

MSS 6000 – World's most Operational Airborne Maritime Surveillance Systems



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SSC Airborne Systems

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Presentation overview

1. Introduction

2. SSC Airborne Surveillance System, leader in environmental mission

3. SSC innovative combined use of satellite and airborne technology

4. Improving mission efficiency with a dedicated coordination center

5. Conclusion



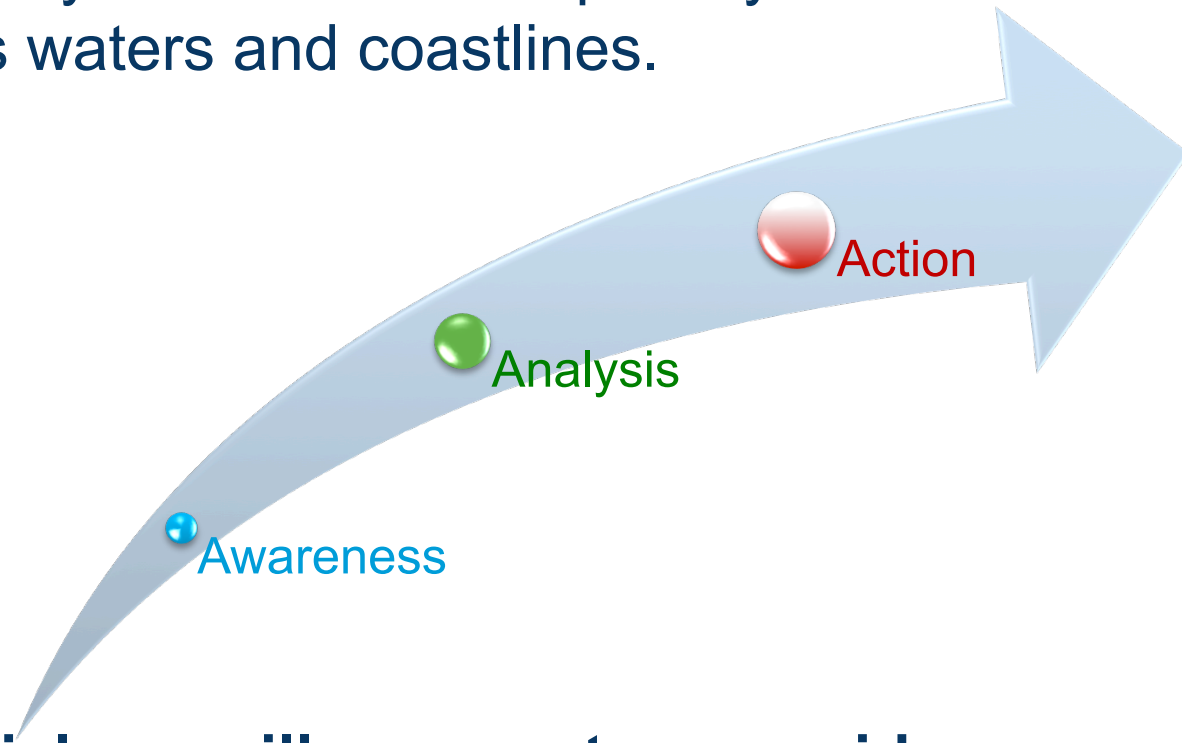
1. INTRODUCTION



The environmental awareness, especially with regard to oil pollution at sea, has been growing in all countries around the world over the last decades. International agreements, treaties have been formed and are starting to show encouraging results. The work aiming at preventing oil spills, at minimising the effects of spills that do happen, and at legal action against the violators is vital to protect our oceans and marine environment.

SSC has been working in this field for more than 30 years

A cost effective surveillance system for detection, identification and tracking of oil spills as well as monitoring of ship traffic dramatically increases the capability of a coastal nation to guard it's waters and coastlines.



SSC aerial surveillance system provides you with critical and real time information all the way to ensure successfull missions



2. SSC, Leader in environmental airborne surveillance Systems

SSC Maritime Surveillance Systems are used in >20 countries for:

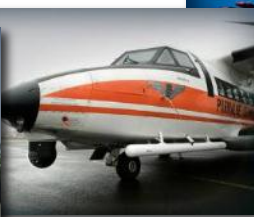
- EEZ (Economic Zone Protection)
- Environmental Protection/
Oil pollution
- Border and fishery control
- Ship traffic management
- Search and rescue
- Ice patrol



Installations

Since 1976, more than 80 systems have operated worldwide on more than 15 different types of aircraft

Sweden, Norway, Poland, Greece, Portugal, Estonia, Finland
USA, Canada, Uruguay
India, Malaysia, Vietnam



MSS 6000 systems

- Most Operational system found on the market; designed to fit the operational Coast Guard requirements for maritime airborne surveillance – adapted to the tasks
- Based on 36 years experience
- Largest customer-base in the industry
- Continuous development as new technologies emerge and customer requirements evolve and expand
- Customized suites of sensors and supporting equipment around a central mission management system with high level of data-fusion to ease the operator work

MSS 6000: A successful system for successful missions!

