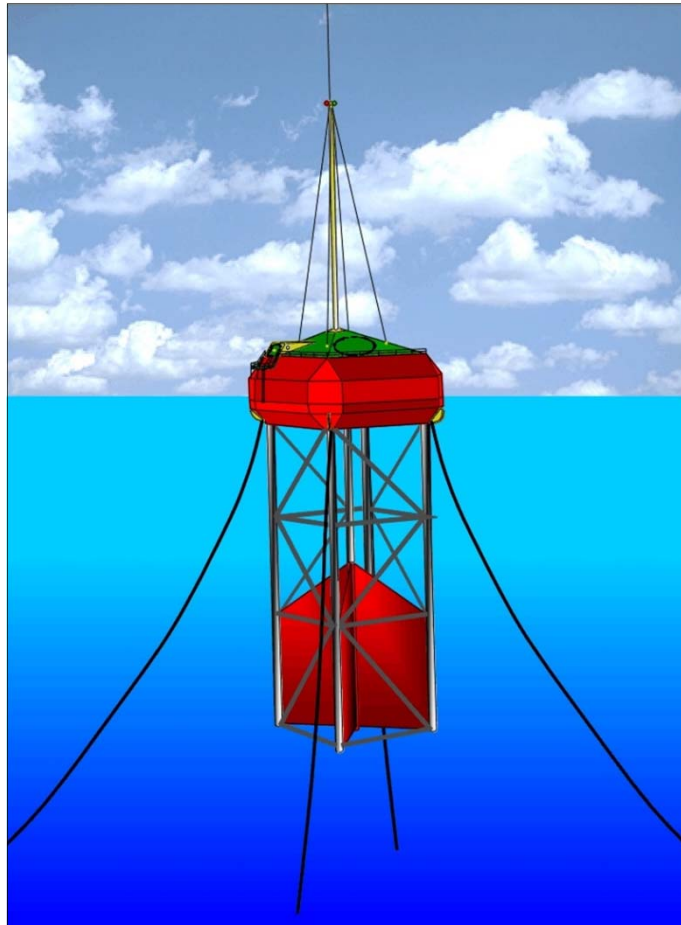




## “Irvine Sea Dart Buoy Concept”

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# Contents

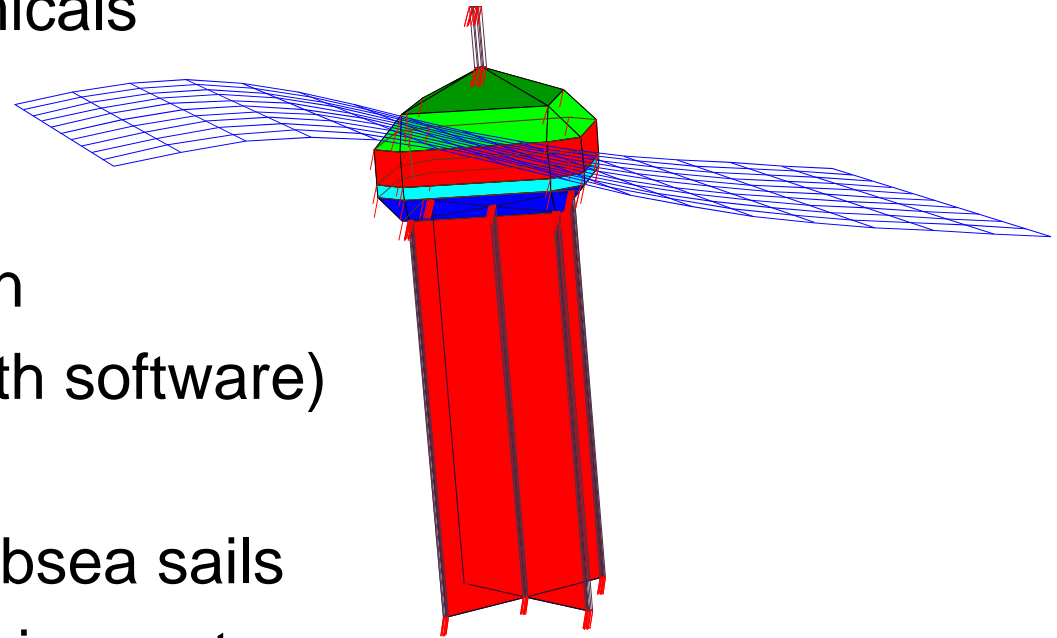
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- Overview
- Sea Dart - Low Added Mass Buoy
- Sea Dart Details
- Separate Sail Example
- Separate Sail Example RAO's
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- Connected Skirt Option RAO's
- Contacts

