

Land & Marine Project Engineering Ltd

Case Study

ROV Operations - Dounreay



Dounreay Site
Restoration Ltd

Land & Marine



NUVIA

WHO ARE WE ?

- n Founded in 1953 Bromborough Wirral. 2013 sees 50th Anniversary
- n Former owners Boskalis, Costain Oil Gas & Process, Smit International
- n Land & Marine Acquisitions since 2002:

McAlpine Marine Division 2003

Walter Lawrence 2005

McTay (Part of Mowlem) 2006

Avoidatrench 2006

Mowlem Energy Team Join 2007

Stork Protech (Specialist Design Team) 2008

Haigh Pettican (Pipeline Fabricators) 2009

WHAT DO WE DO ?

International Contracting & Engineering Company with main business activities in:

- Marine Construction & Offshore Decommissioning
- Hydrographic Surveys & Diving Operations
- Project Engineering & Studies
- Specialist Pipe Pulling & Equipment Hire
- High Pressure Pipelines and Aviation Refuelling
- Horizontal Directional Drilling
- Renewable Energy & Power Plant
- Specialist Welding & Fabrication Facility (Barnsley)
- Storage Tank Design, Build & Tank Seals

WHAT ARE OUR STANDARDS ?

Land & Marine accreditations: (LRQA)

- n ISO 9001:2000
- n ISO 14001:2004
- n OHSAS 18001 (Safety)
- n ROLLS ROYCE NUCLEAR ACCREDITATION (Pending – April 2013)
- n CURRENTLY 820 DAYS WITH NO LTA's



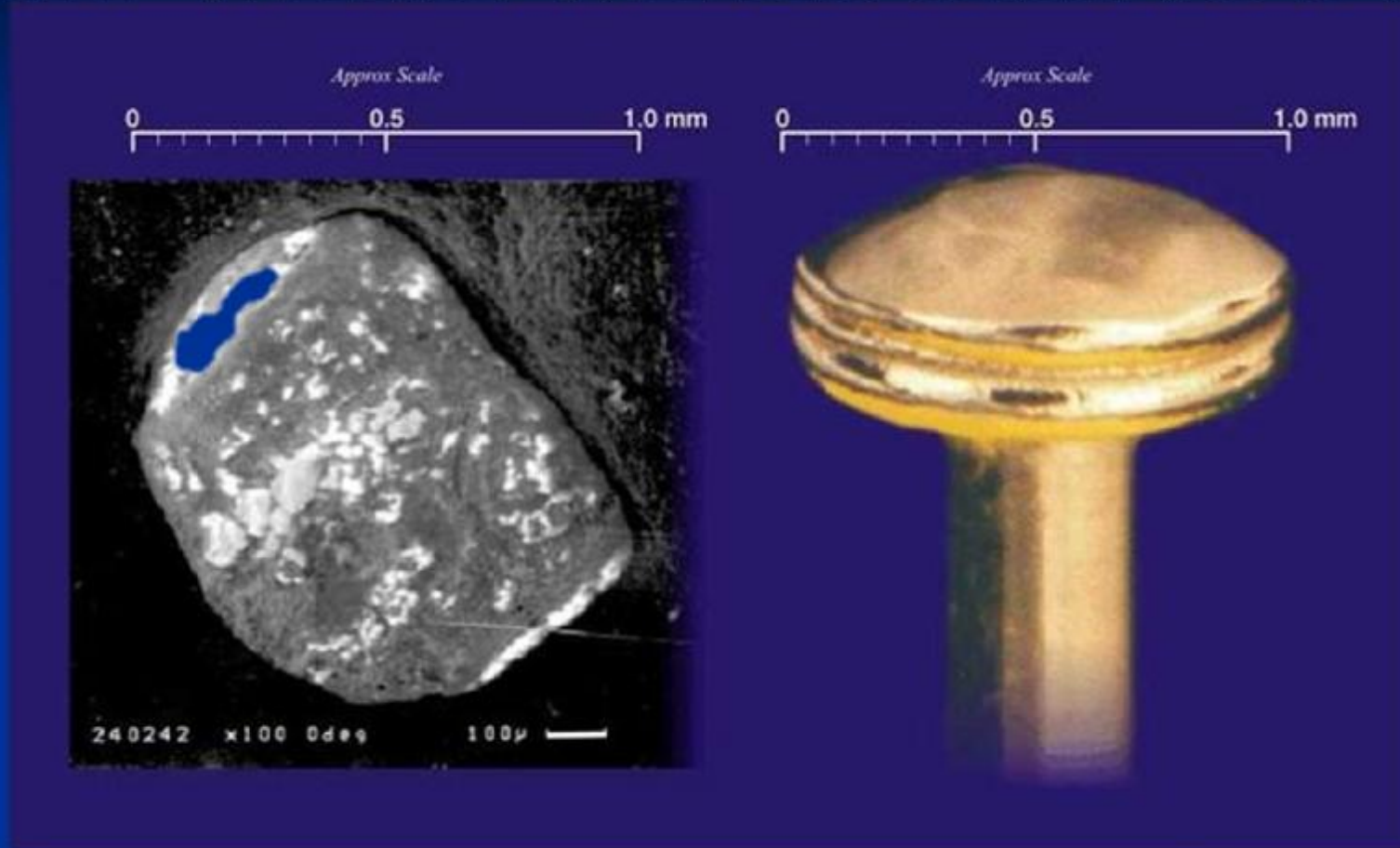
WHY DID WE GET TO CONTRACT ?

