



Alternative Response Technologies: Progressing Learnings

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Outline



ART Program and Results

BP's Oil Spill Response Technology Program

Industry OSR Technology JIPs & OSROs

Future Plans & Summary



Summary & Conclusions



ART Program field tests proved 45 new tools for industry.

Many innovative tools came from outside industry (road maintenance, car wash, lawnmowers, pool cleaners).

Response Operations spawned technology advancements in controlled ISB and subsea dispersant injection.

Waste management recycling innovation: tarballs-to-asphalt & booms-to-bumpers.

Industry JIPs are collaboratively driving change in spill response.

International awareness is high w/ enhancement of OSR programs.

Arctic OSR programs incorporating learnings.

ART Program: Statistics



Total	123,000 individual ideas
Well Control	80,000
Spill Control	43,000
Within Spill Control	
Ideas to potentially field test	470
--Remediation	170
--Booming, skimming, sorbent sand cleaning, mechanical, etc.	300
Formally evaluated or field-tested	100
Recommended for use	45

NOTE: PSE (Product, Services, & Equipment), a separate database containing > 57,000 entries for existing & established capabilities created.

Booming, Skimming, Separation



Kevin Costner and the Oil/Water Separator Centrifuge



Big Gulf Skimmer



Ocean Buster Skimmer



Boom Blaster

ART – Sand Cleaning



BP: R&D OSR Technology Development



ART Team: BP, USCG, NOAA, EPA, OSPR, consultants, engineers

October 2010: de-mobilized ICPs--returned to former roles, conducted informal workshops capturing learnings

BP ART members move into BP Gulf Coast Restoration Org

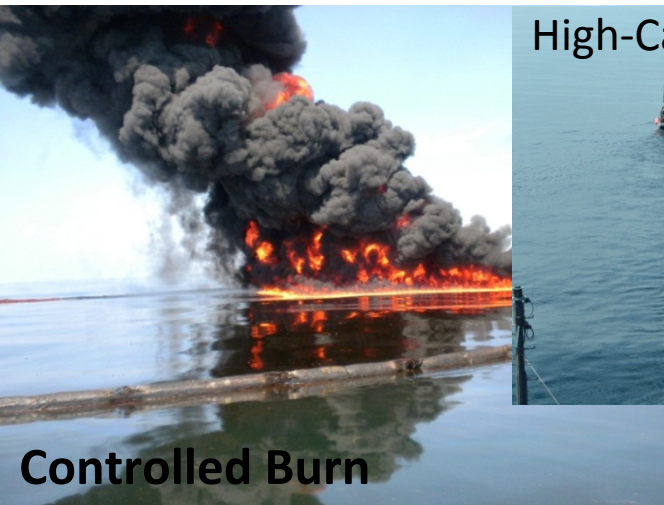
Formulate technology “hopper” of future R&D opportunities to fund

Prioritize technologies and develop themes of ISB, Skimming/Booming, Surveillance, Waste Management, COP

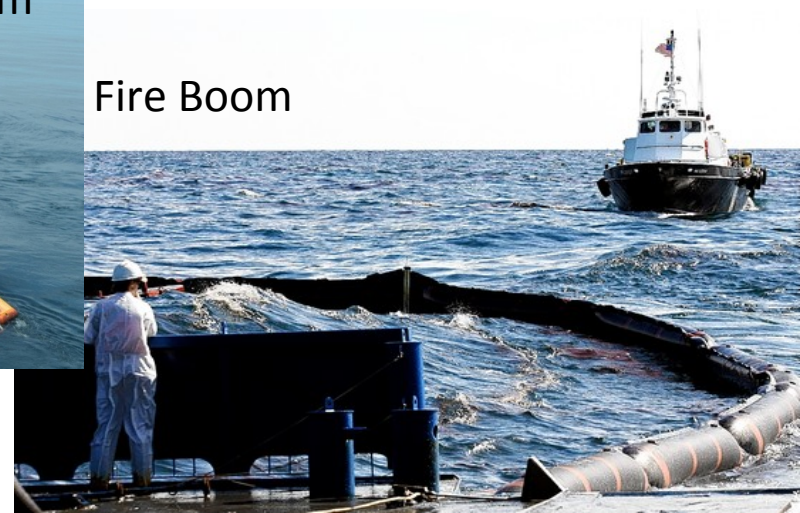
October 2011: Team moves from GCRO into BP’s Corporate Crisis Management department of Safety & Operational Risk Group