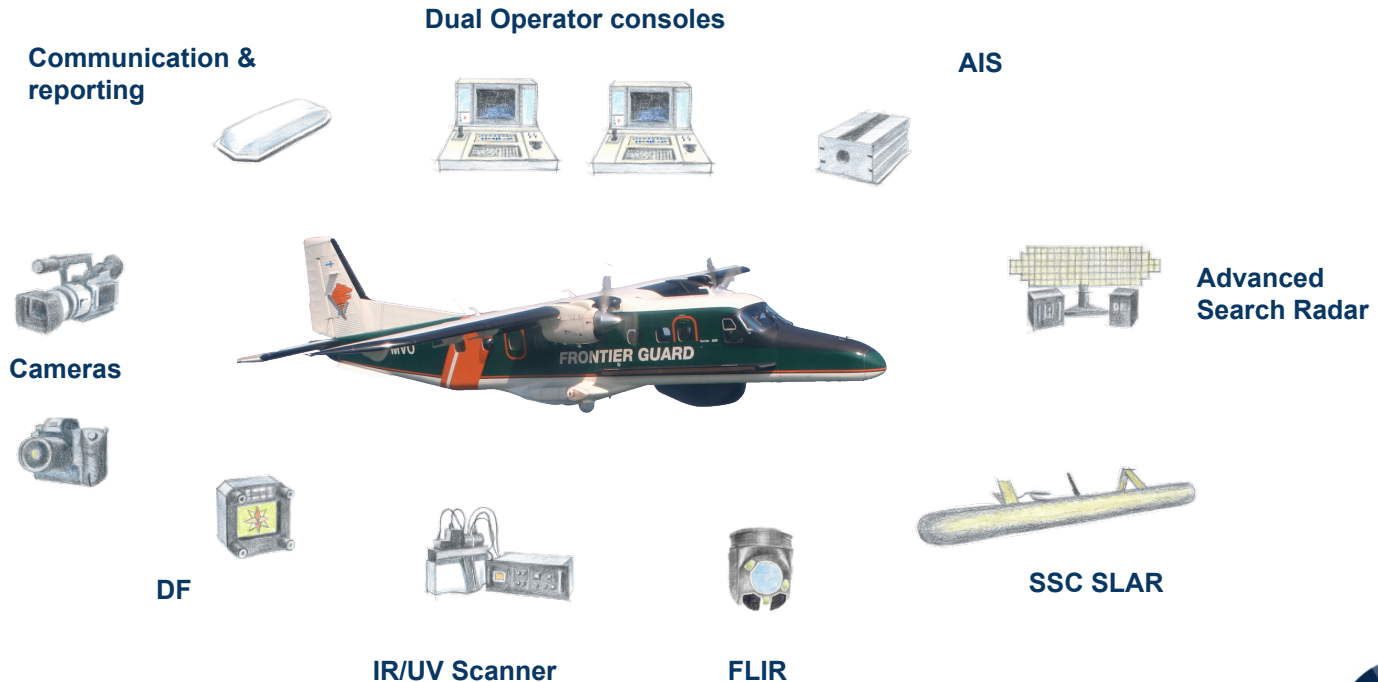


2012 - Latest version of the MSS 6000

(for the Finnish Border Guard)

INTEGRATED & USER-FRIENDLY

- For reduced workload of the operator
- For easy correlation of observations from different sensors
- Real time transmission of reports, maps, images, video