- Marine Construction Operations & Diving
- Offshore Project Management
- Designed & Built Offshore Vehicles
- Previous Nuclear Operational Experience @
Sellafield
Dungeness
- Hydrographic Survey Specialists
- Fabricators
- Working Relationship with Term Contractor – NUVIA
- Ultimately through DSRL Tender process

REASON FOR CHANGE

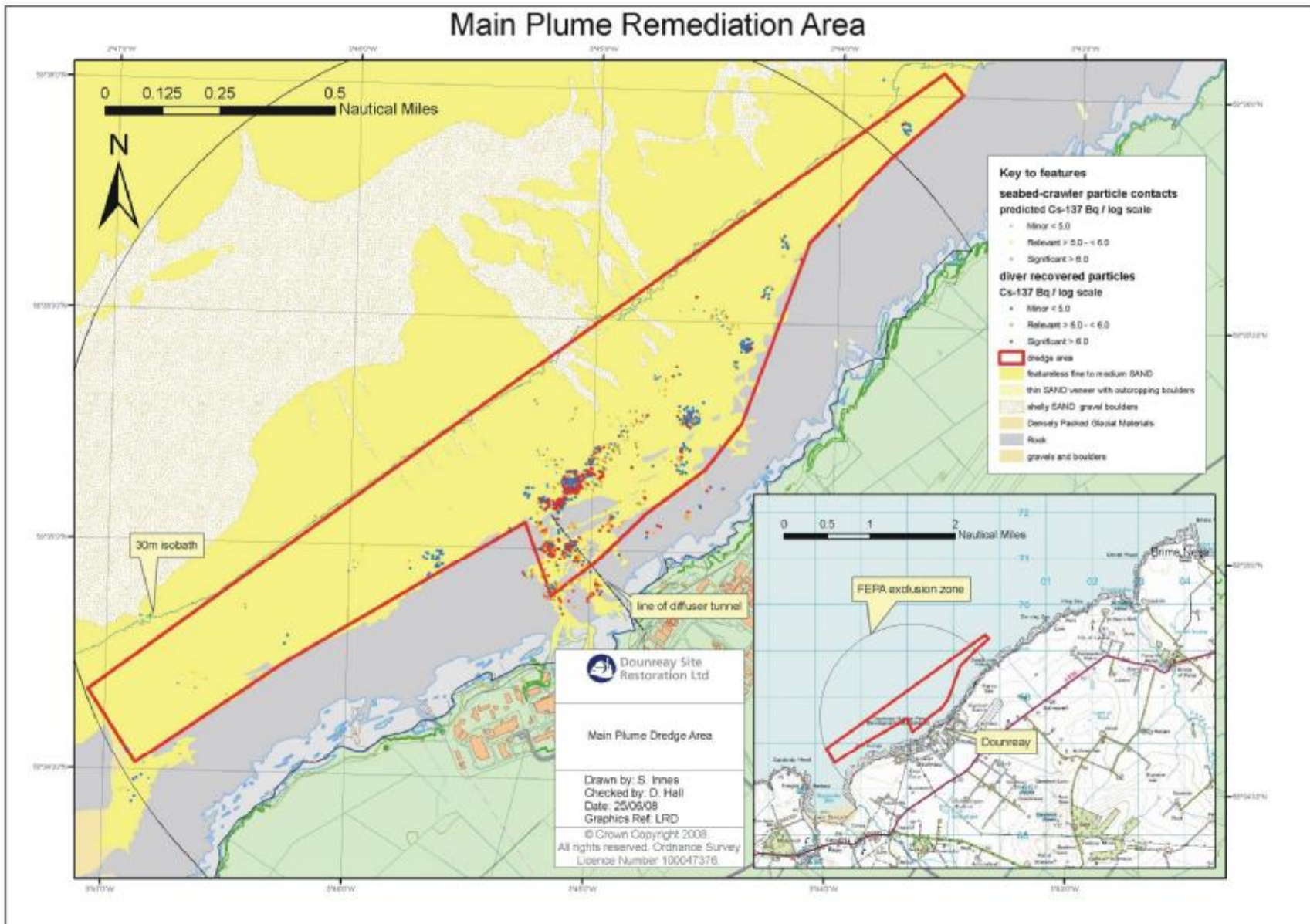
- Years of Study & Diver Surveys
- Sensitive local issues & Stakeholder Pressure
- Existing Contractor – Frustration & lack of progress
- A Willingness for step change by DSRL

WHAT WERE WE LOOKING FOR ?



Fragments of irradiated nuclear fuel discharged to sea as a result of practices in reprocessing during the 1960s and 70s.

