



U.S. Army Research, Development and Engineering Command

# Field Deployable Hydrolysis System Operations: Demilitarizing Syria's Declared DF and HD aboard the MV Cape Ray

4 June 2015



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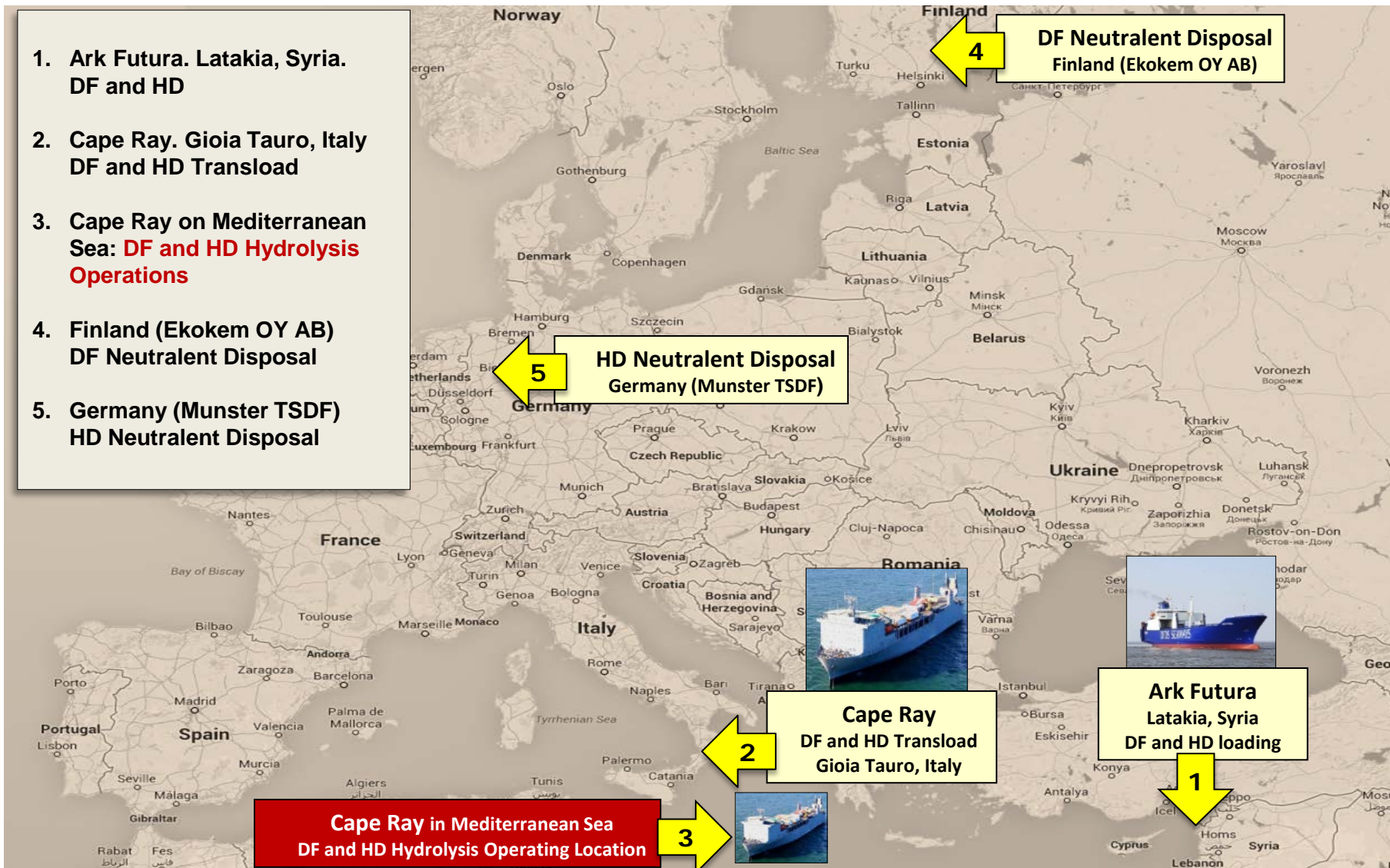