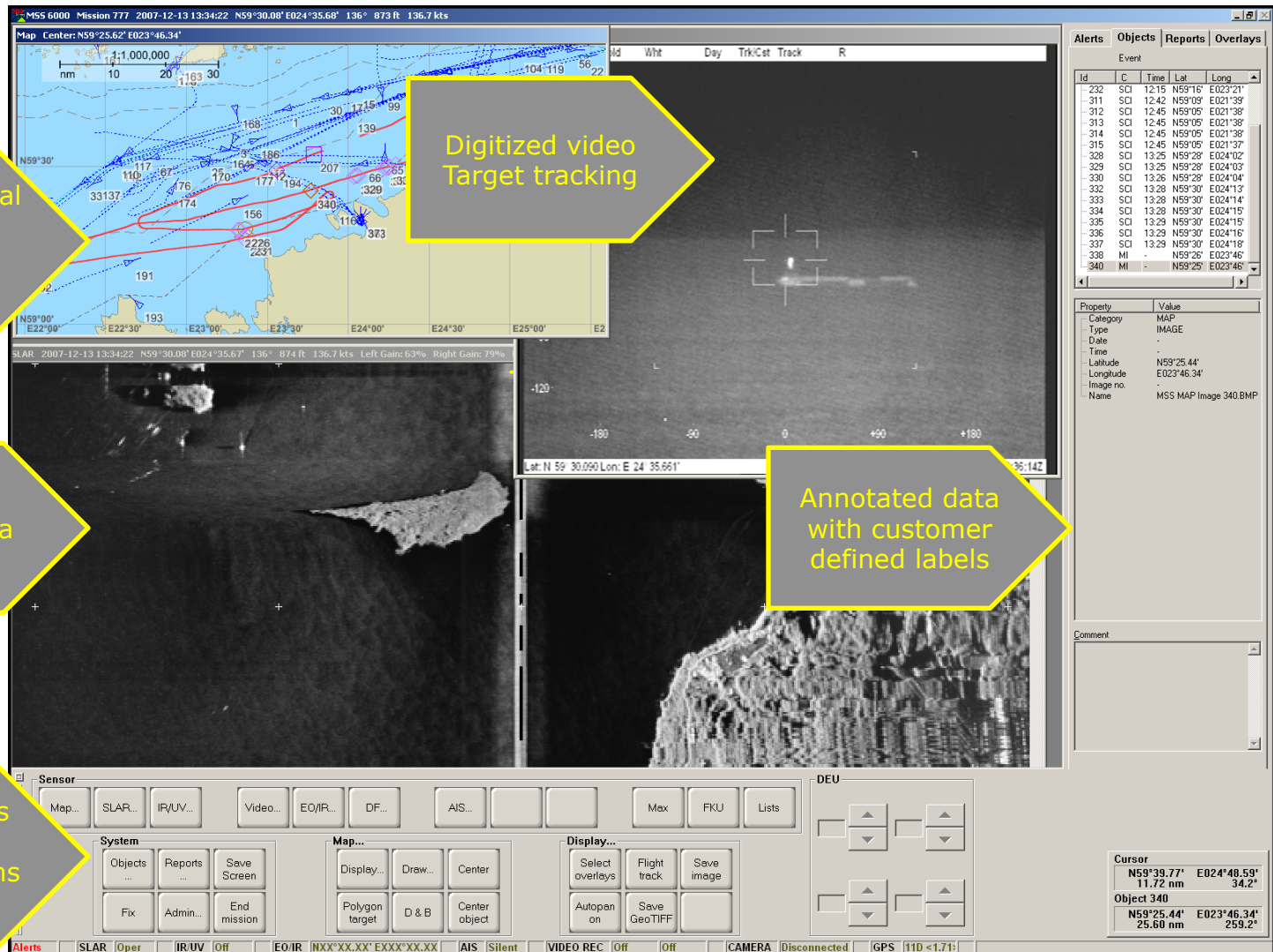


Operator work station on board the aircraft

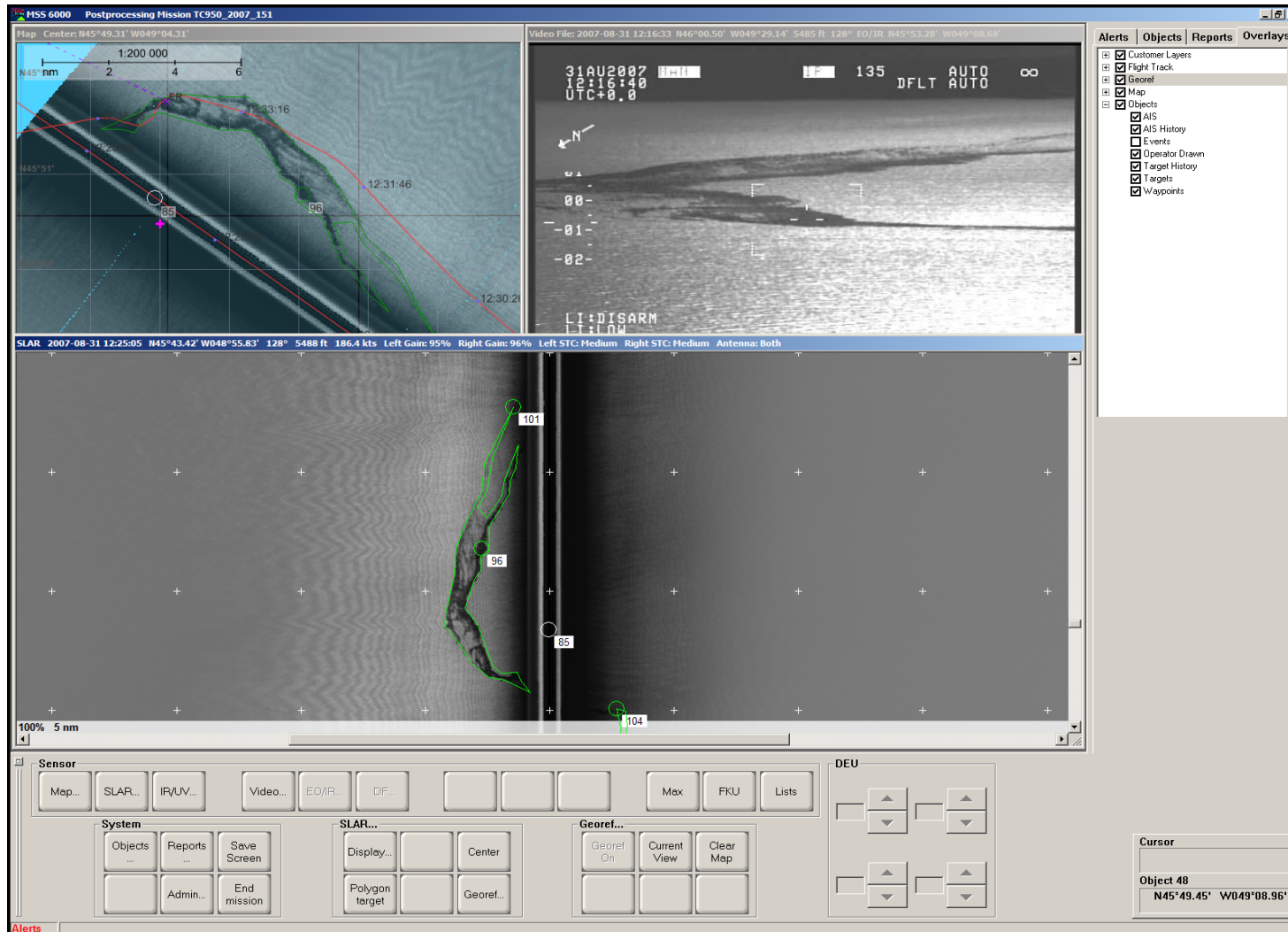


Comprehensive situation overview

MSS 6000 Sensors Display - Fully integrated System

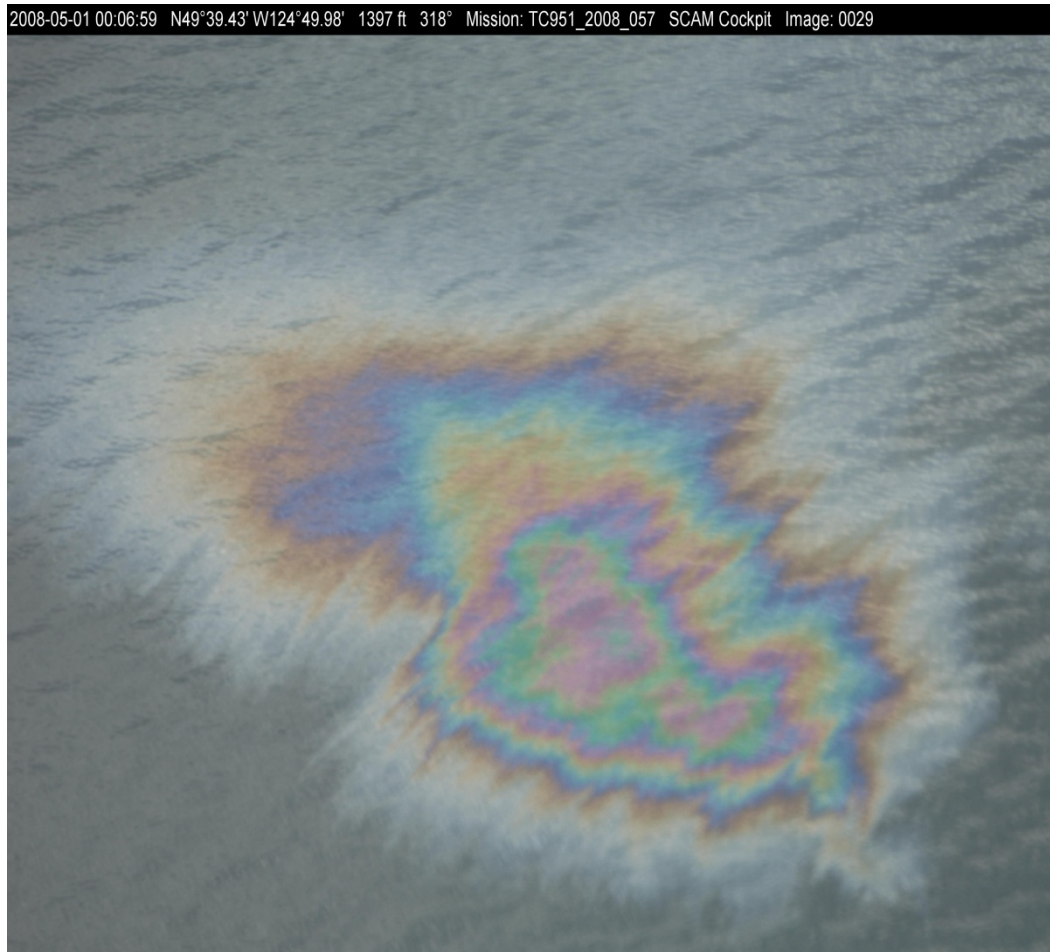


Oil spill Detection - Observation with SLAR, FLIR, AIS



Digital Still & Video Camera Systems

Provides documentation of identified targets and spills



GPS Annotated Data:

- Date (2006-06-08)
- Time (10:23:45)
- Latitude (N59° 54.04)
- Longitude (E017° 18.03)
- Heading (300°)
- Altitude (01345')
- Picture # (4)