# Overview

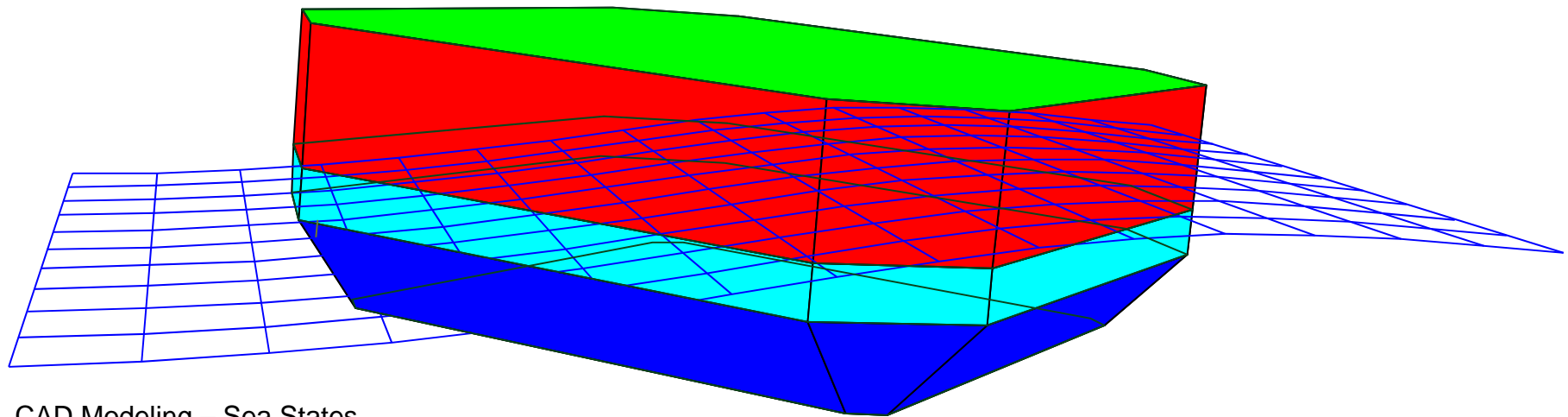
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- Supports well management
- Option for storage - chemicals
- Unmanned
- Deep water capability
- Minimal motions in benign environments (verified with software)
- Spread moored
- Motions minimised via subsea sails
- Easy access for IMR requirements



# Sea Dart - Low Added Mass Buoy

- Proposed for benign regions (sheltered water  $h_s=4\text{m}$  max).
- Payload (generators for subsea power requirements, chemical injection).
- 18 x 18m square 2000 te displacement.