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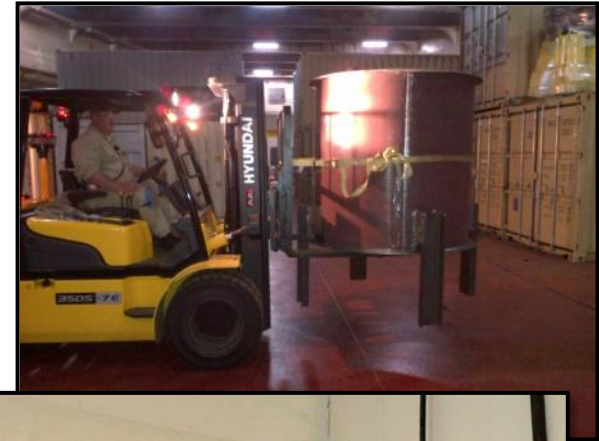
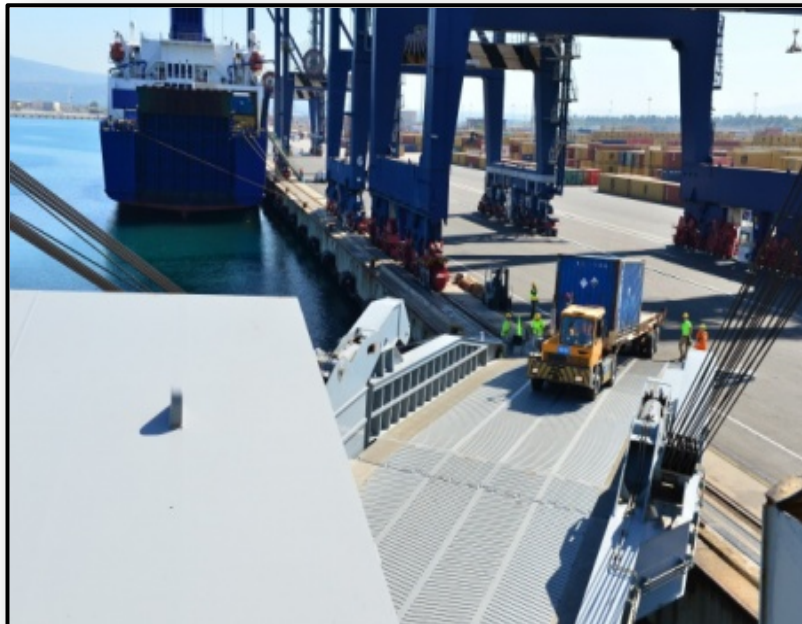
- **Operational overview**
- **Principal Operational Challenge: Storage and pH Adjustment**
- **Process management and flexibility**
- **Offload and demobilization**
- **Mission accomplished**