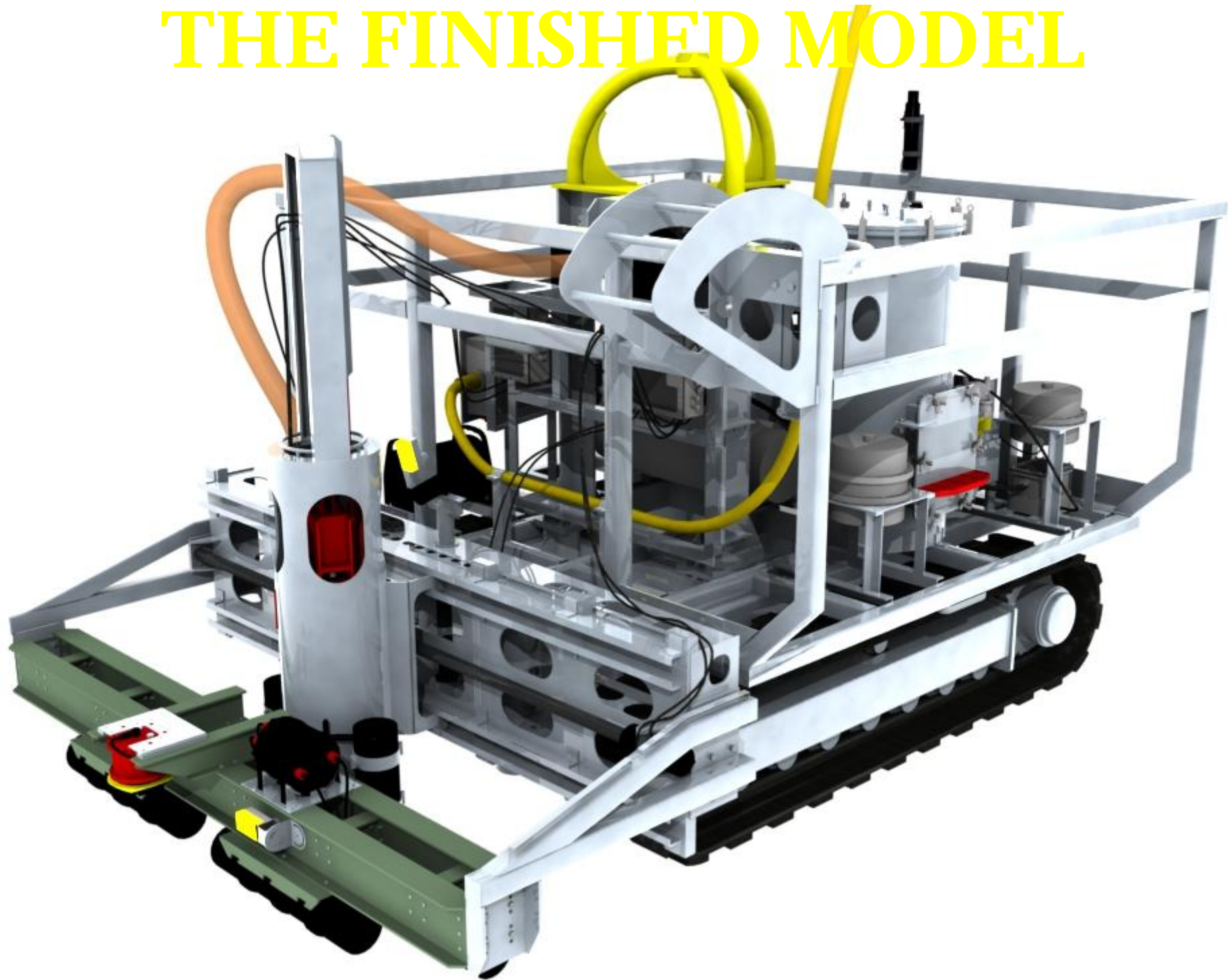
WHERE DID WE SEARCH



HOW WE WENT ABOUT IT ?

- n FINAL DESIGN & BUILD OF A SUBSEA VEHICLE TO PERFORM THE WORK
- n PROVE TARGETING SYSTEM
- n DESIGN & BUILD A CONTROL ROOM
- n DESIGN & BUILD A DEPLOYMENT SYSTEM TO COPE WITH SEASTATE 4 – 5 (2m SEAS)
- n PREPARE SURVEY SYSTEMS TO ACCURATELY TRACK THE VEHICLE.
- n PREPARE OFFSHORE SUPPORT SPREAD TO COVER 24 HOUR OPERATIONS

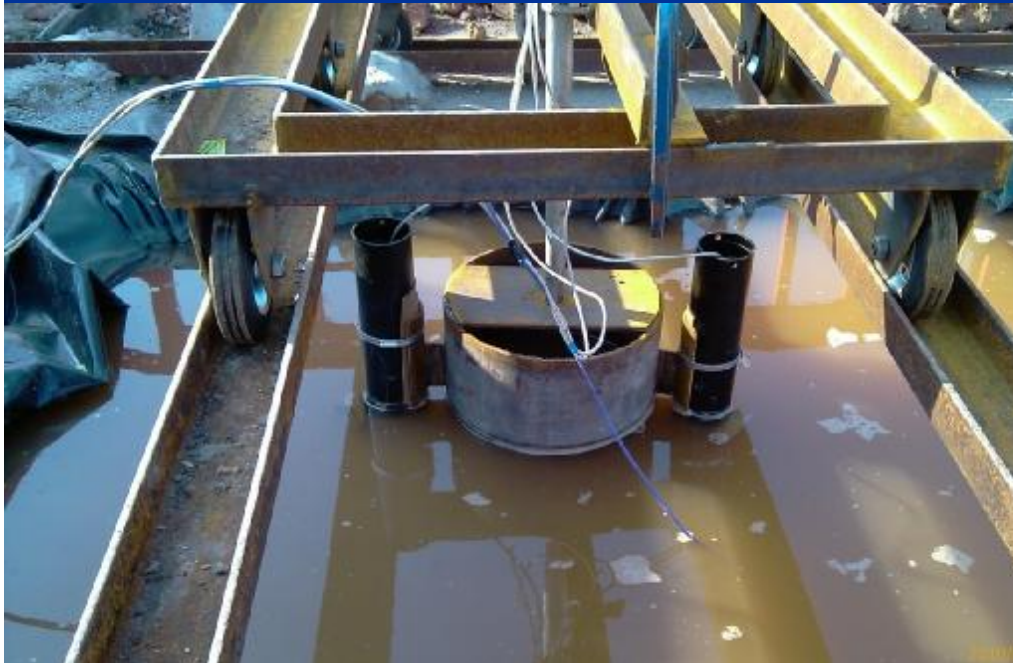
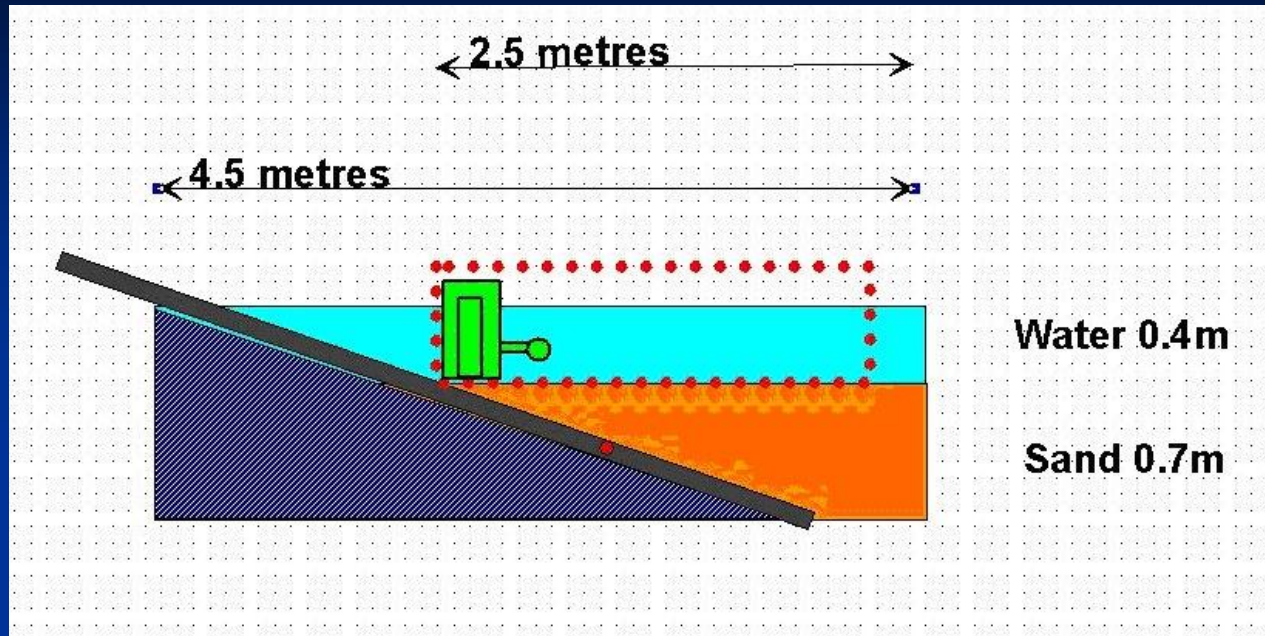
THE FINISHED MODEL