CAD Modeling – Sea States

# Sea Dart Details

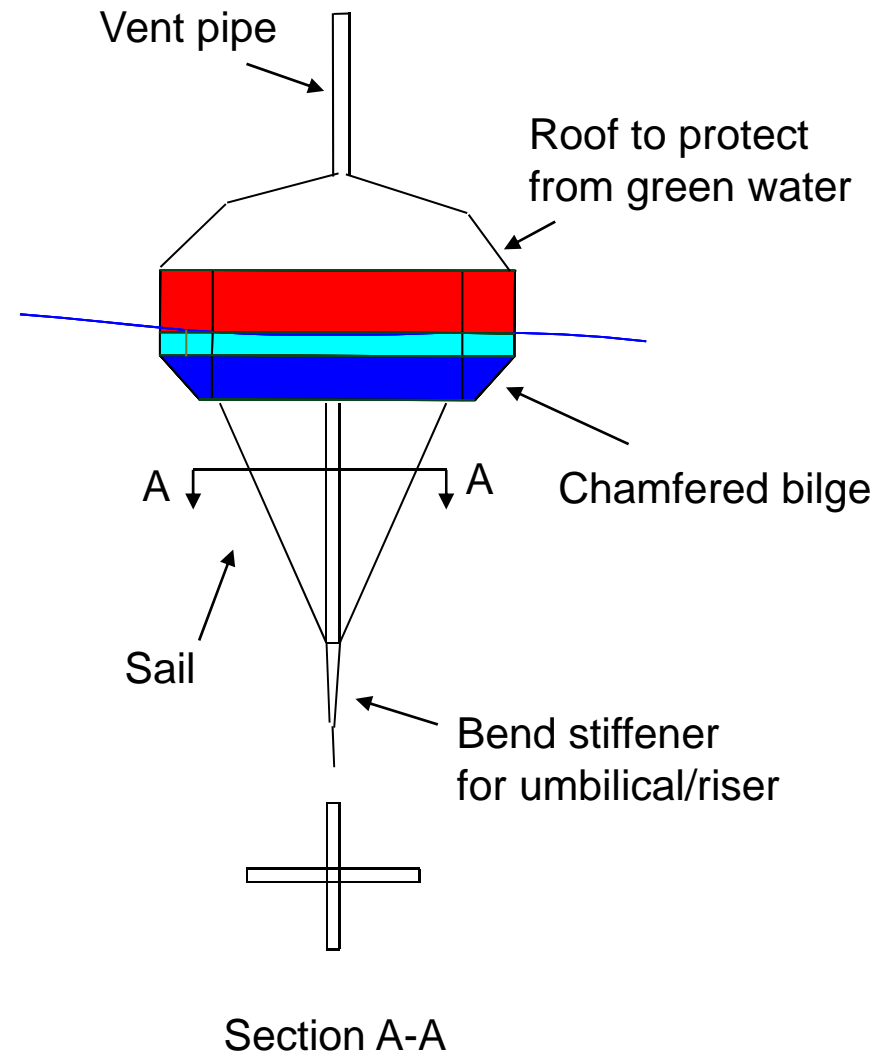
## Sea Dart with Sail to Dampen Pitch & Roll

### 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

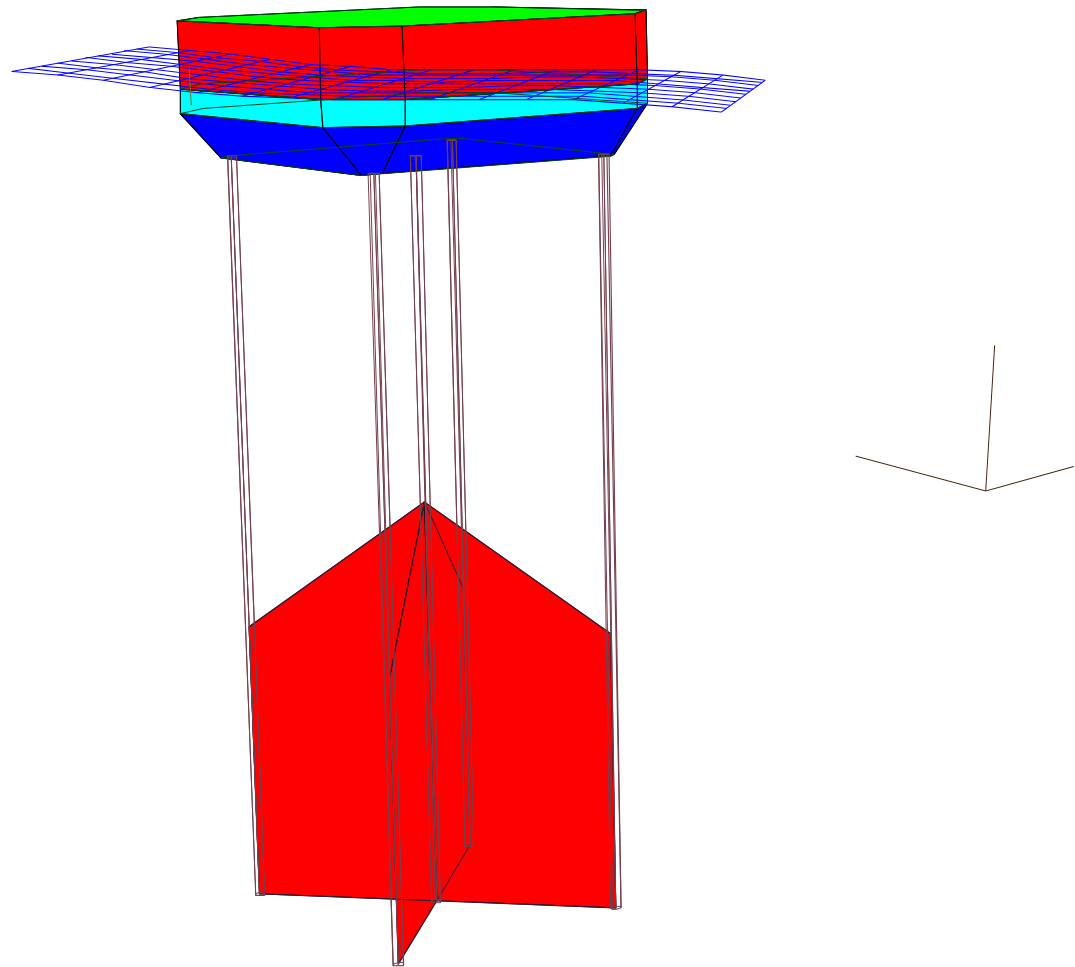
- Size of sail can be designed to optimise pitch response