1. Ark Futura. Latakia, Syria.  
DF and HD
2. Cape Ray. Gioia Tauro, Italy  
DF and HD Transload
3. Cape Ray on Mediterranean  
Sea: **DF and HD Hydrolysis  
Operations**
4. Finland (Ekokem OY AB)  
DF Neutralent Disposal
5. Germany (Munster TSDF)  
HD Neutralent Disposal

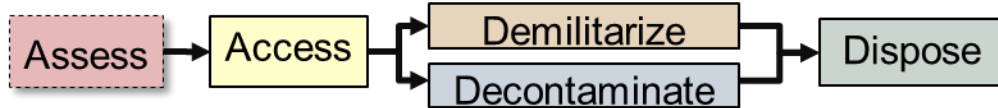
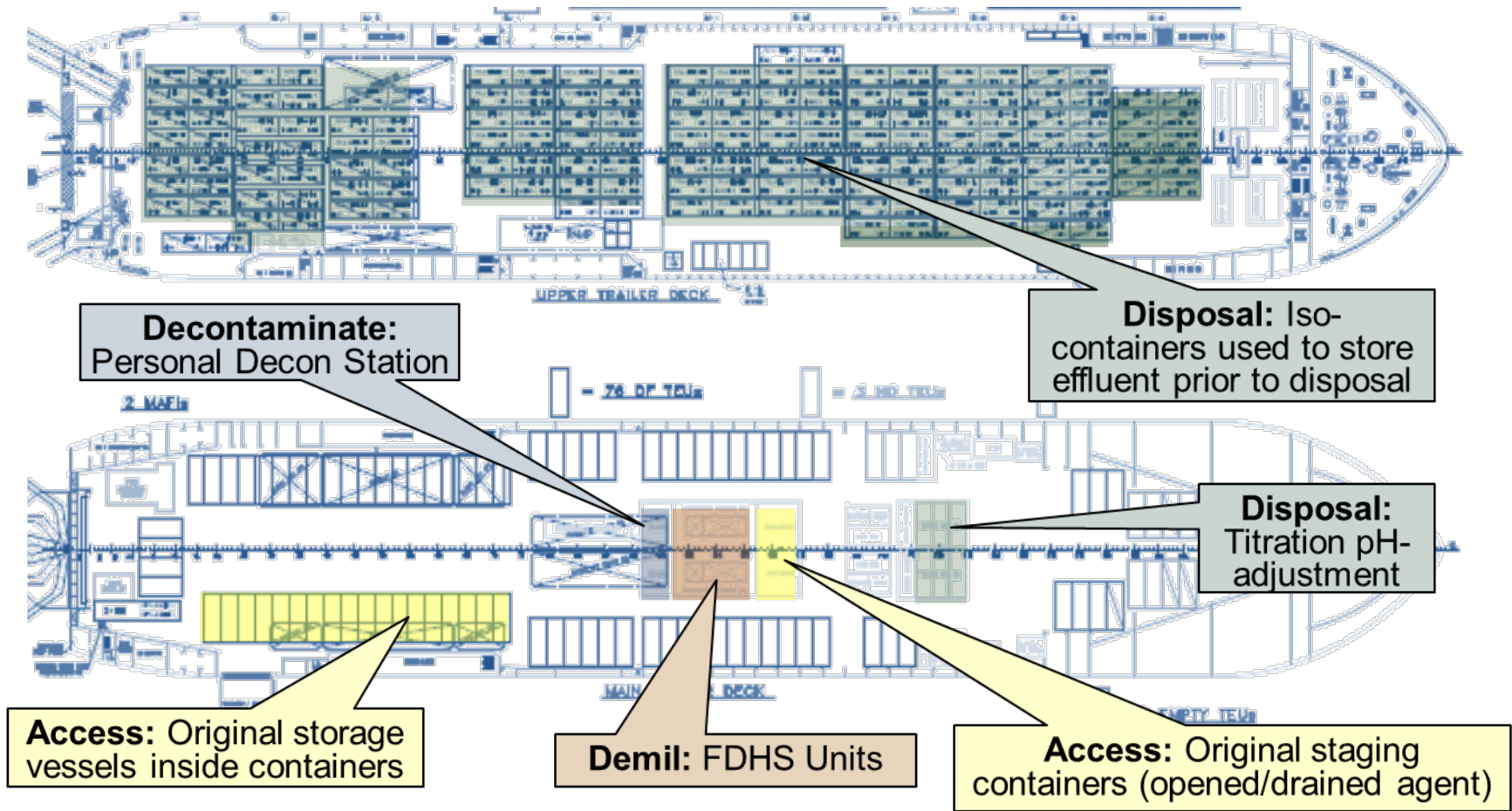