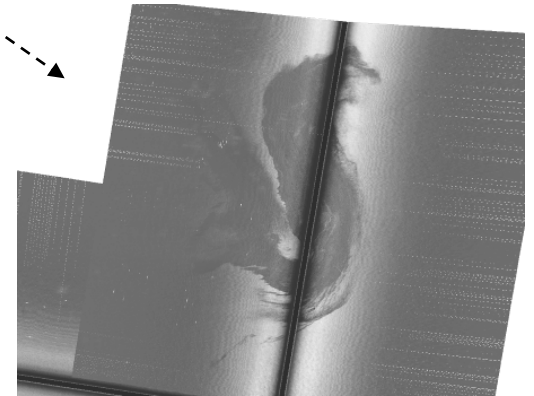


Satellite Communication and reporting

- Satellite two-way data transmission system (high-speed INMARSAT)
- GeoTIFF images, photos, reports to command centre during flight



Command centre



**SLAR radar image with
geographic references (GeoTIFF)**

Main contribution of MSS 6000 in the gulf of Mexico Oil accident, USA 2010

Environmental aerial surveillance data collected by TC has had a critical impact on

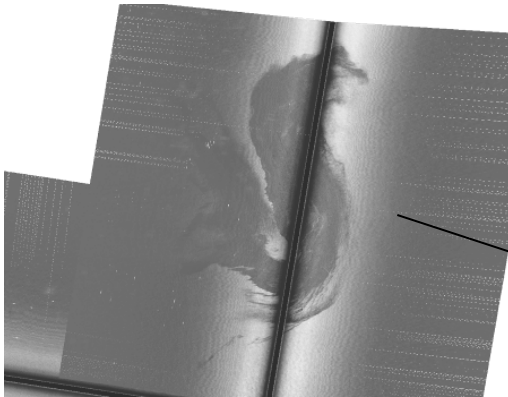
1. The situational awareness in the area: Large-scale mapping

- Spatial distribution of oil:
 - Near Real Time (NRT)
 - Post flight
- Shoreline impact of oil:
 - Mapping of strips and patches near or impacting shore

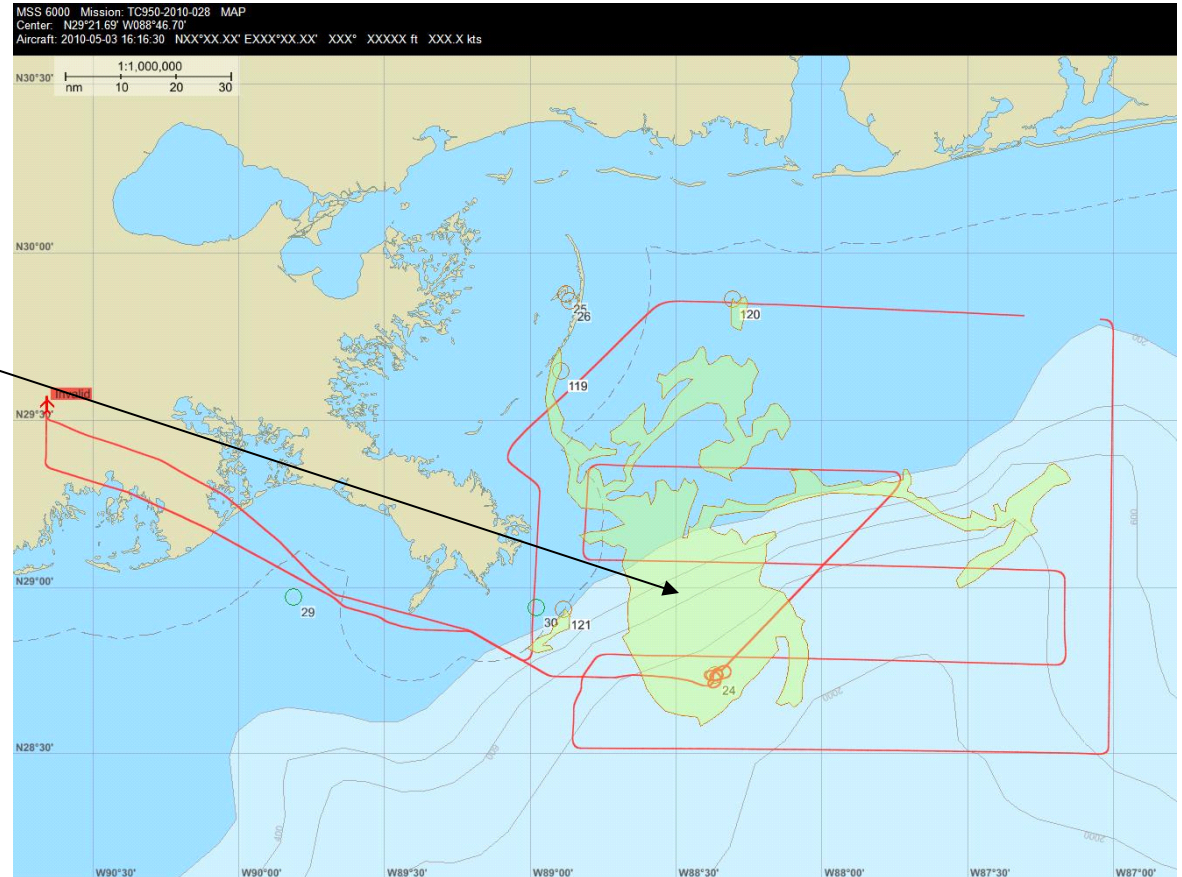
2. The planning of the response operations