# Separate Sail Example

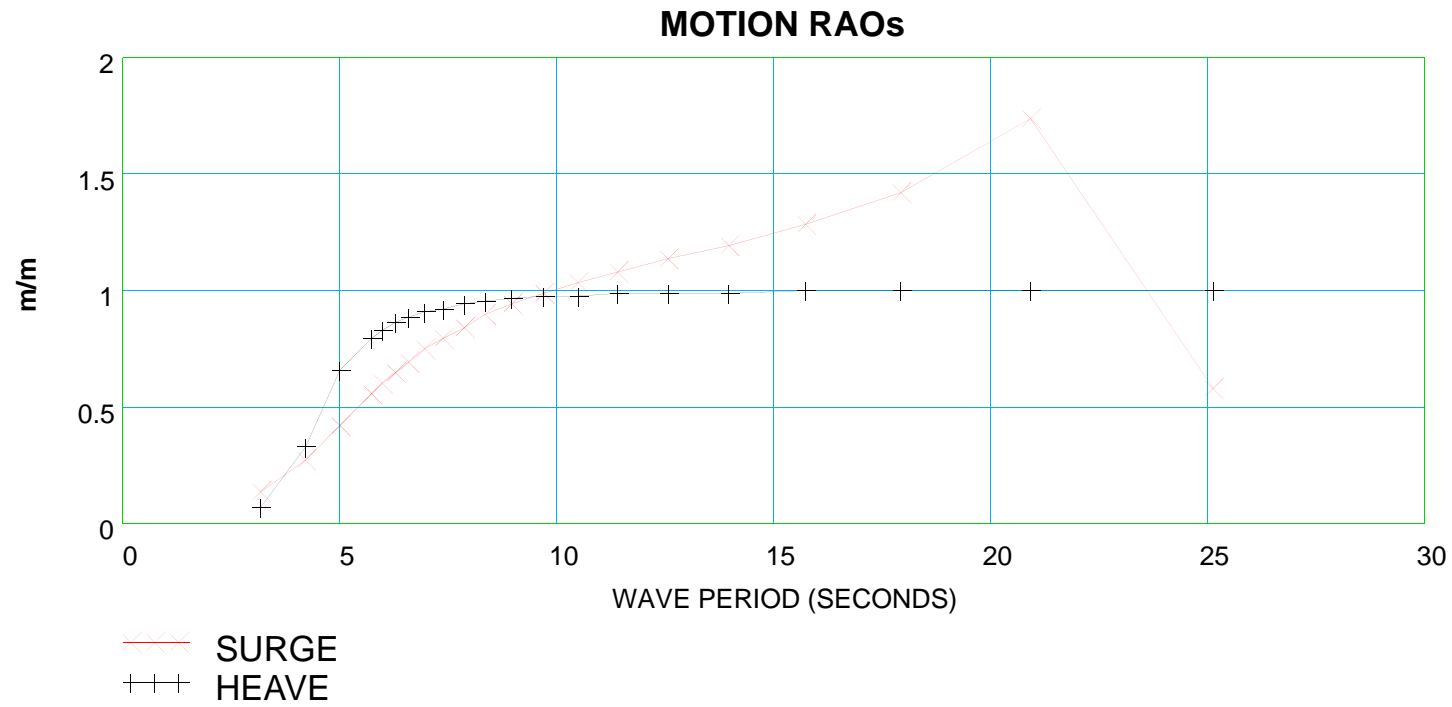
## Sea Dart Motions Characteristics

- Natural Periods
- Pitch/roll = 22.6 sec
- Heave = 5.0 sec



# Separate Sail Example RAO's