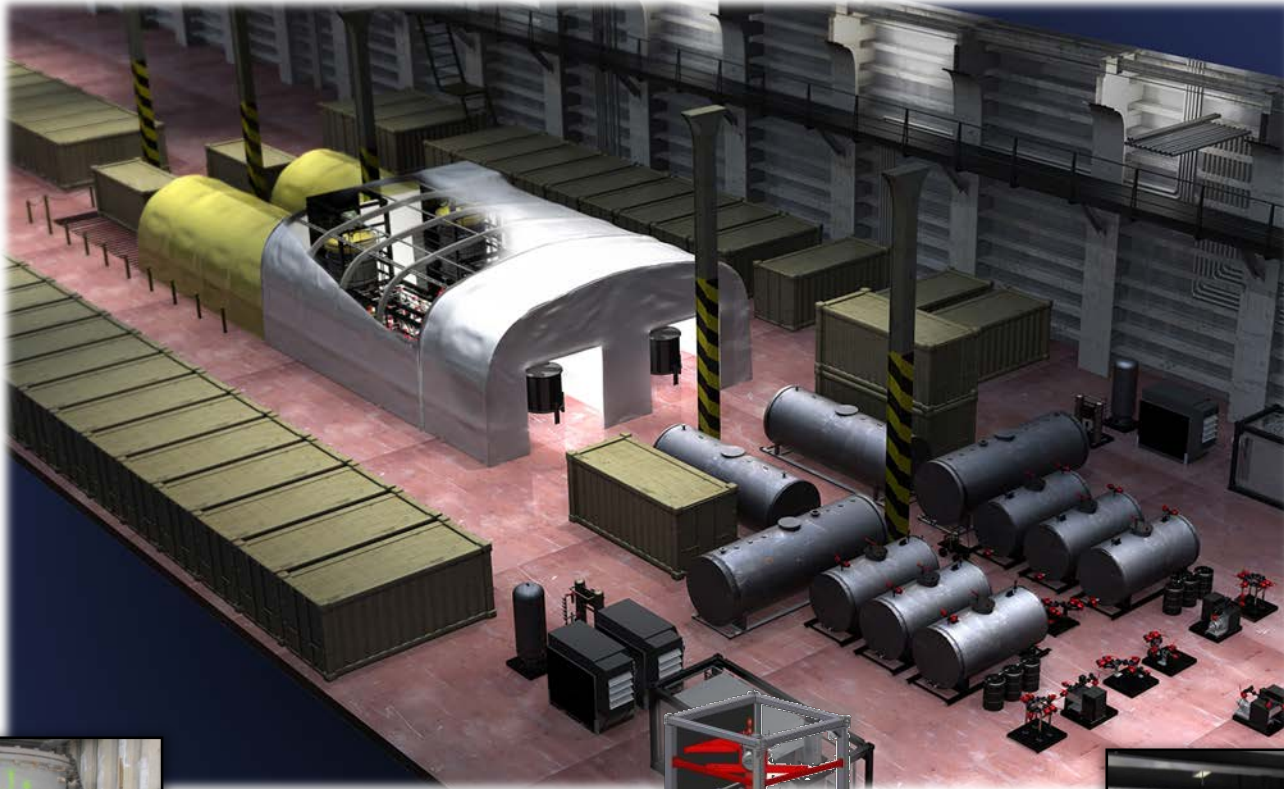
- **Material transfer of DF and HD to Cape Ray at Gioia Tauro, Italy**
- **100% inspection of Syrian containers**
- **Readiness exercises and declaration**