THE FINISHED VEHICLE

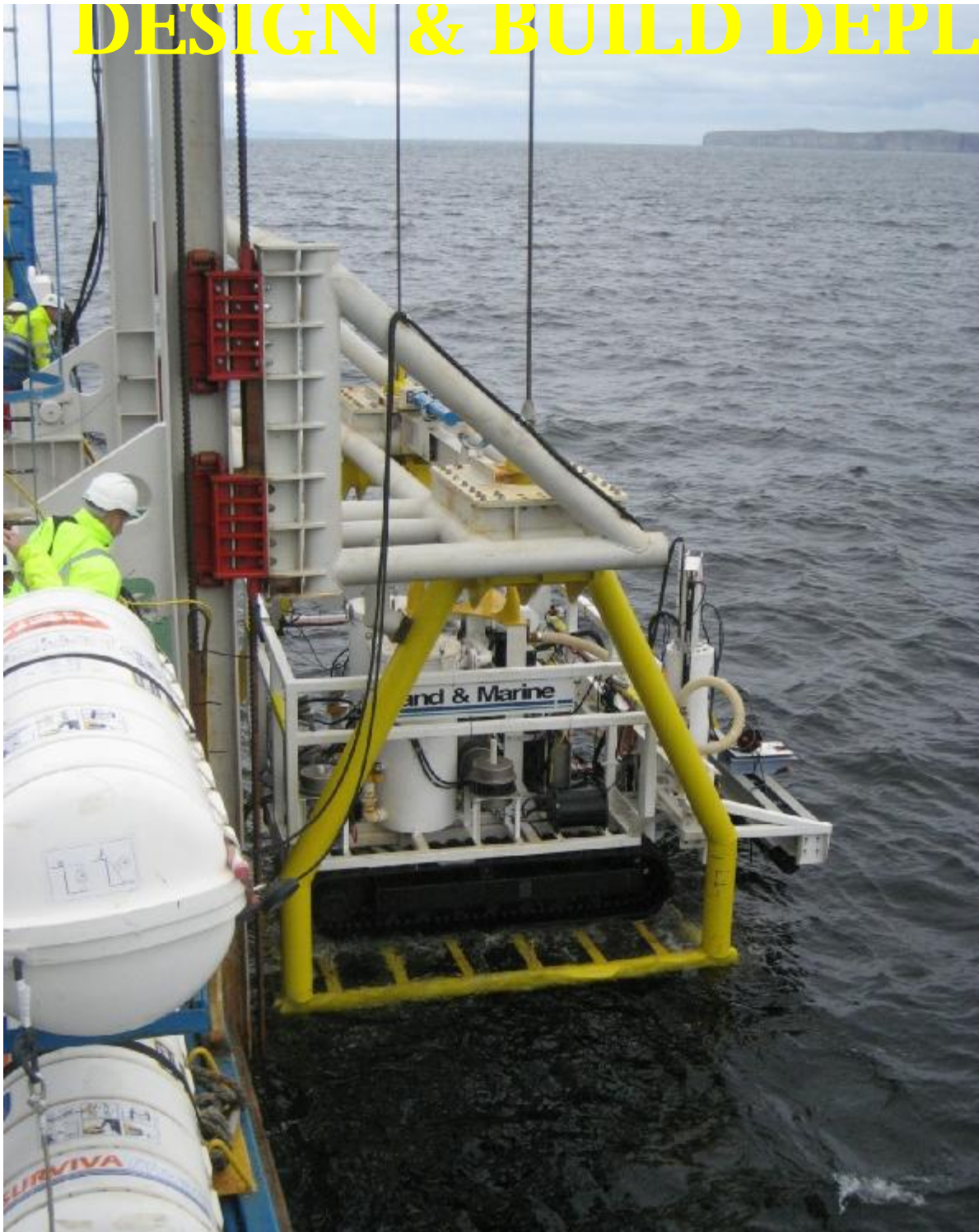


PROVE TARGETING SYSTEM

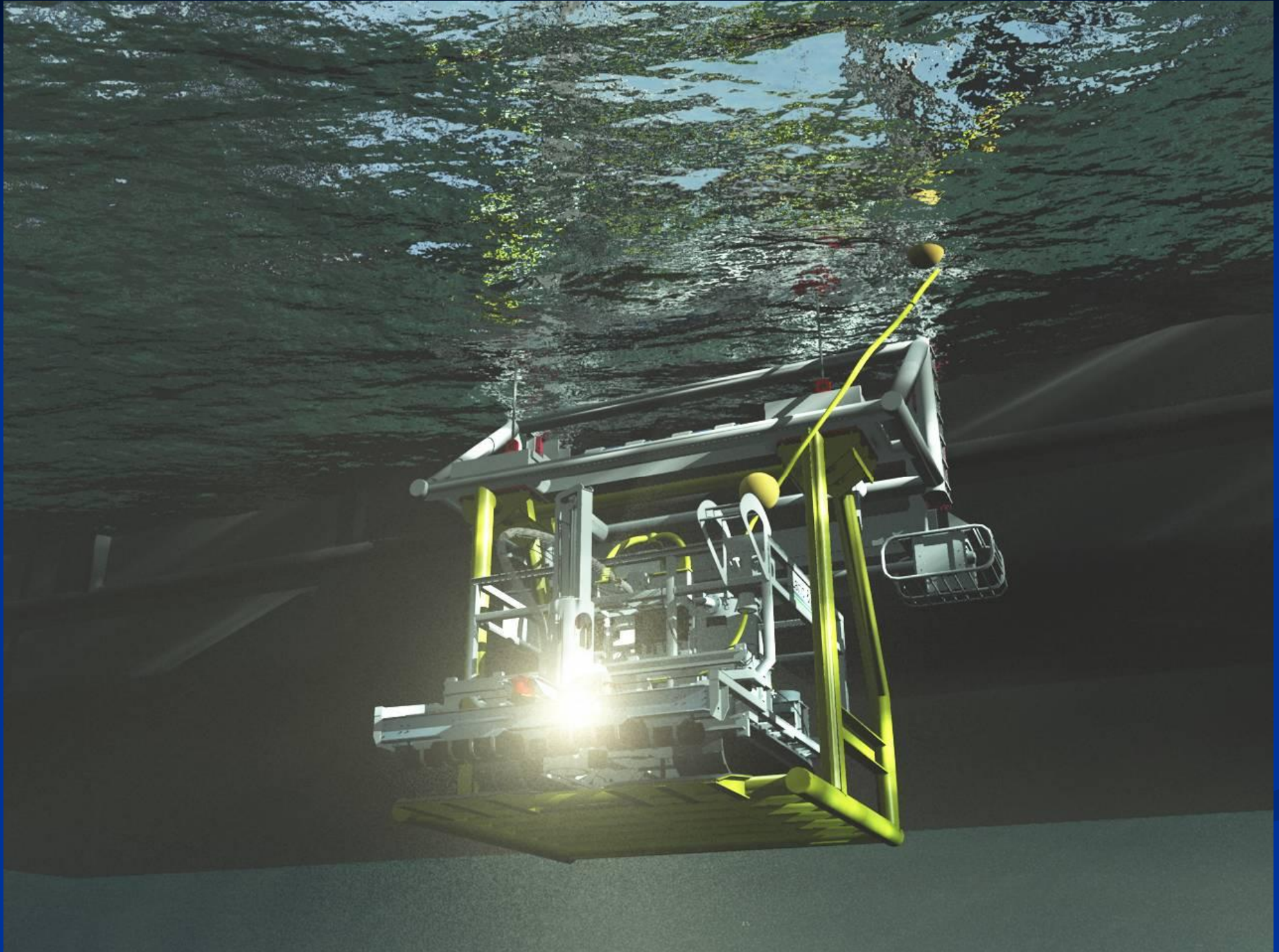




DESIGN & BUILD DEPLOYMENT SYSTEM



DESIGN & BUILD DEPLOYMENT SYSTEM

