The Greening of R/V Sikuliaq

Shrinking a Ship's Environmental Footprint

History / Particulars

- Owner: National Science Foundation
- Operator: University of Alaska Fairbanks College of Fisheries and Ocean Sciences
- Home Port: Seward, Alaska
- Ship Ordered: February 2010
- Keel Laid: April 2011
- Launched: October 2012

Bottom Coating

- Highly resistant, non-ablative bottom coating
- Low VOC during application

→ reduce solvent emissions, no release of biocides into the water

- Reduced frictional resistance over conventional bottom coating

→ reduced hull resistance for improved fuel economy

Waste Management

- Incinerator
  - Capable of burning solid waste and waste oil
  - Complies with both US and European requirements
  - Provides for safe disposal and increased energy efficiency

Diesel Engines

- MTU 4000 Series
  - 2 X 12 V
  - 2 X 16 V
- EPA Tier II emissions compliant
- Meets the MARPOL Annex VI combustion exhaust limits

Integrated Power Plant

- Common electrical plant with a load management system
- Electrical generation can be adjusted to match demand
- Improves energy efficiency, reduces emissions

Waste Heat Recovery System

- Heats the interior of *Sikuliaq* and potable water
  - Waste heat recovery system
  - Reduces energy consumption and combustion emissions

Bio-degradable Hydraulic oil

- Bio-degradable hydraulic oil (similar to vegetable oil) is used for all over the side handling equipment.
- Recent hose burst with a favorable response from USCG once reported and cleaned up

Double Bottom Hull

- No fuel or oil storage tanks next the shell of the vessel
  - Reduces potential for a fuel spill in the event there is an accidental grounding or collision

Marine Sanitation Device (MSD)

- The “ACT 2” MSD exceeds the US requirement for marine sewage treatment discharge standards
  - Complies with the MARPOL Annex IV standards
  - Fresh water flushing system
  - Water recycling system

Ballast Water

- Hyde Guardian System

HG 100 Model, Treats ballast water at 100 m3 / hour
Relatively trouble free and operates as designed
Uses no chemicals

Trash Compactor

- Processes solid wastes generated that cannot be incinerated
- Waste is compacted for efficient storage

Noise reduction

- Hull designed to minimize noise
  - Reduces the impact on nearby marine mammals
  - Major machinery mountings for vibration control
  - Minimizes airborne noise, good for habitability

- Propellers
  - minimize cavitation noise
  - Maintain strength for ice operations

The End

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