# Destruction Planview

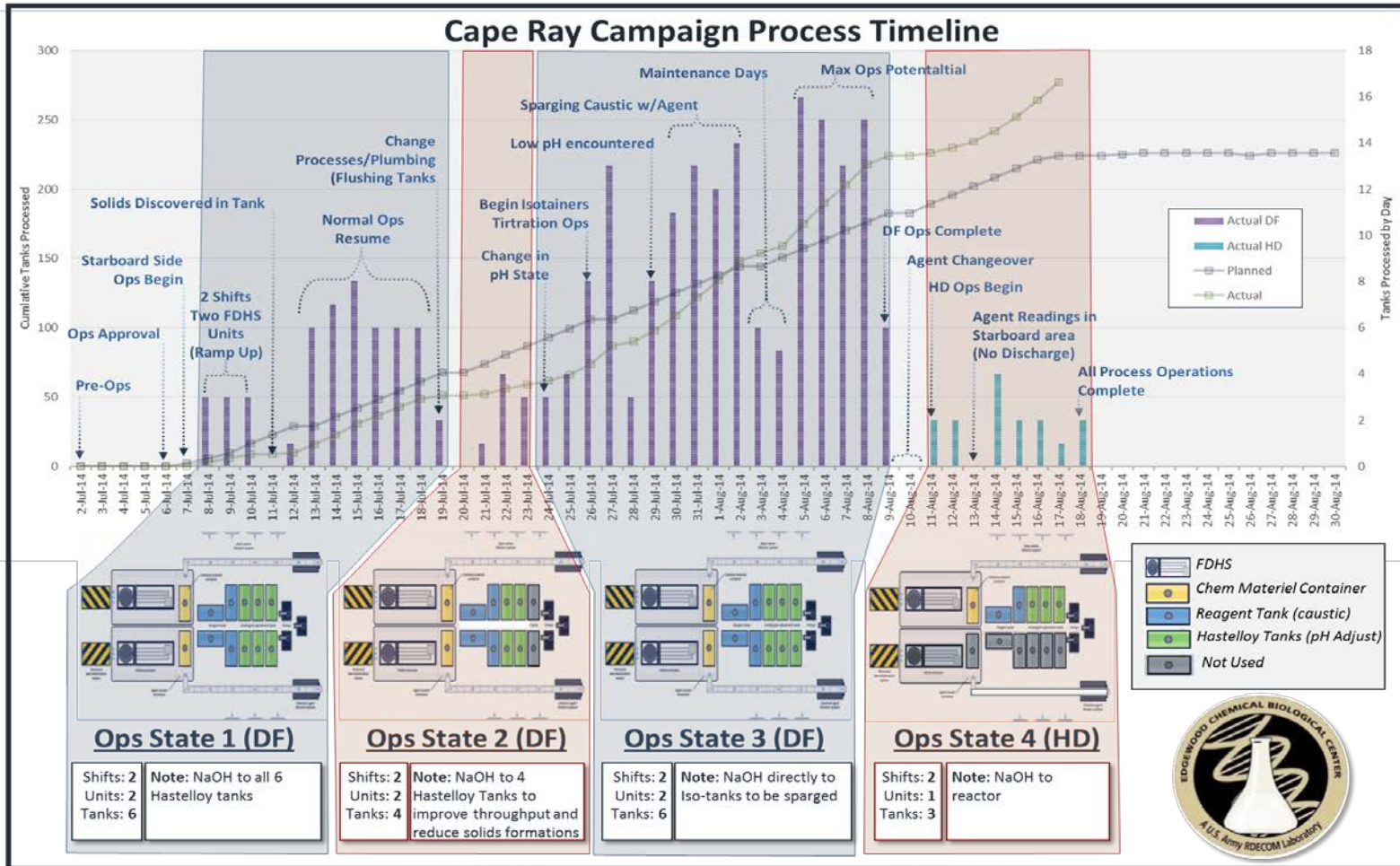




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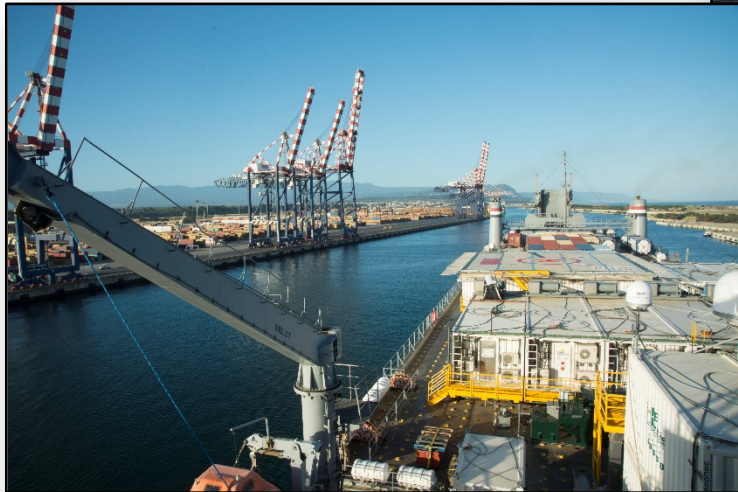
# Campaign Timeline



