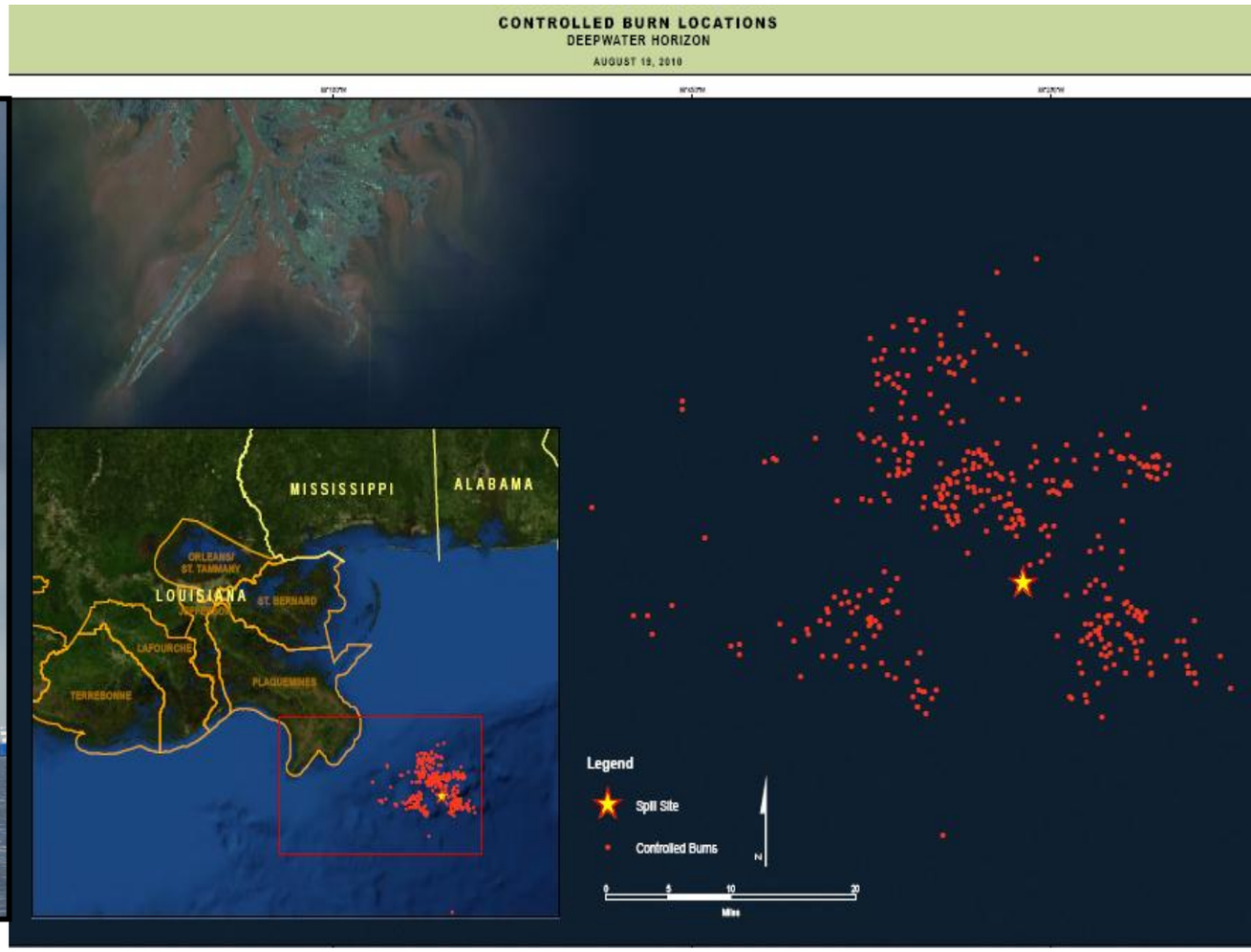
Weighing the Environmental Cost/Benefits of ISB

Under the "right" conditions, ISB has a favorable Net Environmental Benefit



DWH-ISB Metrics

- 411 Successful Burns
- More than 300,000 bbl. Removed
- Average burn 750 bbl.
- Average Duration 50 Minutes



