RADASCAN APPLIED TO VESSEL UNDERWAY REPLENISHMENT AT SEA DP OPERATIONS

Dr. Dominic Pearce
Marine Division
Guidance Navigation Ltd
Leicester, UK

DYNAMIC POSITIONING CONFERENCE
October 12-13, 2010
OPERATIONS

Return to Session Directory

RadaScan System Components

Vessel Mounted Sensor

Ship Mounted Transponders

Marine Display and Computer

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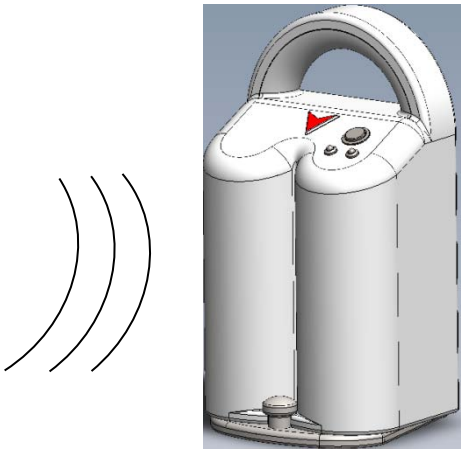
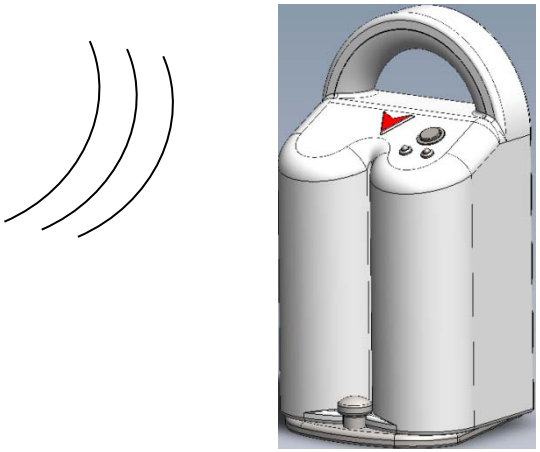
Mini RadaScan System Components

Vessel Mounted Sensor



Ship Mounted Transponders



Marine Display and Computer

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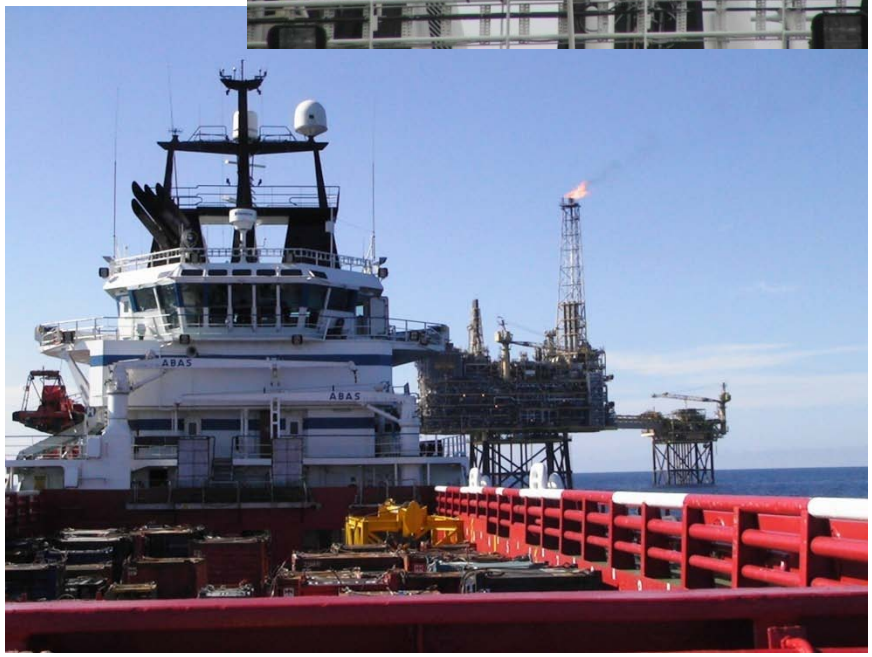
RadaScan Installations



RadaScan System Specification

- 3W FMCW radar at 9.2-9.3GHz (radiolocation band)
- 360 scanning with 1Hz data rate
- Range 10m - 1000m line of sight
- 1.2m diameter dome

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Mini RadaScan System Specification