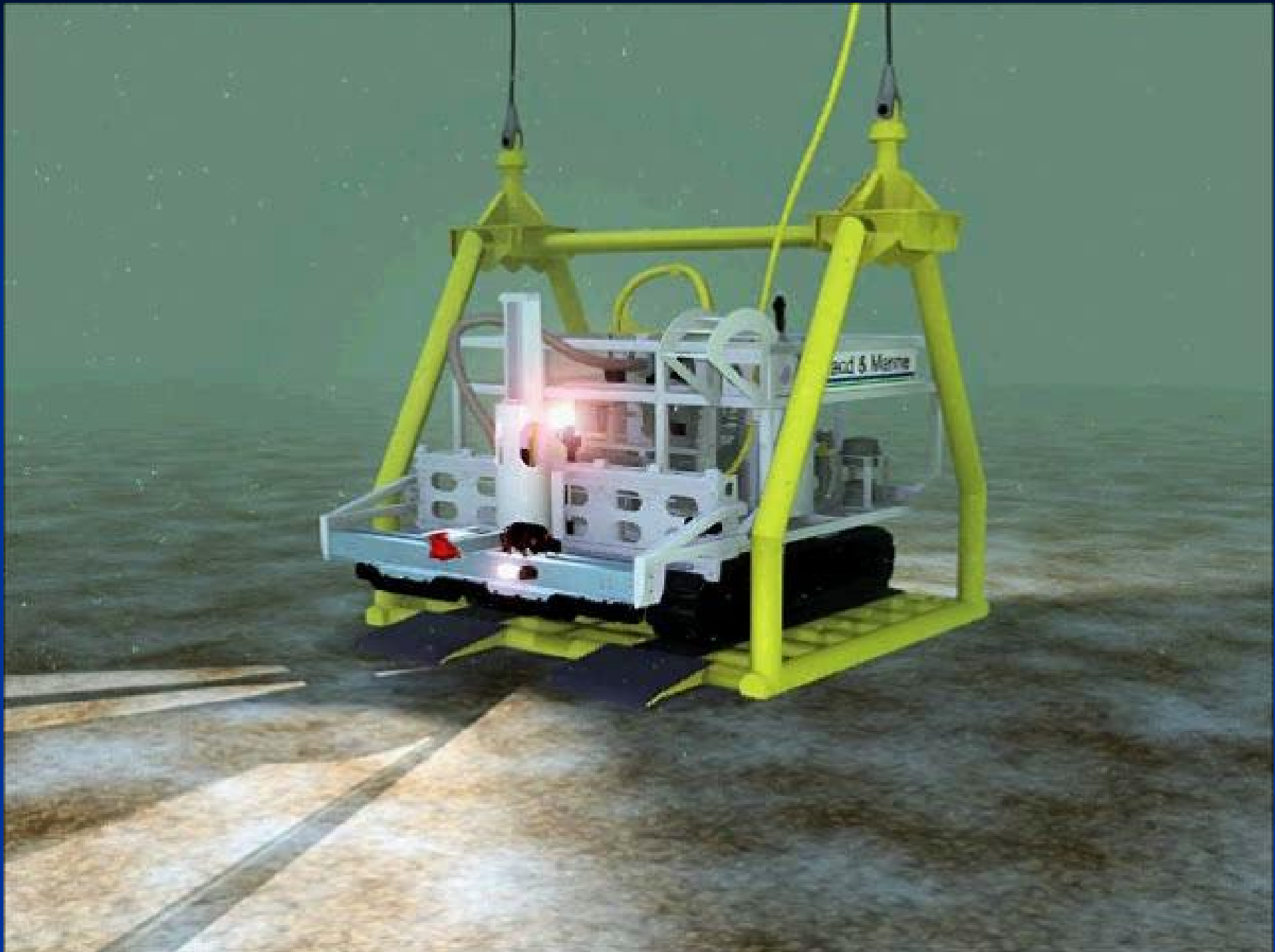




DESIGN & BUILD DEPLOYMENT SYSTEM



DESIGN & BUILD DEPLOYMENT SYSTEM



SURVEY SYSTEMS TO ACCURATELY POSITION THE VEHICLE

ROV GUIDE
CORRIDOR

PILOT TRACK INFO