**On board decision making, supported by technical reach back, critical to success**



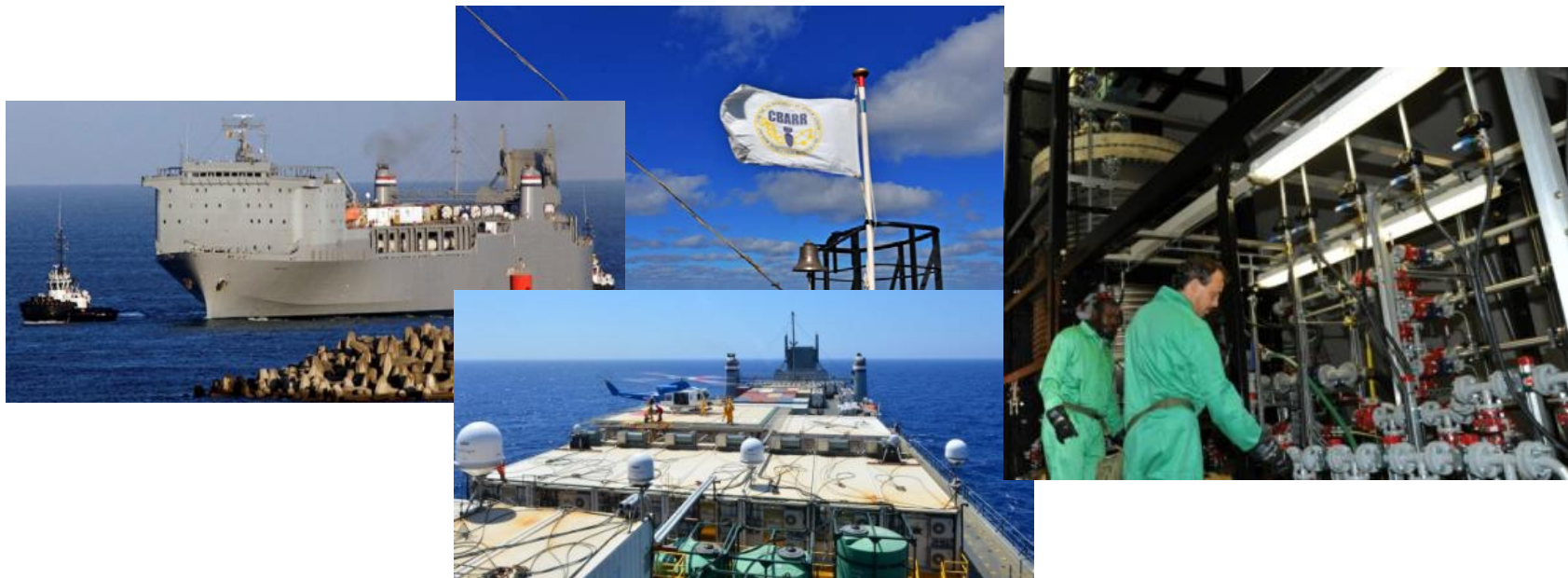
- **Apr 2014 - Demobilization coordination completed**
- **17 Aug 2014 - Operations complete: 600MT destroyed in 42 days**
- **5 Sep 2014 - Offloading of waste complete: tanks inspected and delivered to OPCW-contracted treatment facilities in Finland and Germany for proper disposal**
- **17 Sep 2014 - Cape Ray return to Portsmouth**
- **14 Jan 2015 - Cape Ray operations area declared clear of DF/HD**
- **12 Mar 2015 - Cape Ray declared clear for service**





The successful demilitarization of chemicals using hydrolysis was the result of systematically applied science, experience, and international collaboration.

**“It is an excellent example of how practical cooperation between international organisations can achieve tangible results in disarmament.” — Ahmet Üzümcü, Director-General OPCW**



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# Contacting CBARR



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