Technology program ongoing with ~ 20 individual projects

Controlled ISB / Skimming-Oil Collection



Fire Boom



Fixed-Wing Ignitor



Remote-Controlled ISB

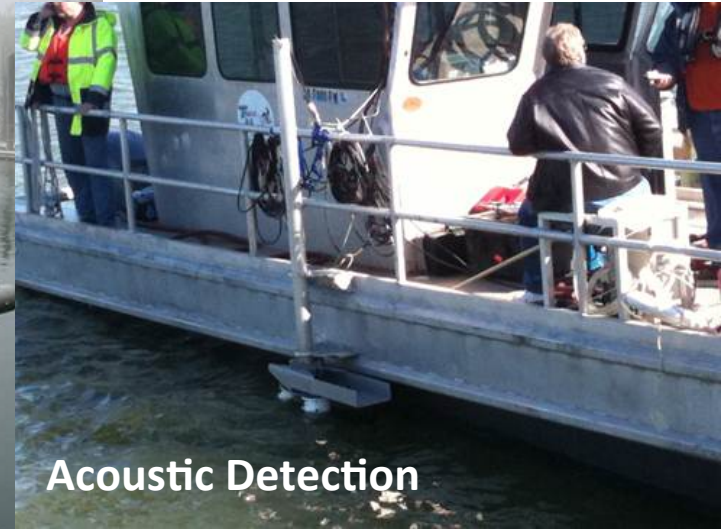


Surveillance Technologies

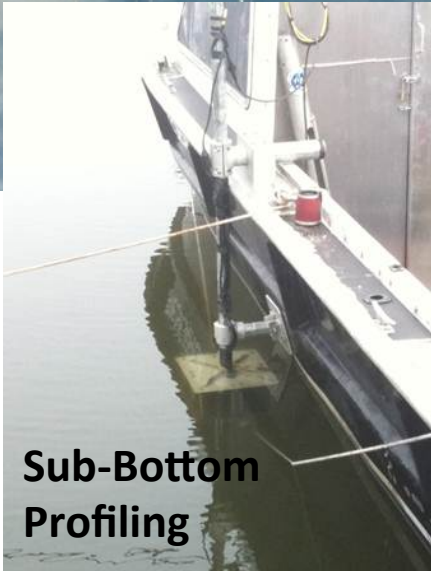
Aerial Observation Spill Response Balloon