HEADING, PITCH &
ROLL



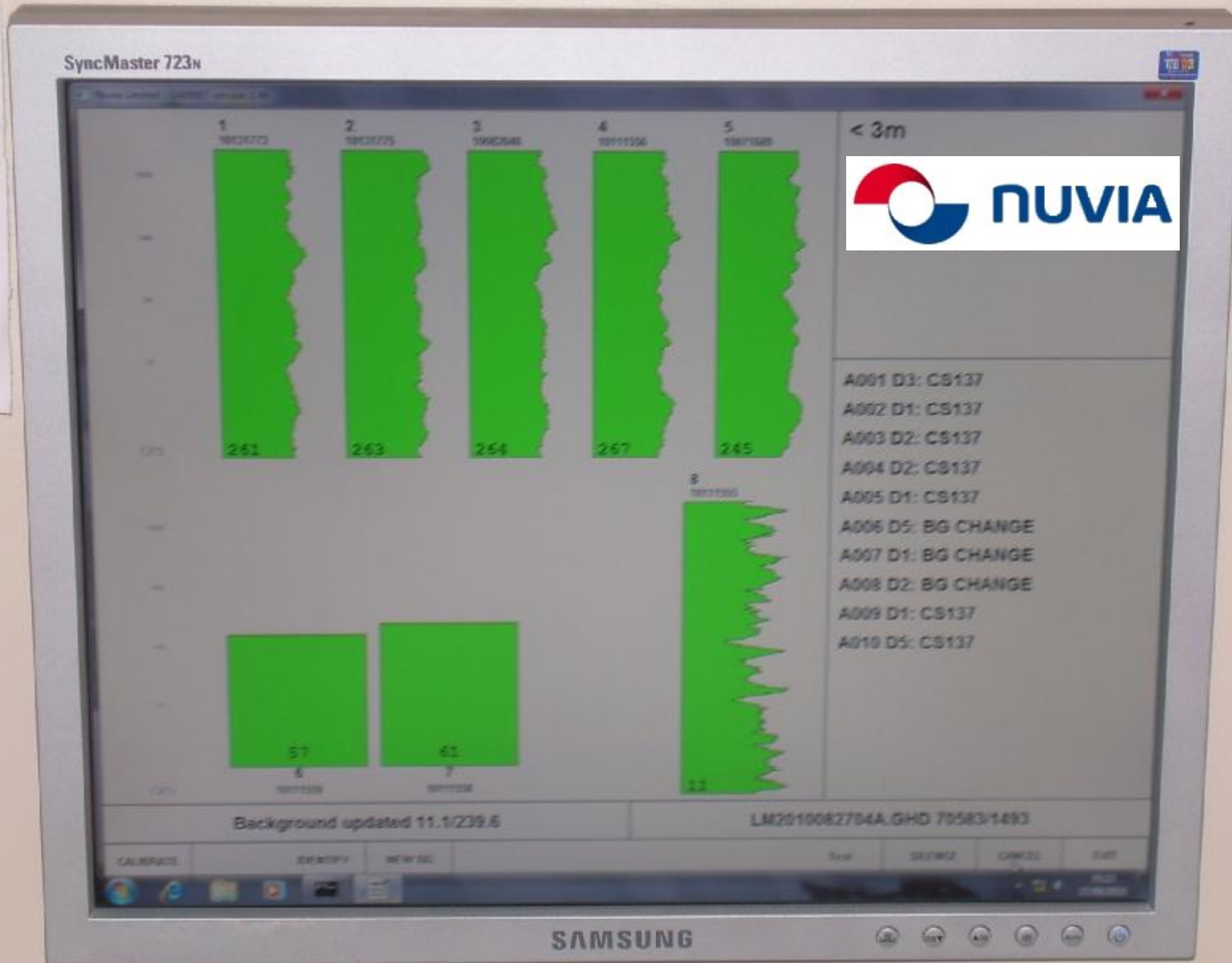
FORWARD CAMERA APPROACHING ROCKS

2010/10/02 17:00:05
29809.62° E 967675.453° N
88° E 9° N
88. E, 9° 7

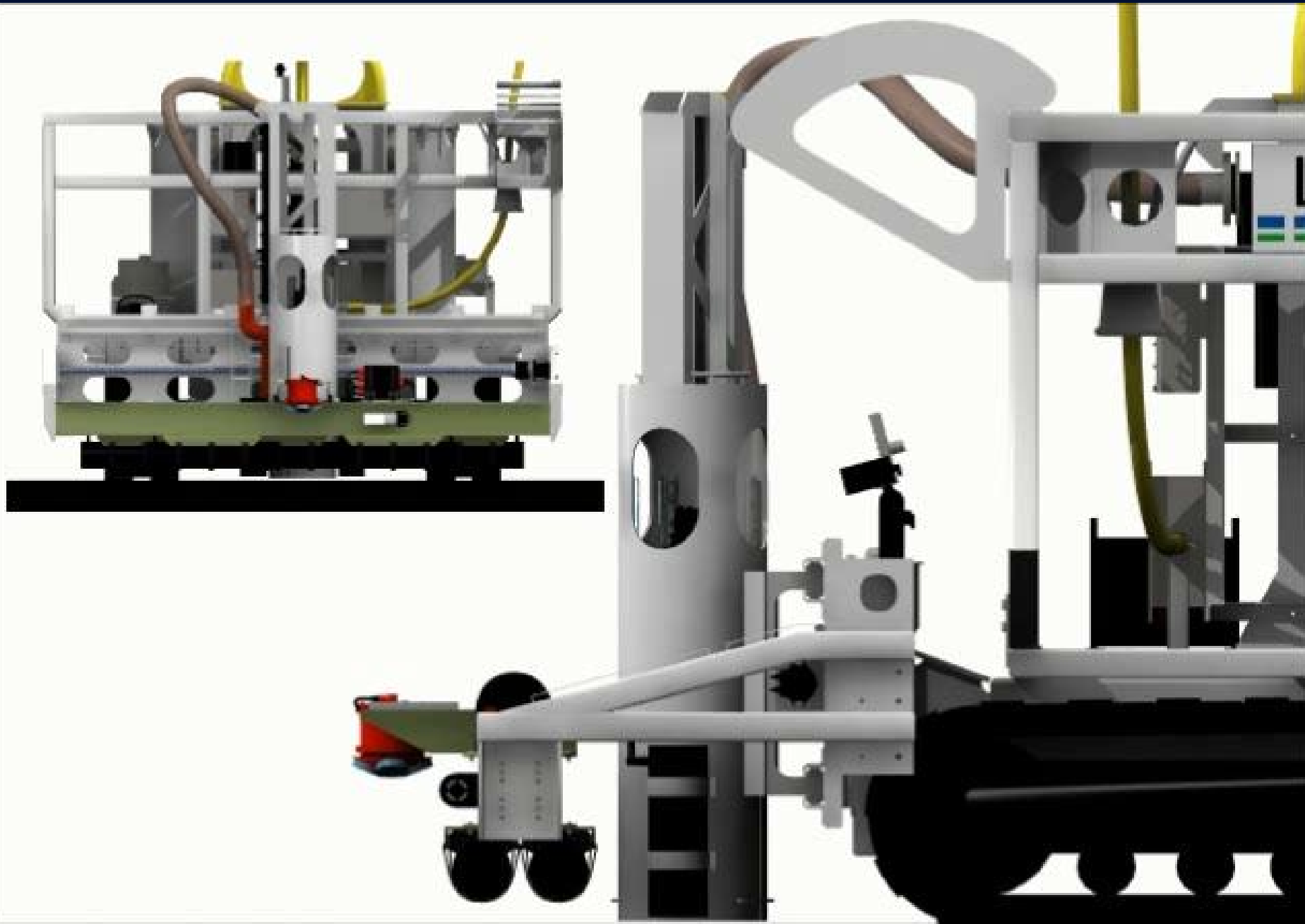