- Resource allocation support

MSS 6000 spill distribution 3rd May 2010



Surface oil distribution
detected by SLAR

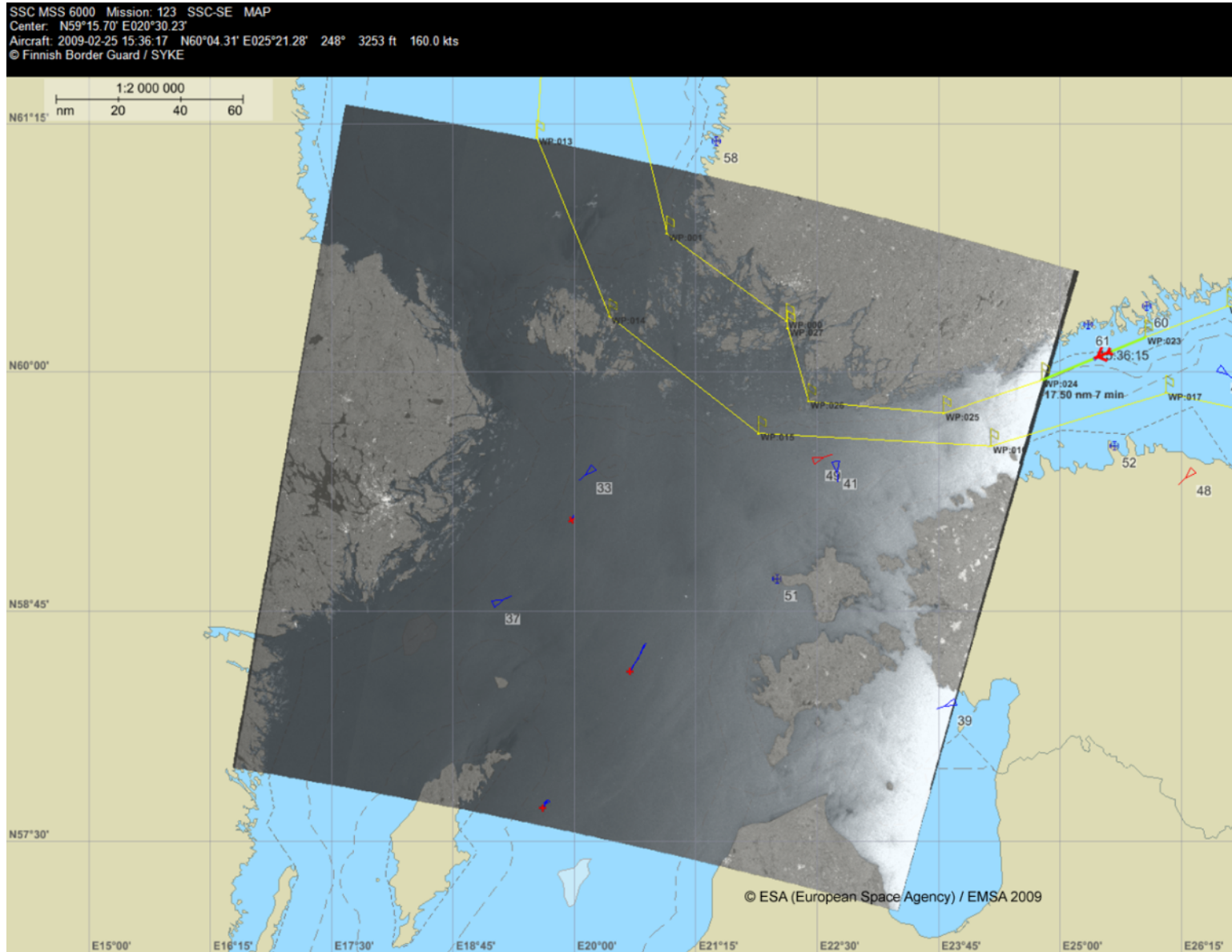


3. An effective concept for maritime surveillance: combined use of satellite and airborne information

A state-of-the-art approach to accomplishing successful surveillance tasks is to combine the use of:

- **satellite-borne SAR** (Synthetic Aperture Radar) for wide area coverage and early warning
- with
- a dedicated **sensor system equipped surveillance aircraft** for regular patrols and flexible follow-up of the situation on the sea surface.