- 3W FMCW radar at 9.2-9.3GHz (radiolocation band)
- 360 scanning with 1Hz data rate (3Hz planned)
- Range 10m - 200m line of sight
- Range 200m – 350m careful setup
- 0.5m diameter dome
- Portable installation

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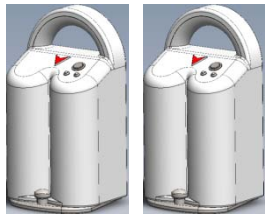
System Specification (transponders)

- “sees” only RadaScan transponders
- Rotate polarisation by 90
- Add unique ID by modulation to reflection
- Demodulation of ID at receiver rejects clutter using communication style processing techniques
- 12 month Fixed battery life option
- Mini Transponder rechargeable, one month between charges
- All transponders are compatible



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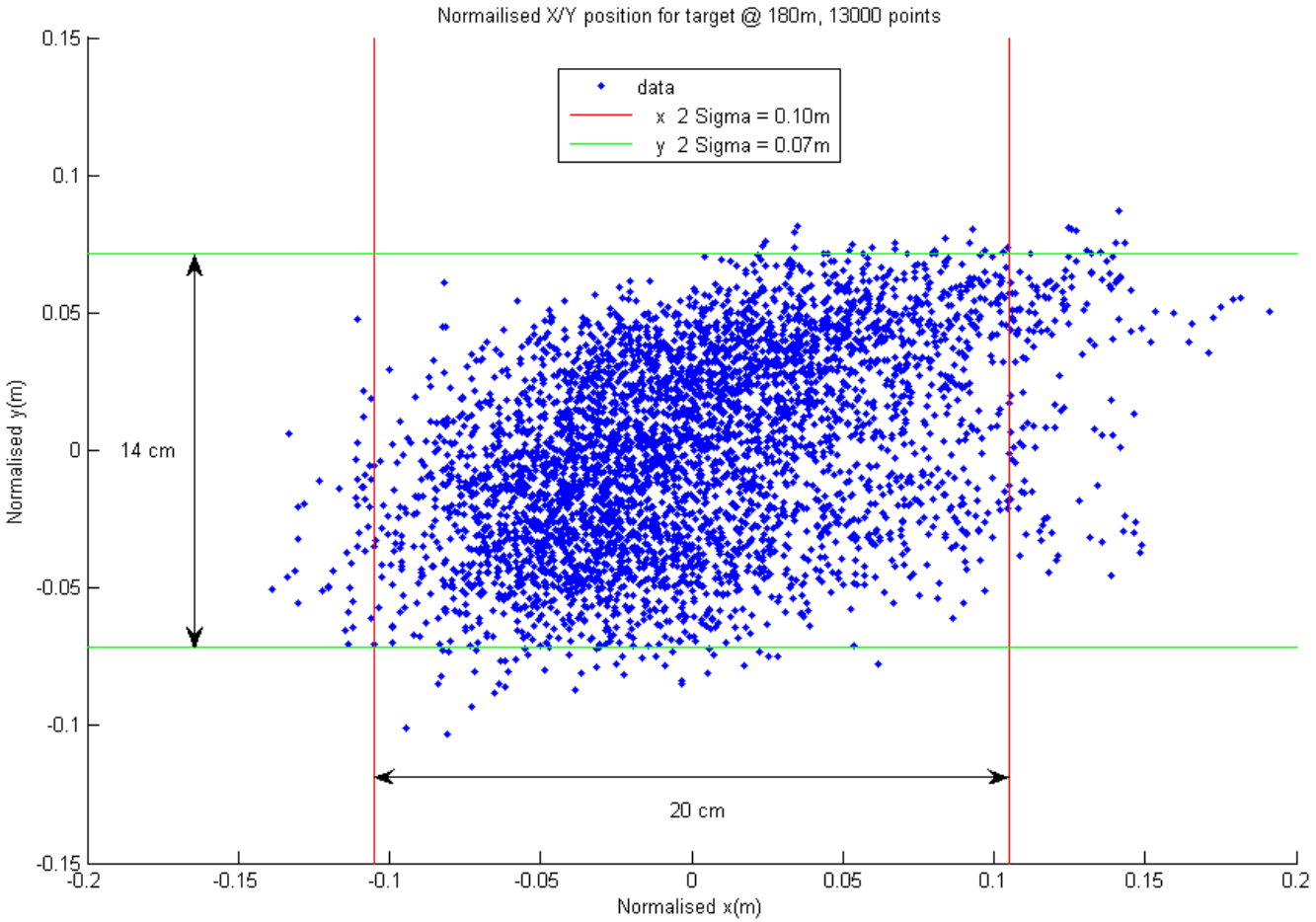
Position Measurement Repeatability