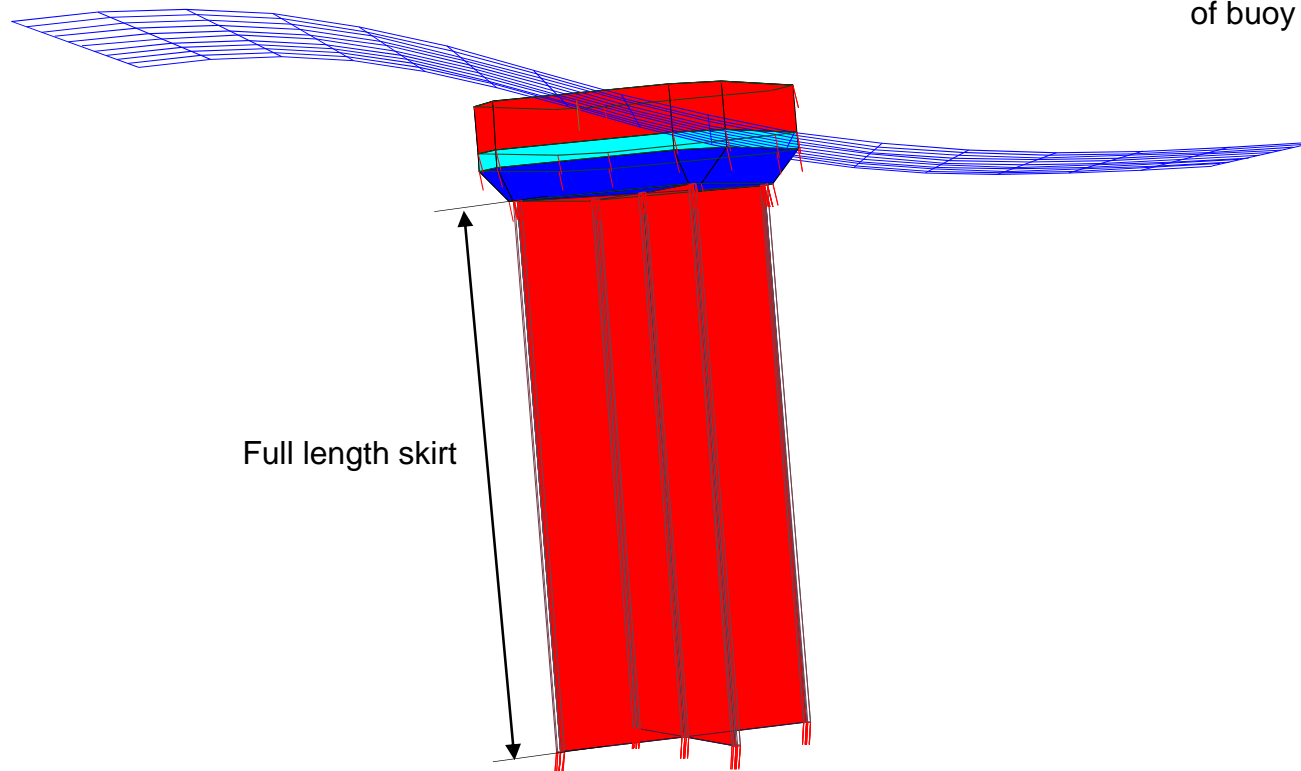
## Motions RAOs



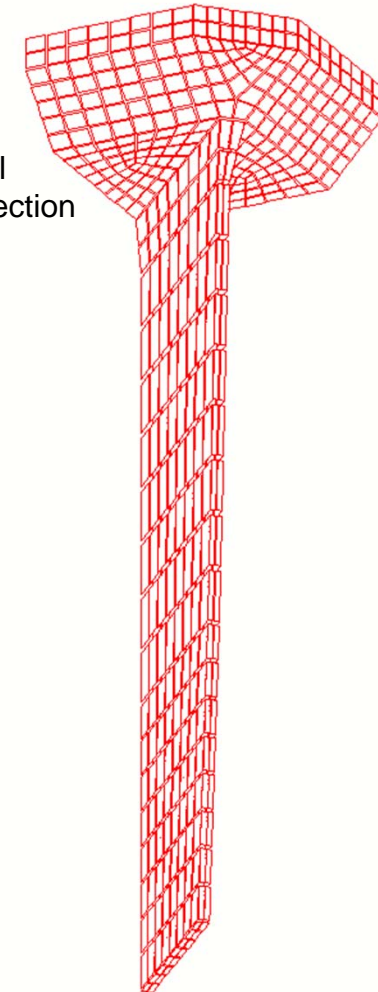
# Connected Skirt Option

## Reduced Pitch but Increases Loads on Skirt and Moorings Arrangement

