“Irvine Sea Dart Buoy Concept”
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Overview

• Supports well management
• Option for storage - chemicals
• Unmanned
• Deep water capability
• Minimal motions in benign environments (verified with software)
• Spread moored
• Motions minimised via subsea sails
• Easy access for IMR requirements
Sea Dart - Low Added Mass Buoy

- Proposed for benign regions (sheltered water $hs=4m$ max).
- Payload (generators for subsea power requirements, chemical injection).
- 18 x 18m square 2000 te displacement.
Sea Dart Details

Sea Dart with Sail to Dampen Pitch & Roll

Purpose of Sail
• Lowers centre of added mass
• Lengthens pitch natural period
• Increased pitch damping
• No affect to heave natural period (kept short)

Design Considerations
• Size of sail can be designed to optimise pitch response
Separate Sail Example

Sea Dart Motions Characteristics

- Natural Periods
- Pitch/roll = 22.6 sec
- Heave = 5.0 sec
Separate Sail Example RAO’s

Motions RAOs

![Graph showing motions RAOs with wave period on the x-axis and motion response on the y-axis. The graph includes data points for surge and heave.]
Connected Skirt Option

Reduced Pitch but Increases Loads on Skirt and Moorings Arrangement

- Heave Period 5.3 secs
- Pitch/Roll period = 27.8secs
Connected Skirt Option RAO’s

- Heave Period 5.3 secs
- Pitch/Roll period = 27.8 secs
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Thank You!
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