Data measured statically at the GNL test range

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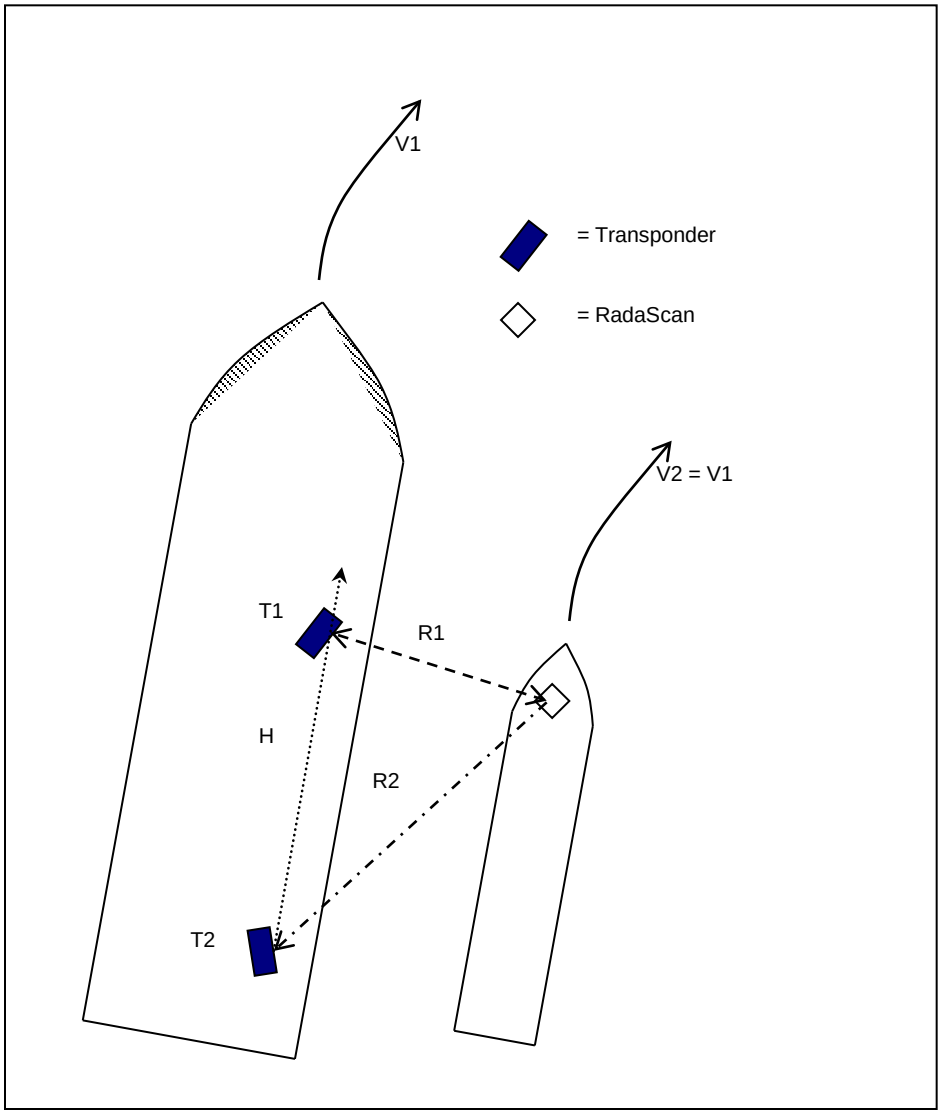
Replenishment at Sea

- Transfer personnel & materials between two vessels.
- Supply vessel controlled by Dynamic Positioning, position and heading supplied by RadaScan
- Match forward velocity and maintain lateral separation.



Replenishment at Sea Trials

February 2009

Vessels:

USCGC Mellon, a 378’ High Endurance Cutter (HEC)

HOS Gemstone, a 300’ Offshore Supply Vessel (OSV)

Dynamic Positioning (DP):

Gemstone fitted with L3 DP System

Position control solely from the RadaScan system

Manoeuvres:

Straight Line, 45 & 90 degree turns at 8-12 knots

Vessel separation: 60 feet.