ISB Monitoring Components

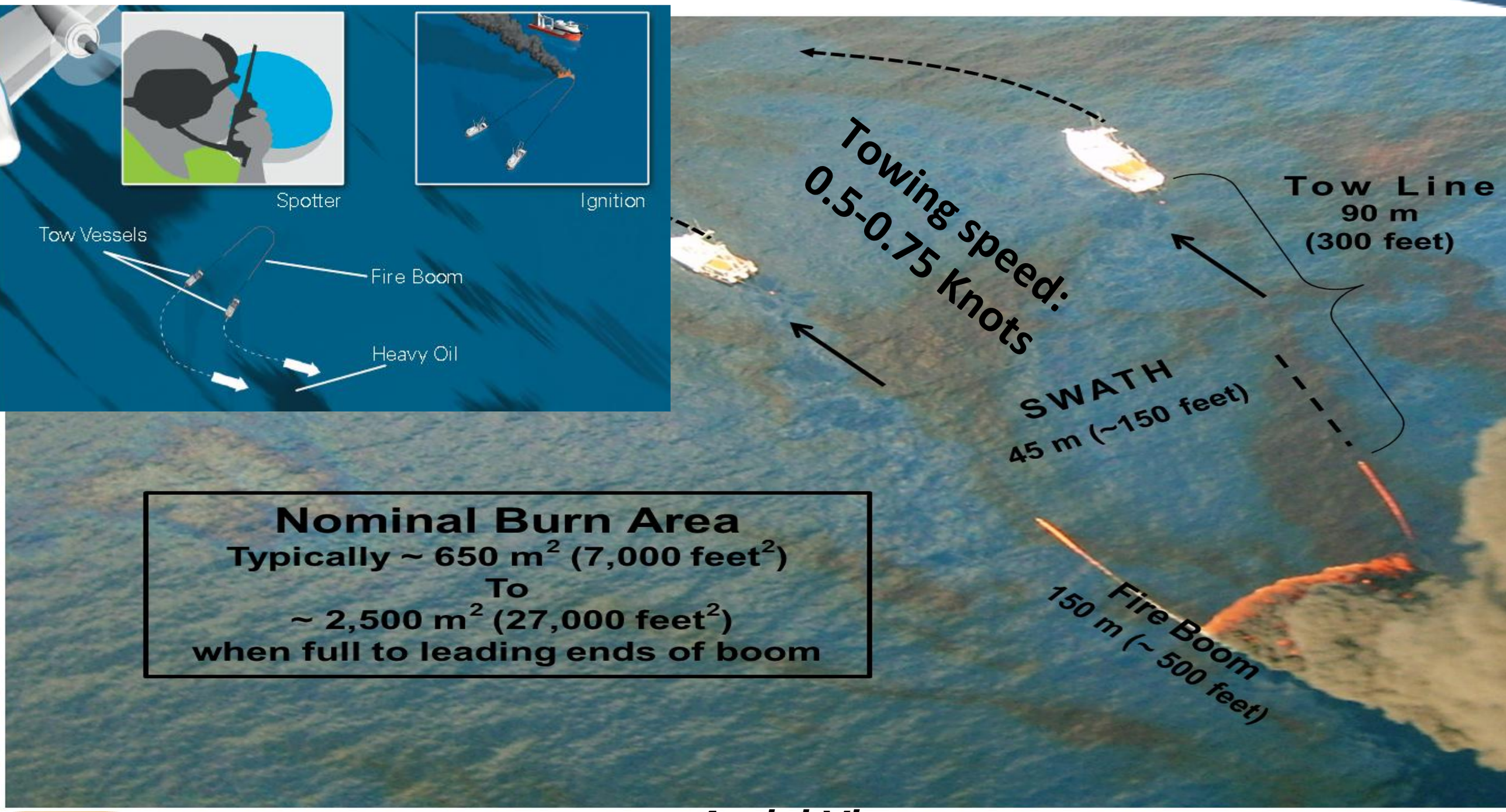
Directing Operations

Estimating Burn Volume

VOCs & Air Quality

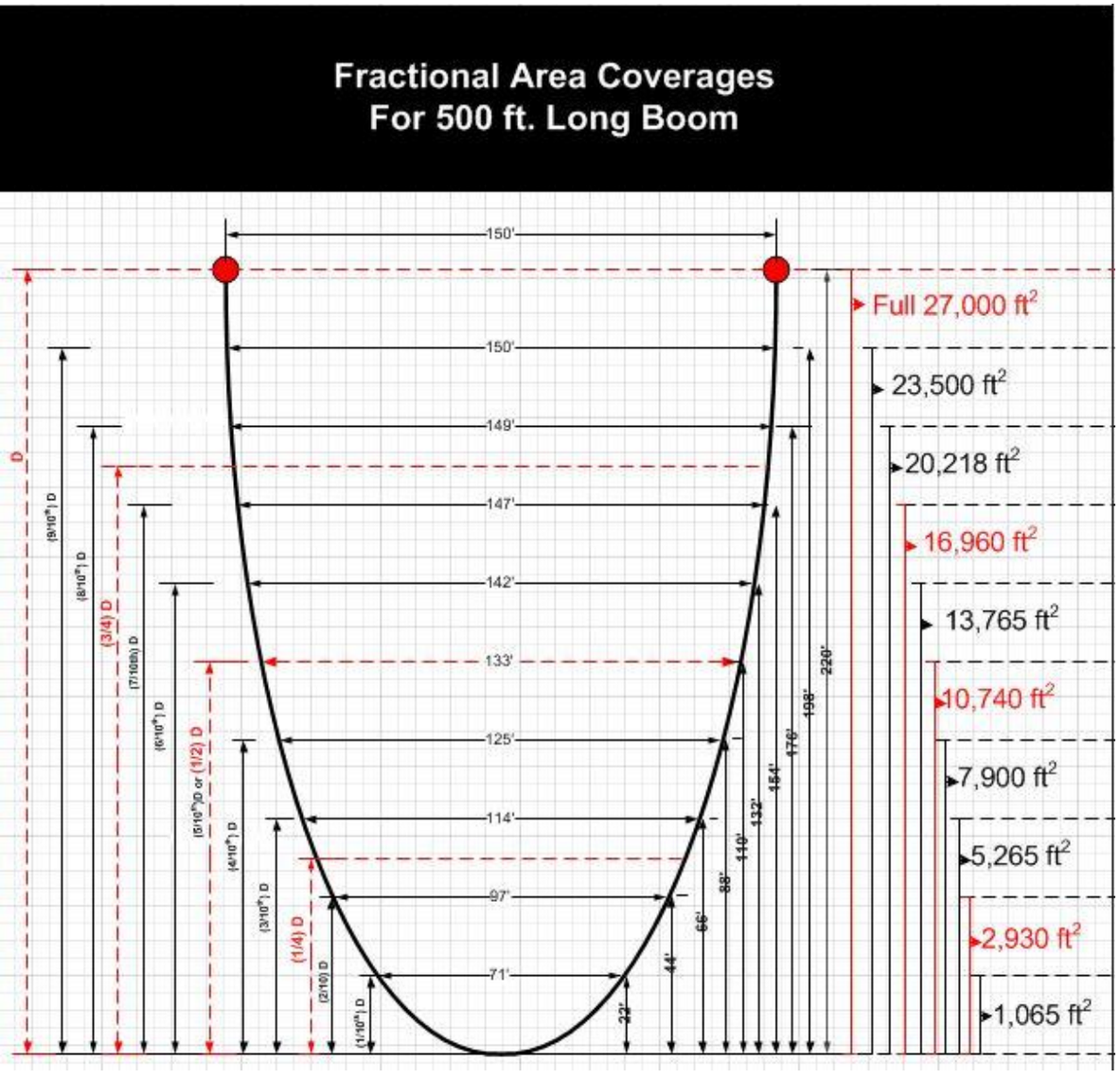
Burn Residue

ISB-OPS Monitoring



Aerial View

Burn Area Estimation

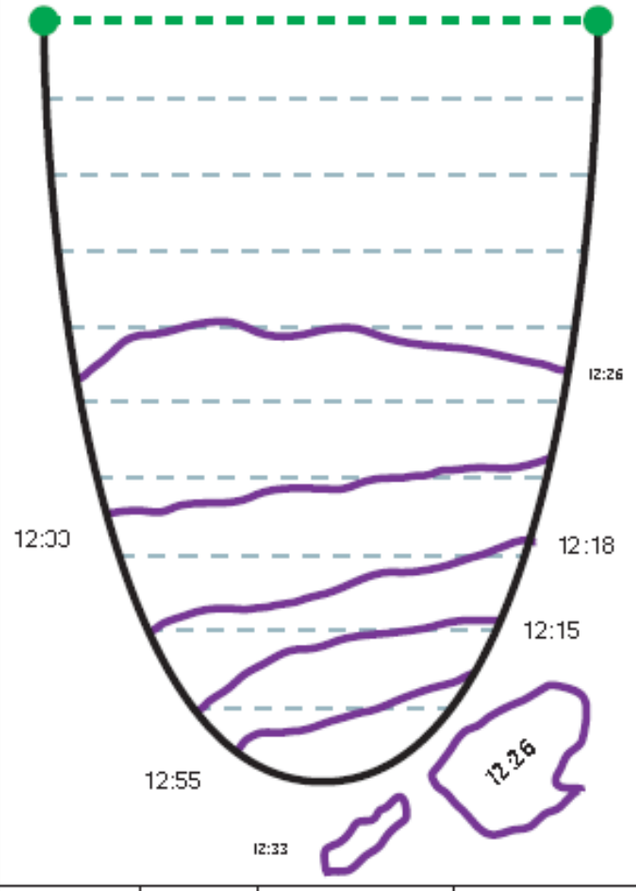


Source: Al Allen 2010

Controlled In-Situ Burning Field Data Collection Sheet
Burn Monitoring Taskforce

Incident Info	Incident Name:	Block 33	Date:	1/12/2012
	Section:	Operations	Group	In-Situ Burning
	Branch	Spill Response	Division	Gulf of Mexico
	Task Force:	Aerial Burn Monitoring		
Site Conditions	Sea State:	Calm	Burn Team #:	7
	Visibility:	Clear	Burn #:	3
	Latitude:	2322	First Observed Time/Condition	12:15 Saw Fire
	Longitude:	7710	Last Observed Time/Condition	12:55 Fire Out

Burn Area Observations



General Notes

-Burn observed outside boom at 12:26
-Left burnsite at 12:54

Burn Area Data

Obs. Time	Area ft²	Area ft² outside Boom	Comments
12:15	2000	-	Saw Fire
12:18	4800	-	
12:26	11000	1000	
12:33	7800	200	
12:55	850	-	

Burn Volume Estimation

1- Burn Area

2- Burn Duration

3- Burn Rate (ASTM F 1788-97)

Burn Volume Estimation

$$V_{(gal)} = A_{(ft^2)} \times t_{(min)} \times BR\left(\frac{\frac{gal}{ft^2}}{min}\right)$$