Since 2009 SSC integrates satellite images in its advanced aerial surveillance systems



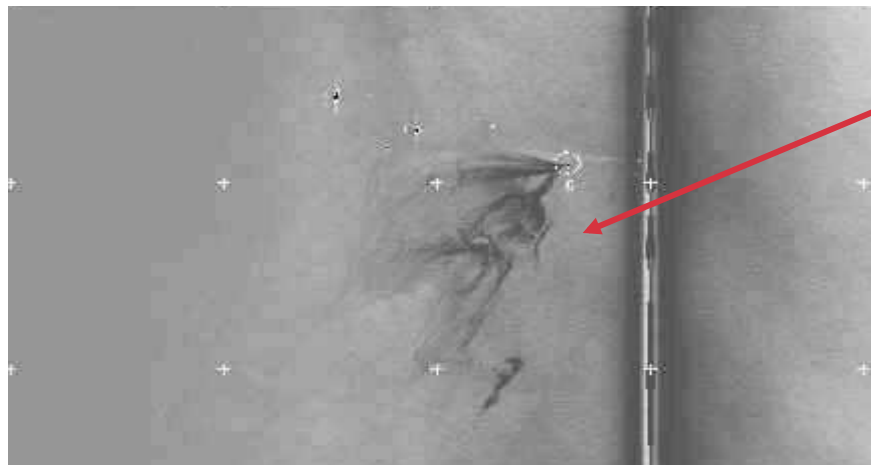
Coordinated surveillance started in Norway in the 1990's

Verified oil pollution
29. sep. 1998

Oil pollution from oil rig in the Norwegian Sea



RADARSAT SAR
image



SLAR image from
SFT's surveillance
aircraft (30.sep.) that
estimated the size to
be 1700 L



The advantages of combined use of satellite and airborne information

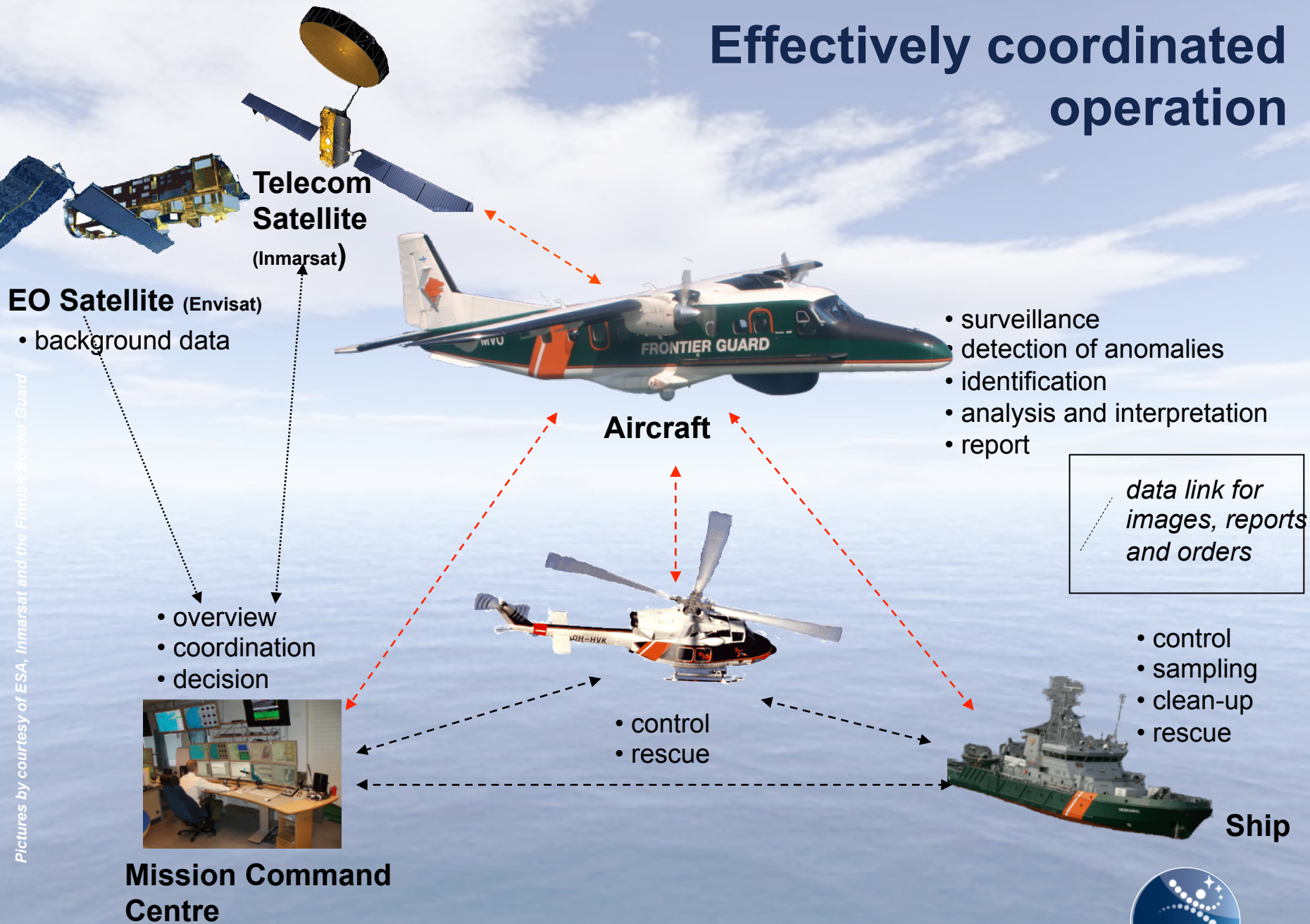
Regular wide area coverage. The satellite SAR technology as well as the patrol aircraft is able to cover large areas day and night.