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RAS – USCGC Mellon

RAS – Transponder placement

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RAS – HOS Gemstone – RadaScan placement

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RAS – Vessels Holding Station at 12 knots

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RAS – Crane extended between two vessels

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RAS – HOS Gemstone Wake Trail during turn

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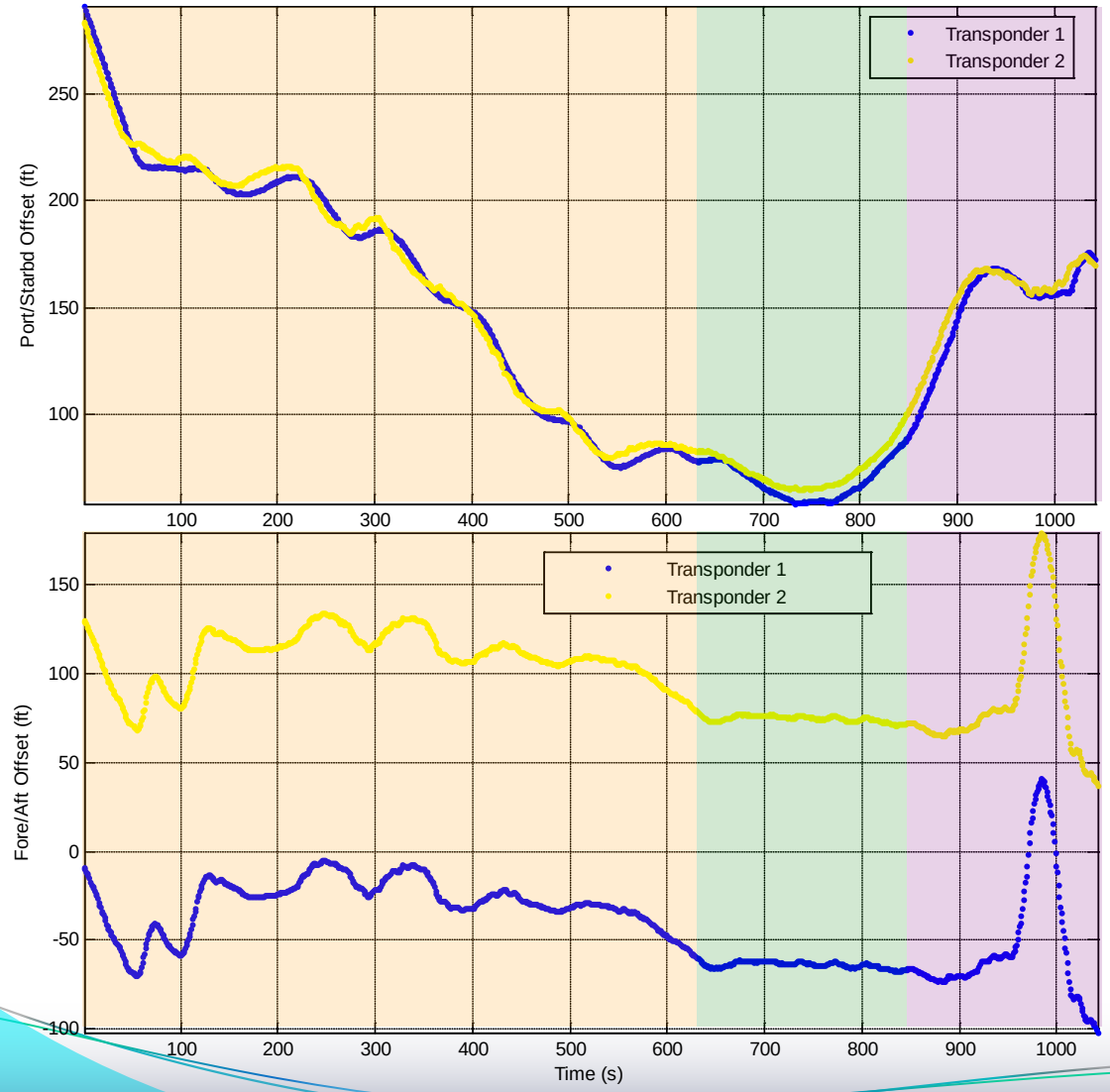
RAS – RadaScan Data



Key

Slow approach of the HOS Gemstone

Final approach and hold for RAS manoeuvre. Fore/Aft control to within 2’

Break away of HOS Gemstone.

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Conclusions

- RadaScan has been shown to be a reliable sensor for RAS operations and is suitable for difficult weather conditions where laser systems struggle.
- Dynamic positioning combined with microwave sensor technology has been shown to be the way forward for RAS operations.

RadaScan
POSITION REFERENCE SENSOR

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