Min. Burn Rate = $\frac{\frac{0.05\ gal}{ft^2}}{min}$

Burn Area = 2000 ft²

Burn Duration t = 2 min

Burn Volume V = 2000 × 2 × 0.05
= 200 gal
= 4.7 bbl

Total Estimated Min.Burned Volume = Σ V

Max. Burn Rate = $\frac{\frac{0.07\ gal}{ft^2}}{min}$

Burn Area = 2000 ft²

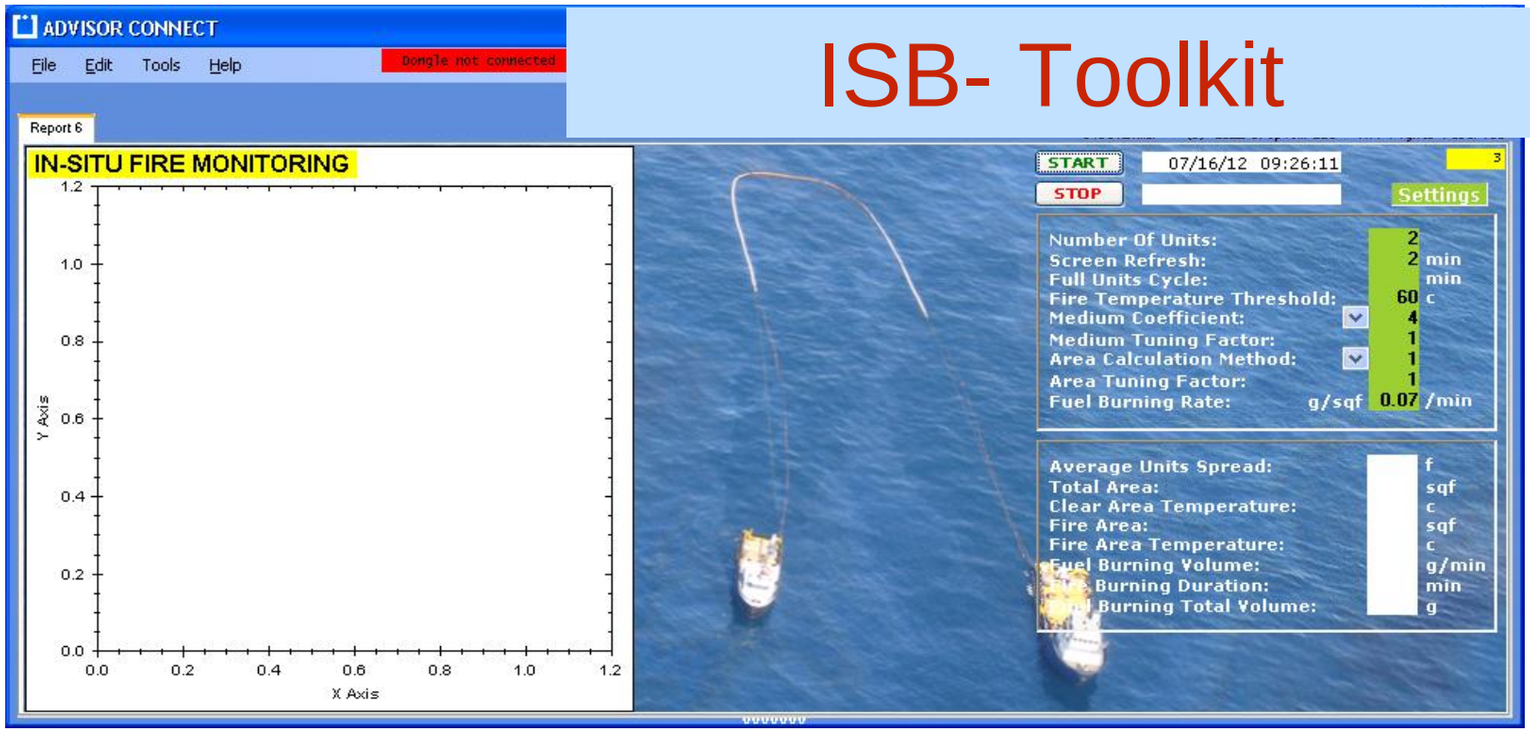
Burn Duration t = 2 min

Burn Volume V = 2000 × 2 × 0.07
= 280 gal
= 6.7 bbl

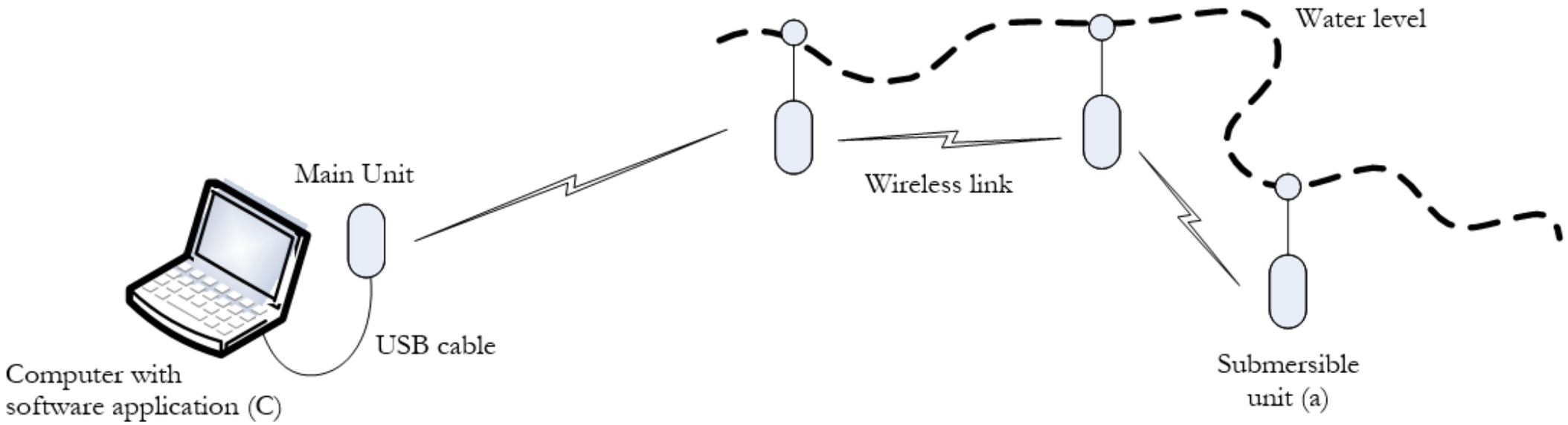
Total Estimated Max.Burned Volume = Σ V

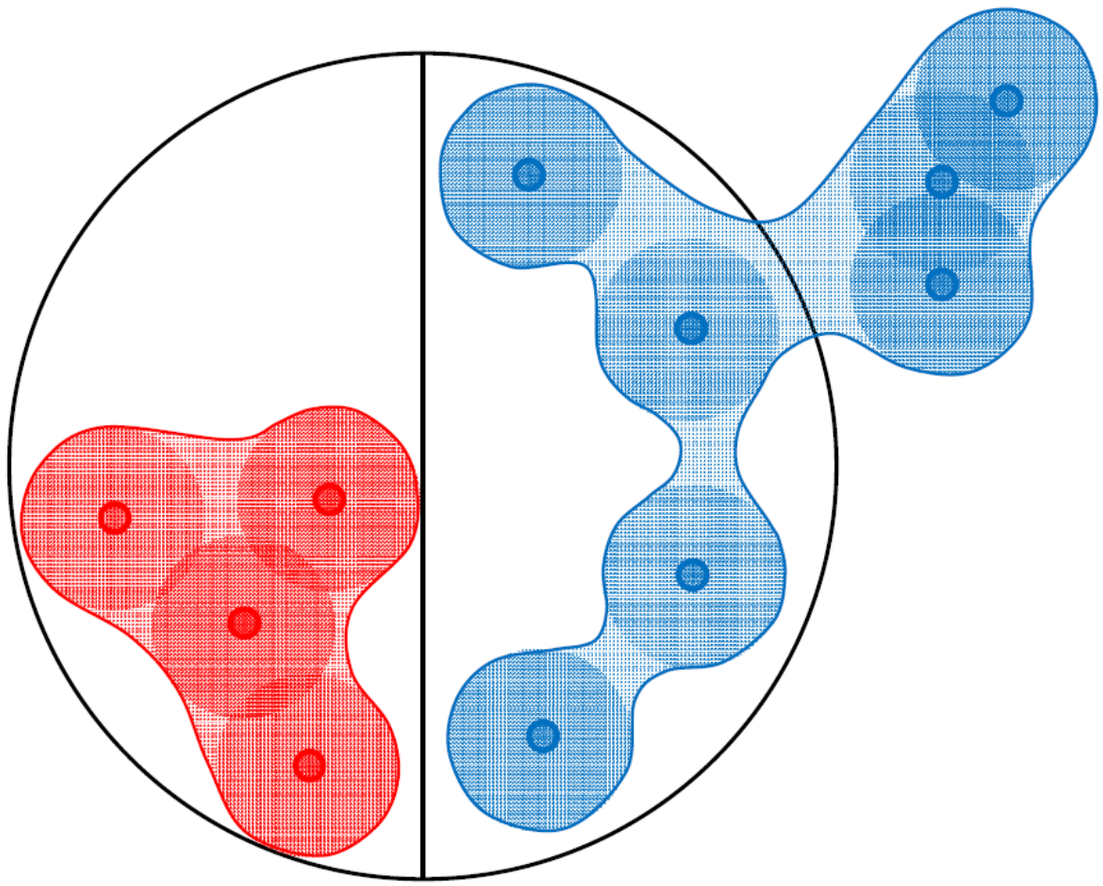