Aids mission planning. The satellite image can be imported to the command center and be used for planning the mission for the surveillance aircraft. In the case of an alert the satellite image can also be forwarded and sent to the aircraft via SATCOM.

Saves fuel and increases productive flight time. The aircraft can be directed to concentrate the surveillance activities in the area of highest interest.

Reduce response time – the aircraft can be sent directly to the spot for verification and can then in turn send information that will guide other units and vessels that perform accident response and clean-up activities.

Effectively coordinated operation



Pictures by courtesy of ESA, Inmarsat and the Finnish Border Guard

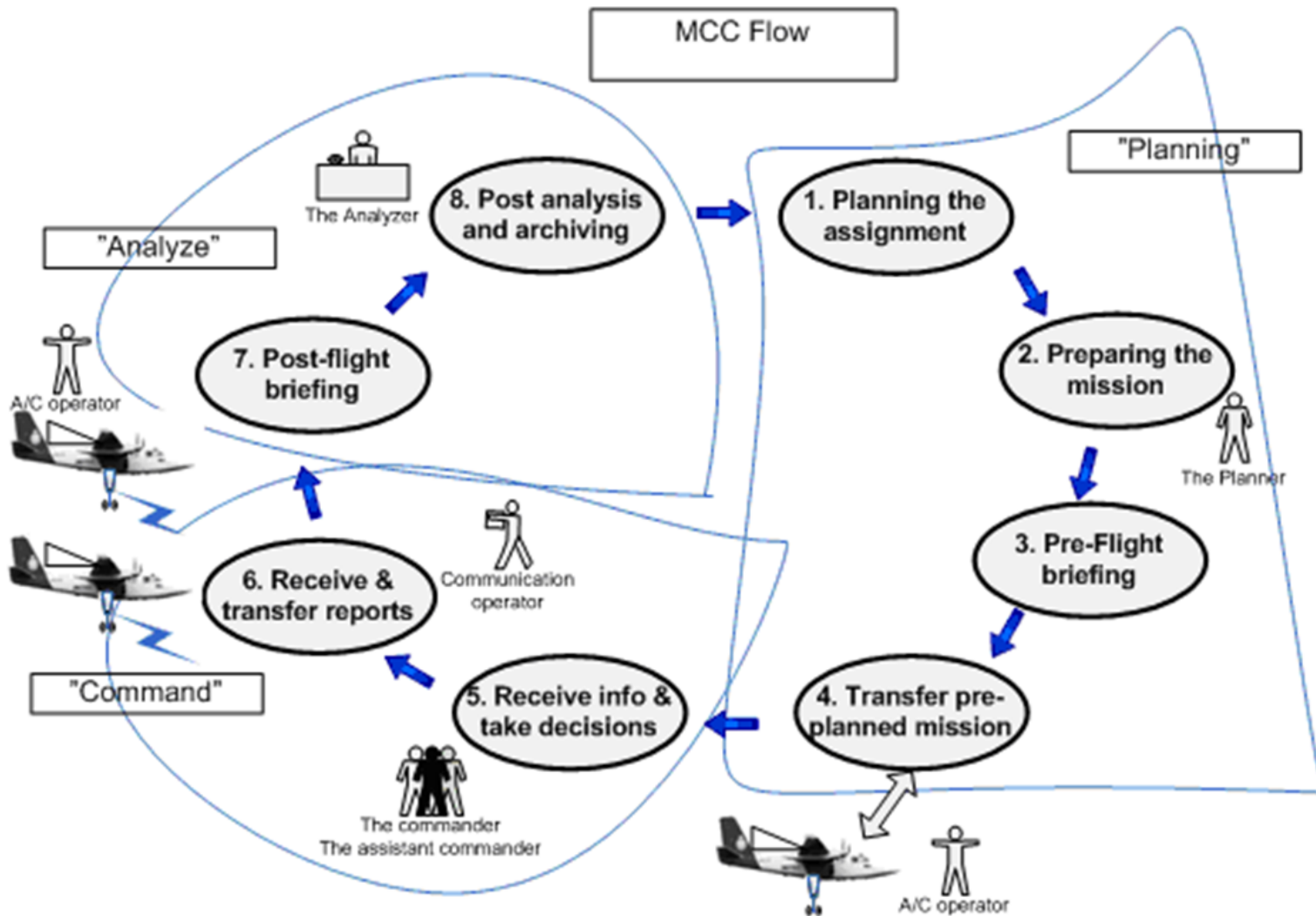


4. Improving mission efficiency with a dedicated MCC

SSC new Mission Command Centre (MCC) - 2012



Eight phases of a surveillance mission



5. Conclusion – Why choose MSS 6000?

Operational
Expertise

Proven
Solution

Driving the
standards

*"MSS 6000
For successful missions"*



ENABLING YOU TO MAINTAIN CLEAN & SECURE WATERS



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