- Heave Period 5.3 secs
- Pitch/Roll period = 27.8secs



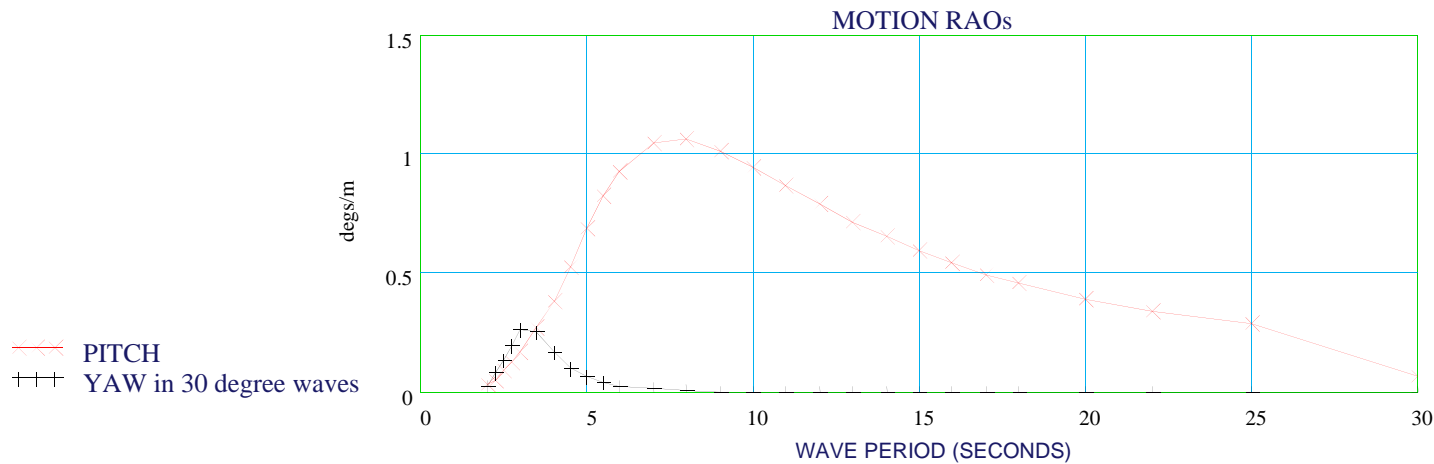
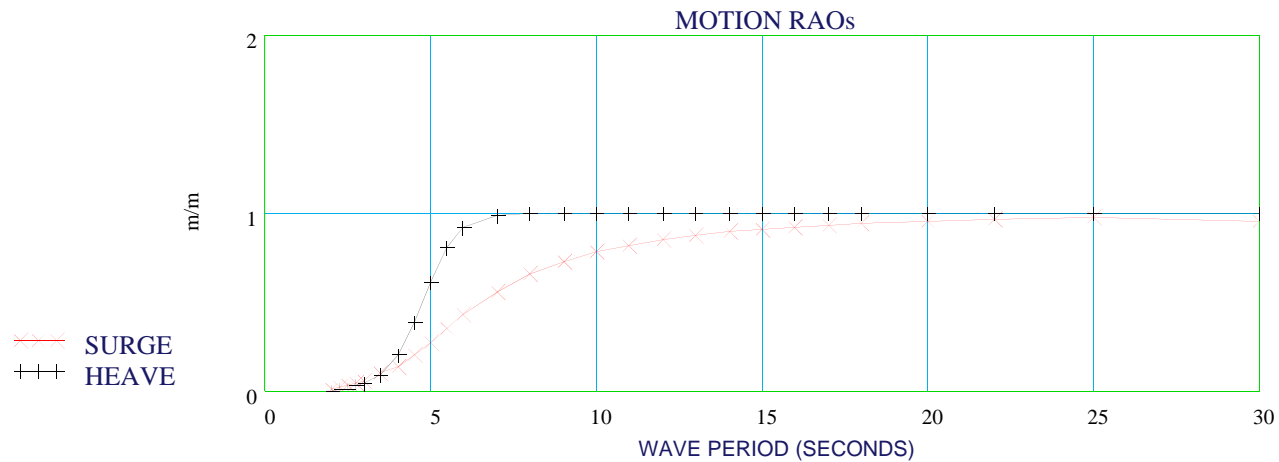
WADAM model  
displaying ¼ section  
of buoy