ISB Toolkit- Available in July 2015

ISB- Toolkit

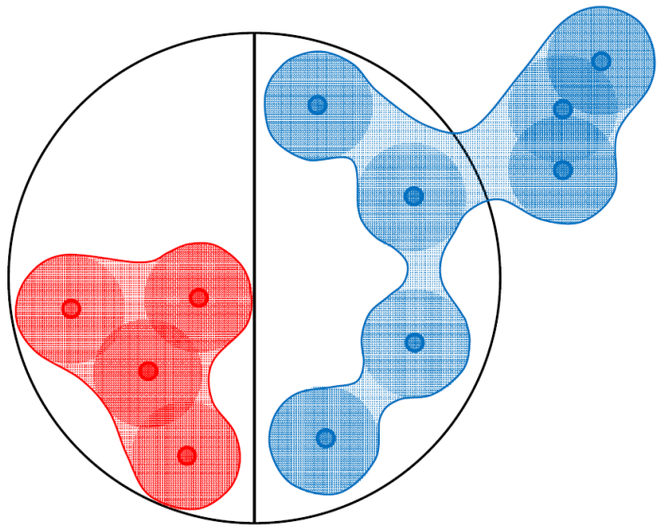


Burn Monitoring Technologies

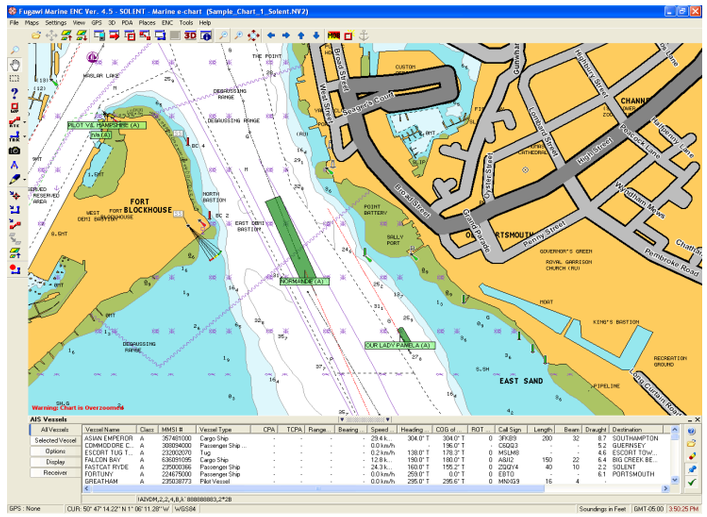




Burn Test at TEEX



OPS Monitoring Technologies



Trillium
Orion HD25
visible and long-wave infrared (LWIR)