352 x 288

RADIATION SENSOR DISPLAY - NUVIA

RADIATION
SENSORS



RADIATION SENSOR SEABED PROXIMITY



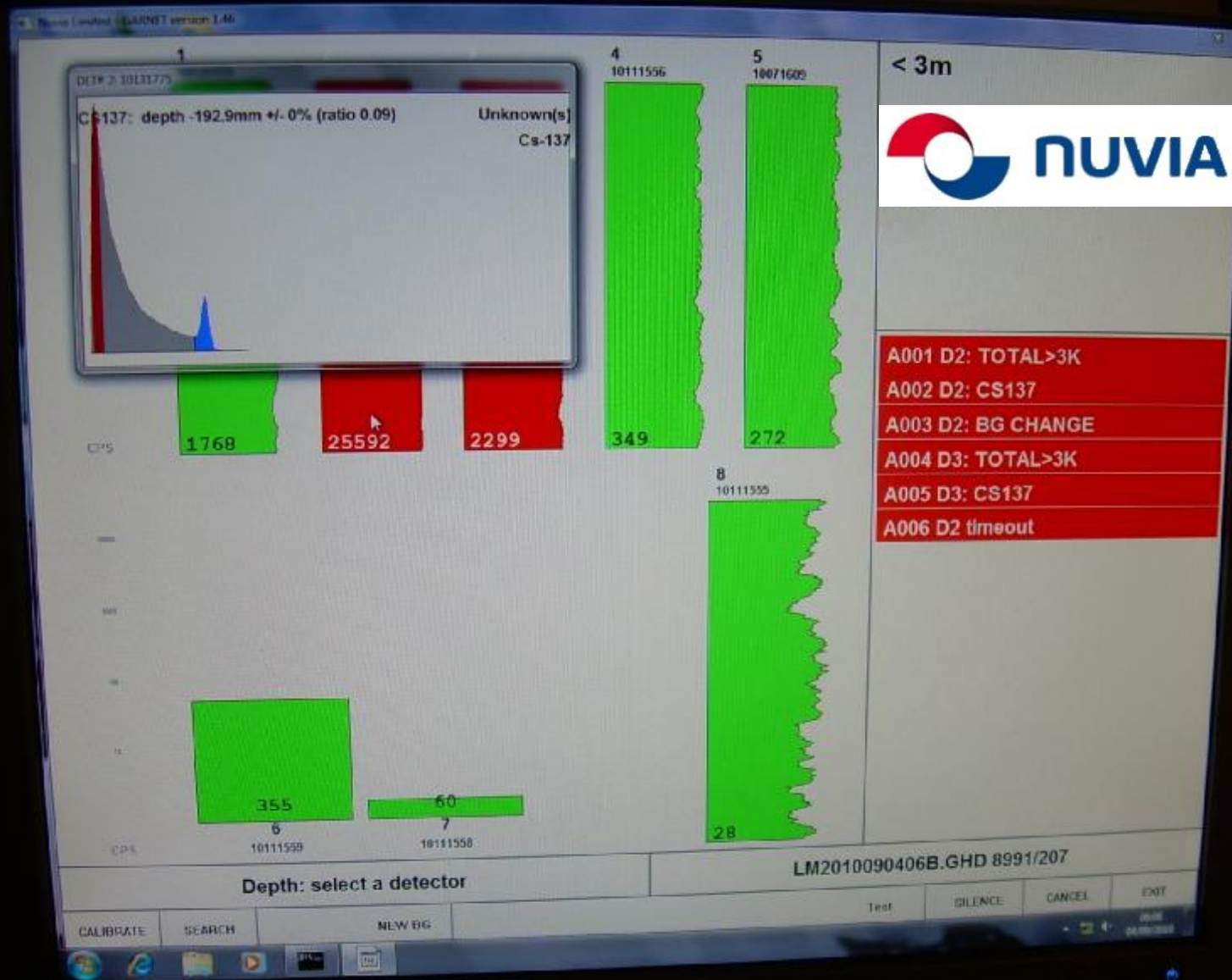
RADIATION SENSOR MOVEMENT TO TARGET PARTICLES