Side-Scan Sonar



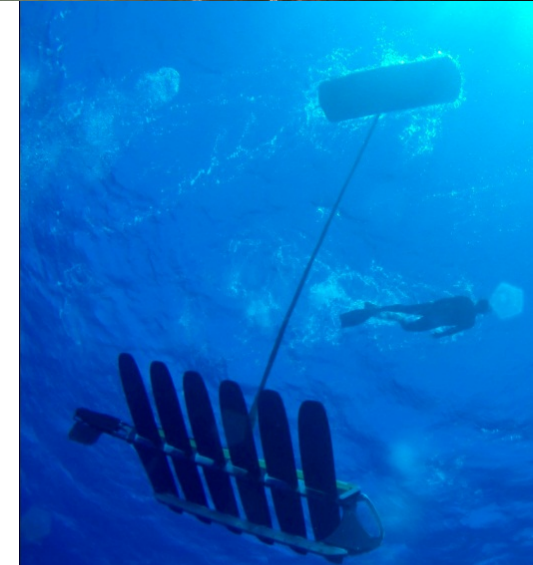
Acoustic Detection



Sub-Bottom Profiling

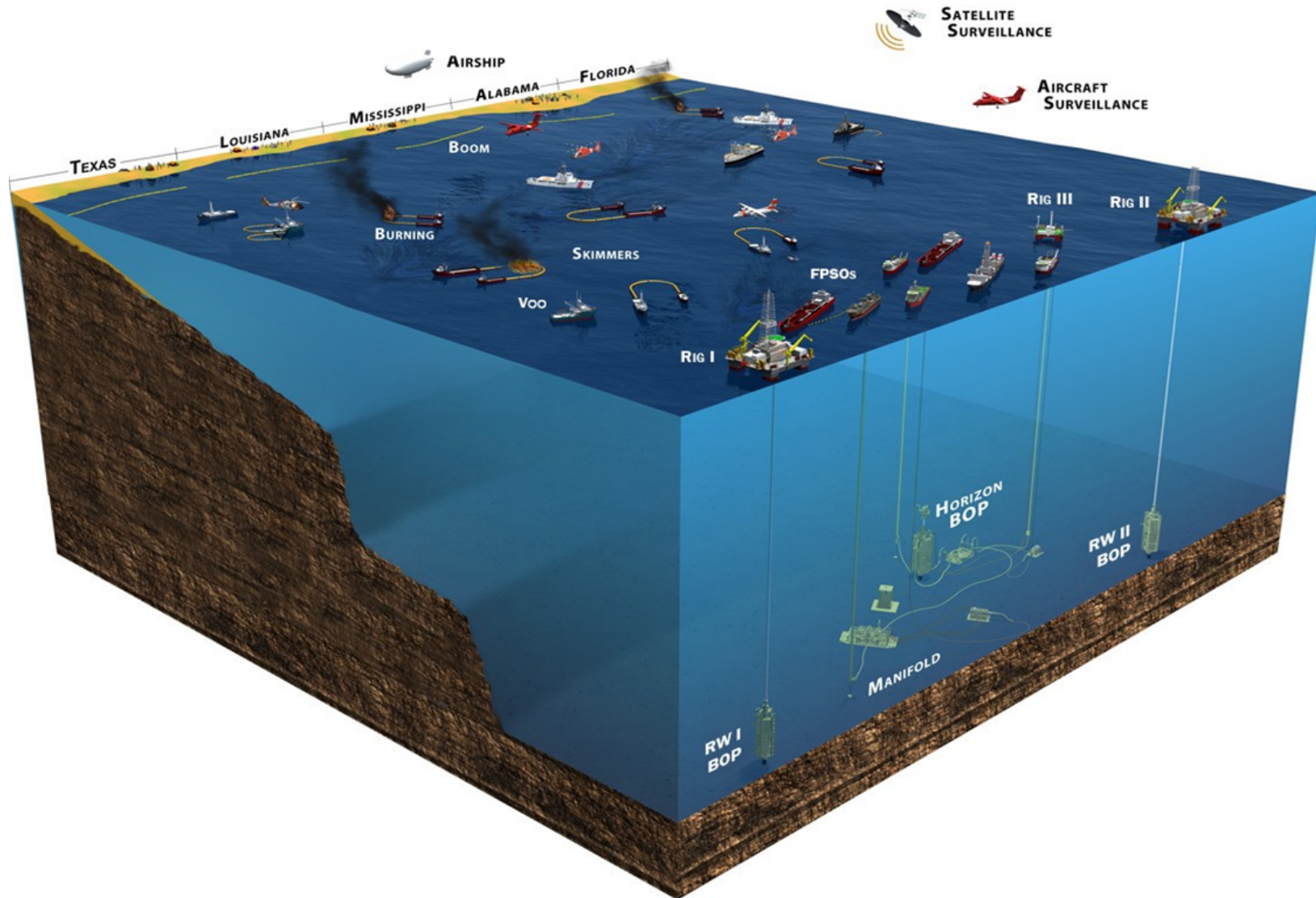


Aeryon Scout UAV



Wave Gliders™

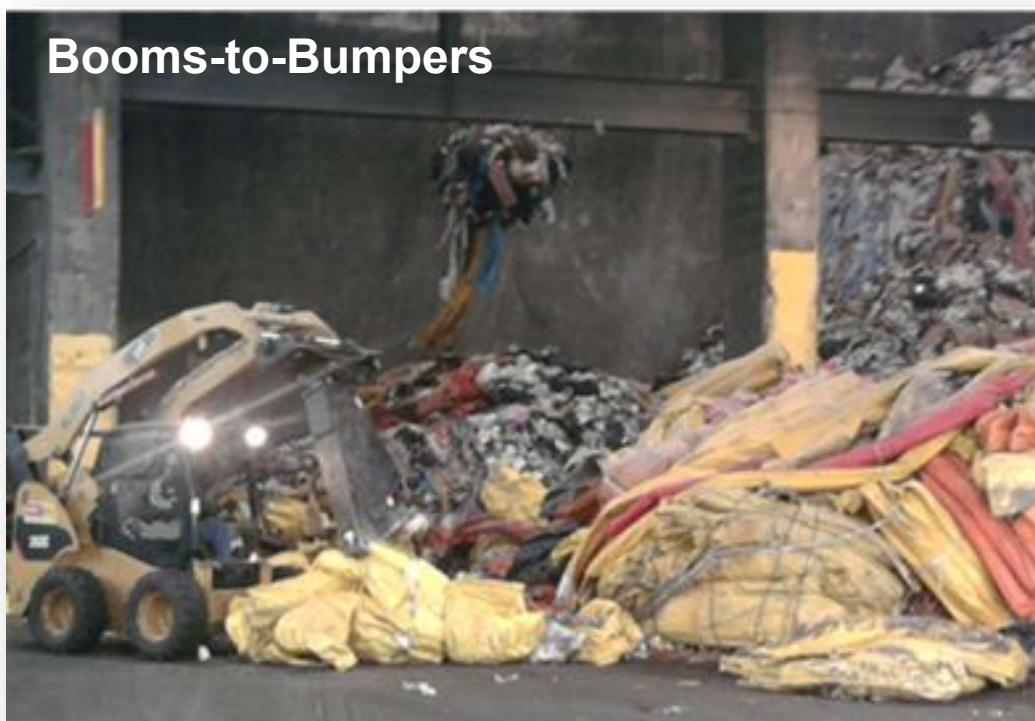
Common Operating Picture



Waste Management



MC 252 Waste and Oil Recovery and Disposal— Cumulative Total to Date Period Ending 06 November 2011		
	Total	Units
Oily Liquid	460,462.00	BBLs
Liquids	949,099.00	BBLs
Oily Solids	95,550.70	Tons
Solid Waste	14,003.80	Tons
Recyclables and Recoverables	4,761.30	Tons