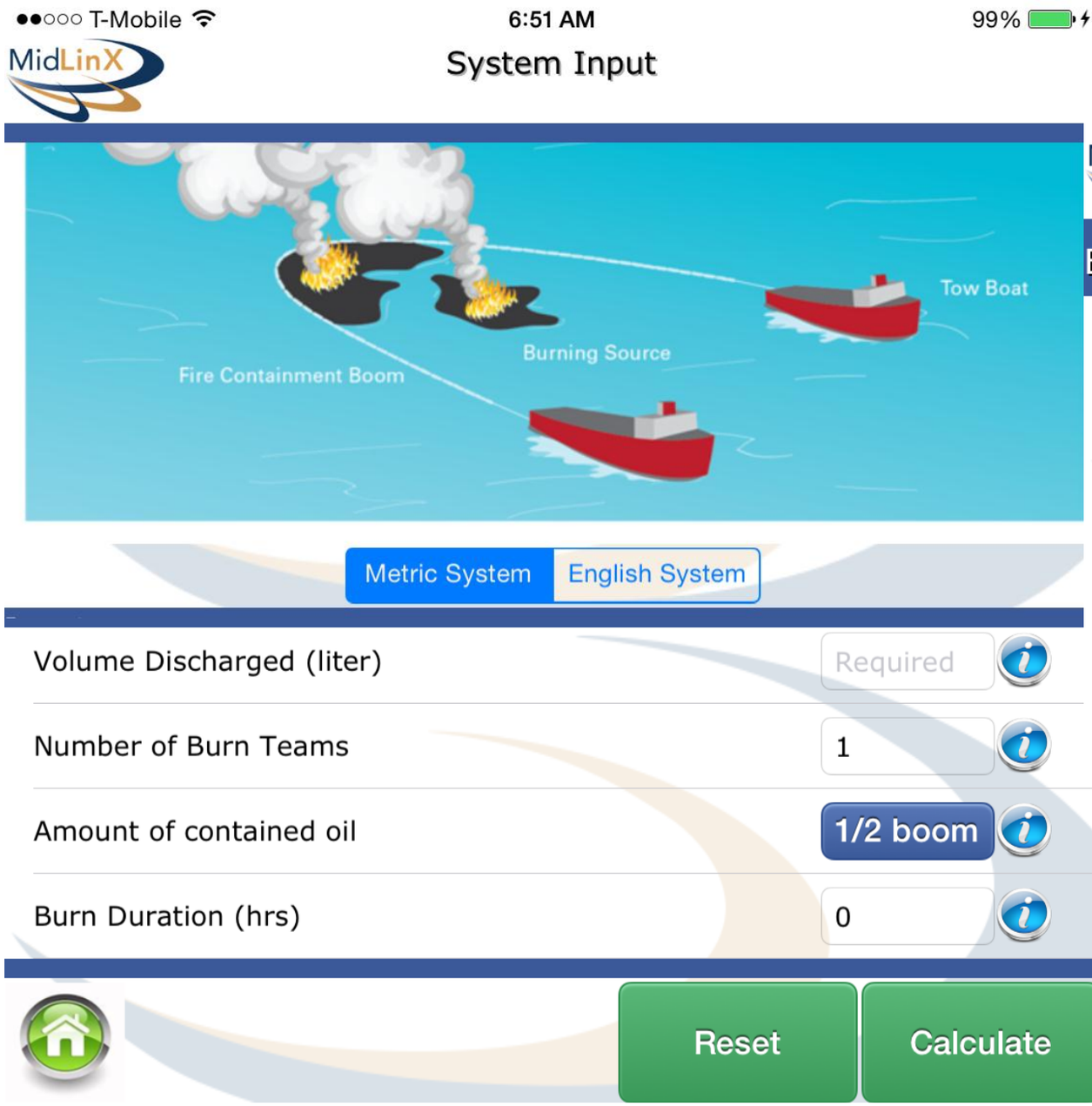
ISB-ENV. Monitoring

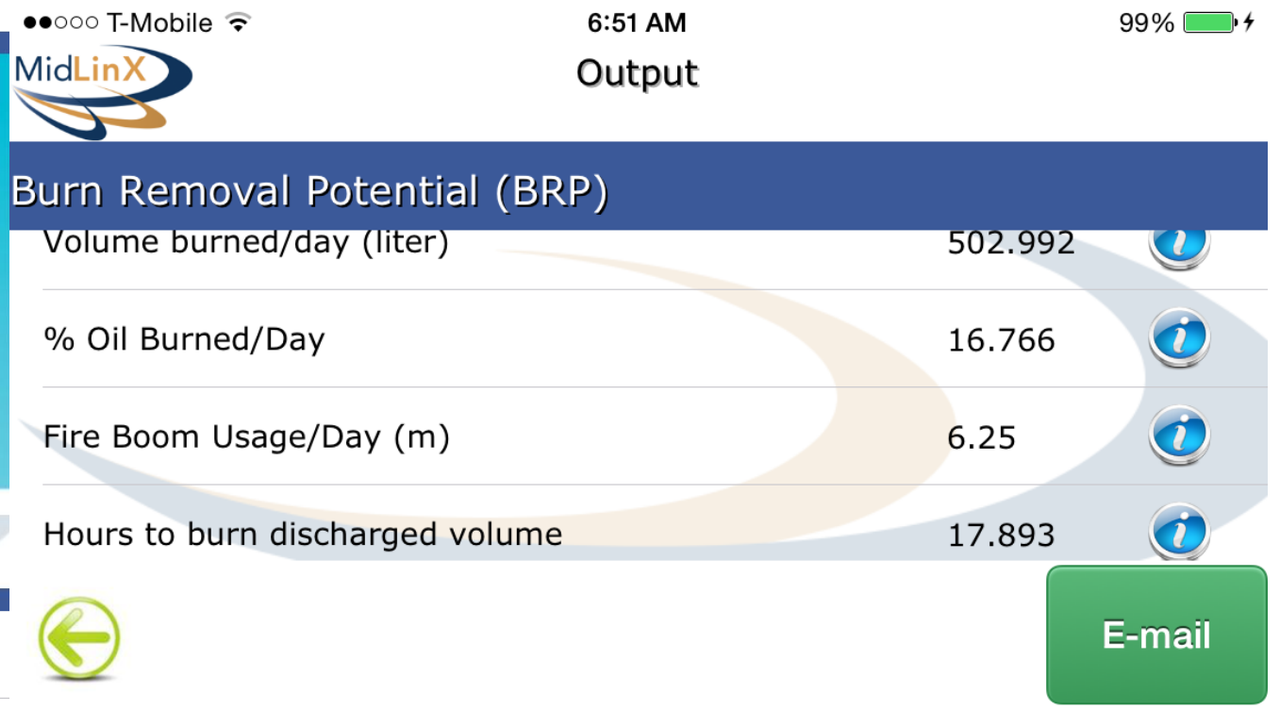
Personnel were NOAA-trained to watch for and protect wildlife prior to, during, and after burns.

IH Specialists traveled with the burn teams and monitored smoke particles, volatile organic compounds, and oil exposure.

Burn Removal Potential (BRP) Calculator

Make quick educated decisions on Burn Potential





FREE

Available on the App Store

GET IT ON Google play

Conclusion
Questions?

- *ISB has a favorable NEB*
- *ISB technology has Improved*
- *Right tools are available*