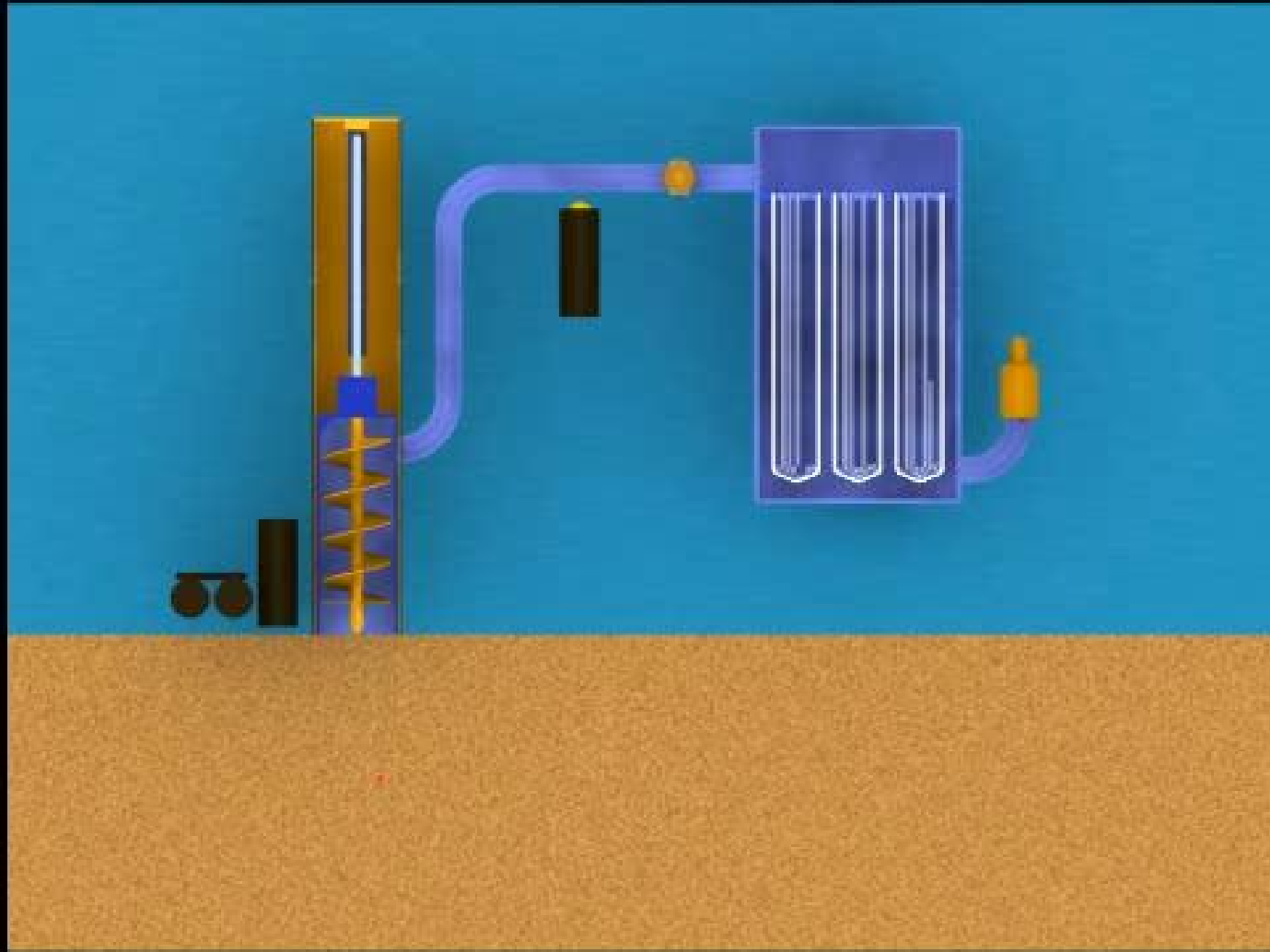
PARTICLE DETECT SENSOR 2



PARTICLE IDENTIFICATION & DEPTH



PARTICLE SUCTION & CAPTURE



VIDEO SHOWING CONICAL HOLE AFTER CORING

2010/10/10 02:11:56° E 967986.177° N

30° E ,M
30,E,9° 8

2010/10/10 02:14:25

Full Disk Cam

352 x 288

A RATHER FULL RECEPTION TANK



FILTER REMOVAL FOR SEGREGATION



PARTICLE HANDLING

- n ISOLATE PARTICLES
- n DETERMINE SIZE/MAGNITUDE
- n UNIQUELY RECORDED
- n BAG & TAG
- n PACK INTO APPROVED PACKAGES FOR TRANSPORT ASHORE
- n RECEIVED AT SCRABSTER BY DSRL & SENT TO LAB FOR ANALYSIS OR FOR DISPOSAL.

OFFSHORE SUPPORT SYSTEM

A FLOATING CITY 24 Hrs OPERATIONS

24 STAFF WORKING, EATING, SLEEPING & RELAXING!



CREW VESSEL 2 MEN

TUG CREW 6

2010 SEASON

- n Contract award Feb 20th 2010
- n ON SITE WORKING – 5th Aug 2010 – 166 DAYS
- n We retrieved 429 fragments, of which 81 were above the threshold for being classed as “significant”, as defined by Dounreay Particles Advisory Group in its assessment of potential health effects. The most radioactive fragment measured 100 million becquerels of Caesium-137.
- n The other 348 were categorised as "relevant" and "minor".. 37 Days - Area equivalent to 22 Football pitches

2011 SEASON

- n 351 were taken to Dounreay, results indicate 38 were sufficiently large to be a “significant” risk to human health.
- n Target coverage 16.5 hectares. The ROV was lowered onto the seabed at the beginning of May and was withdrawn on July 3, when it had completed 23.5 hectares. Approximately 3 weeks were lost to bad weather

2012 SEASON

- n Covered a total of 42 hectares of seabed.
- n A total of 299 particles were recovered, of which 16 were considered “significant” in terms of health risk, 54 were “relevant” and 229 were “minor”. * The largest single find measured 7.6MBq of Caesium-137.

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