Industry JIP Summary & Progress



Industry Collaboration at a High

---API

---IOGP

---IPIECA & IOGP's GIRG



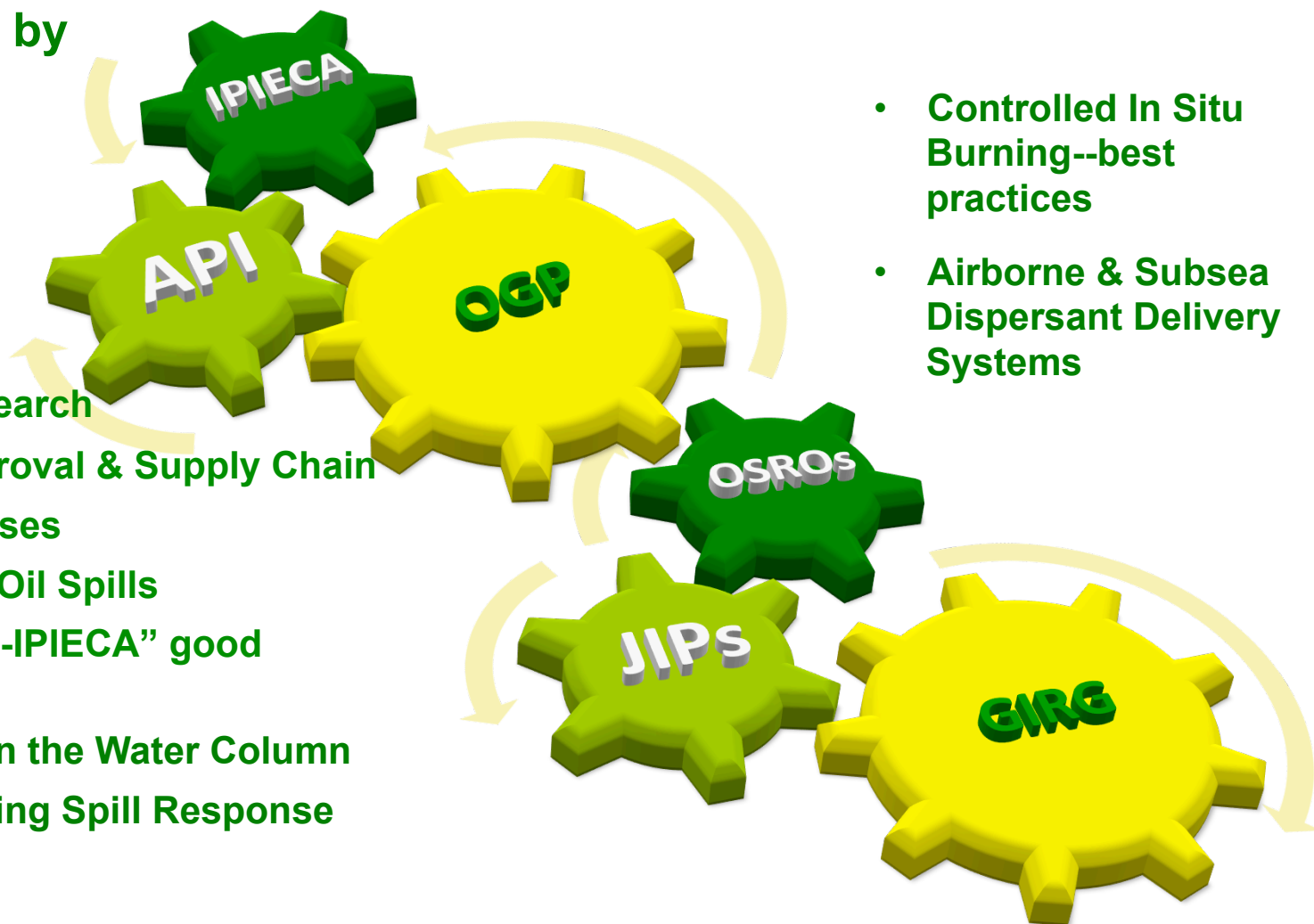
JIPs in API/IPIECA/OGP-GIRG Technical Working Groups 2011



Cooperation: Industry & Global Organizations



Projects initiated in 2011 and led by the API, OGP, and IPIECA:



- Dispersant Research
- Dispersant Approval & Supply Chain
- Effective Exercises
- Surveillance of Oil Spills
- update to “OGP-IPIECA” good practice series
- Monitoring Oil in the Water Column
- Use of PPE During Spill Response

- Controlled In Situ Burning--best practices
- Airborne & Subsea Dispersant Delivery Systems

Summary



Industry collaboration currently high for advancing spill response learnings & technology

- **ART Program:** Many new ideas came from outside industry & out-of-the-box
- **Response Operations:** Developed innovation through subsea dispersant injection and controlled in situ burning
- **Sustainability:** Industry needs to stay the course in advancing spill response learnings and technologies internationally

Backup Slides