# Connected Skirt Option RAO's

- Heave Period 5.3 secs
- Pitch/Roll period = 27.8secs

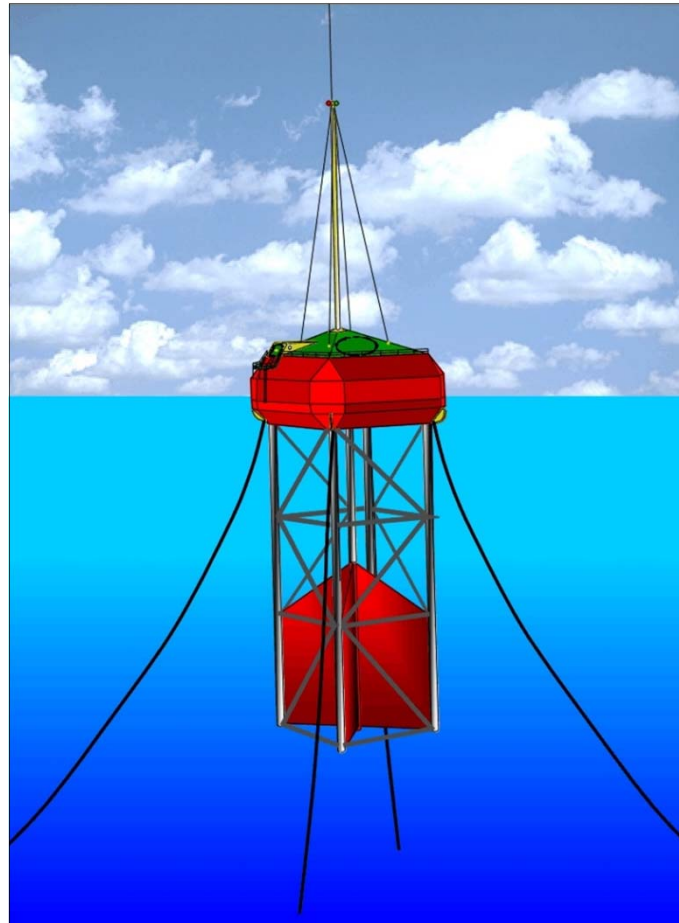




## “Irvine Sea Dart Buoy Concept”

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*Thank You!*



# Contacts



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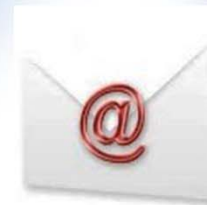
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