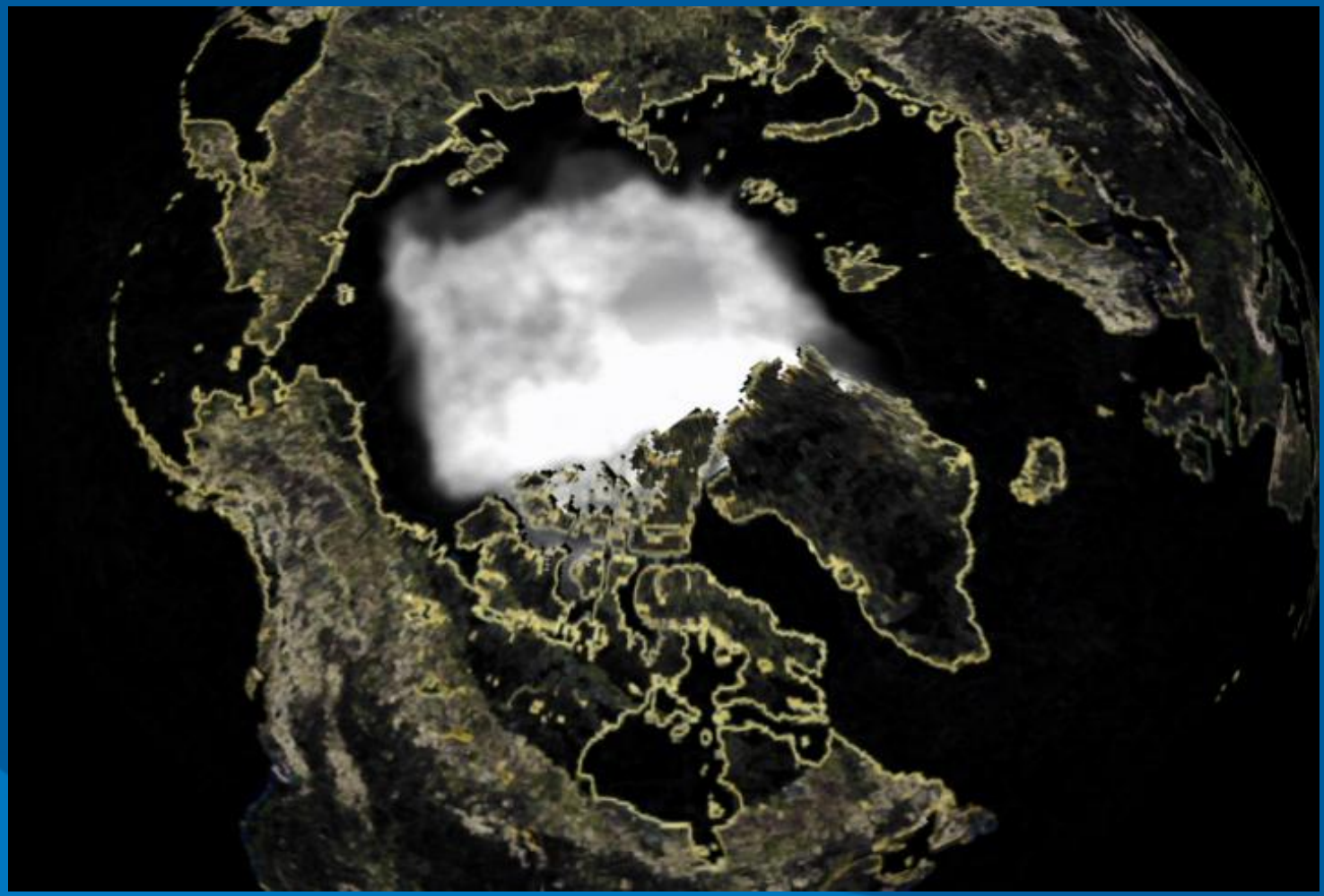
University of Alaska Fairbanks
The next 10 years

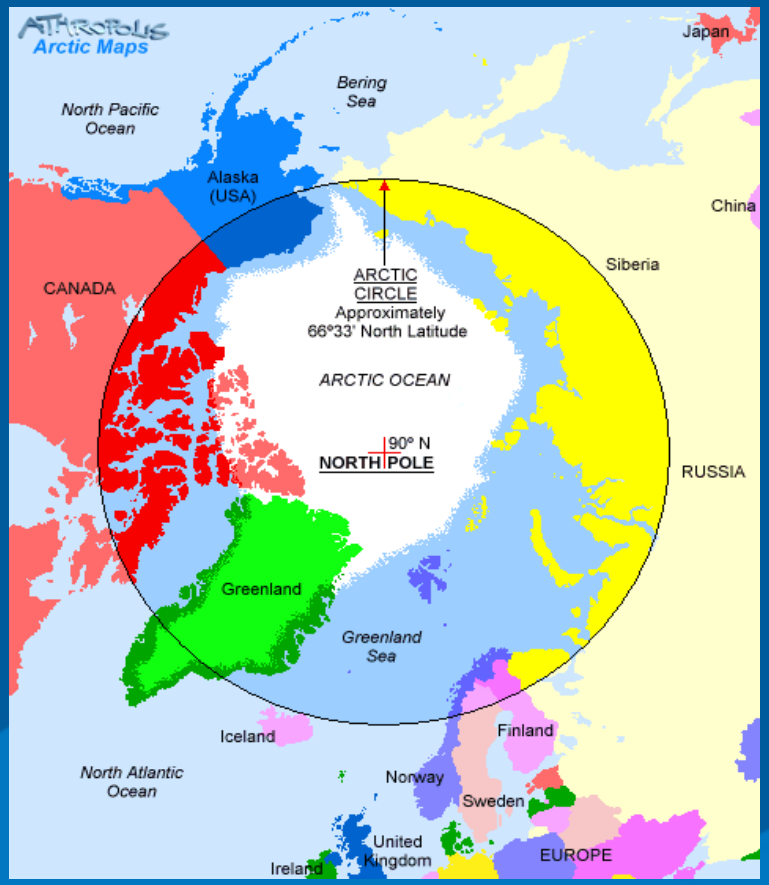
Scientific Committee for Oceanographic Aircraft Research
Fairbanks, Aug14-15, 2012

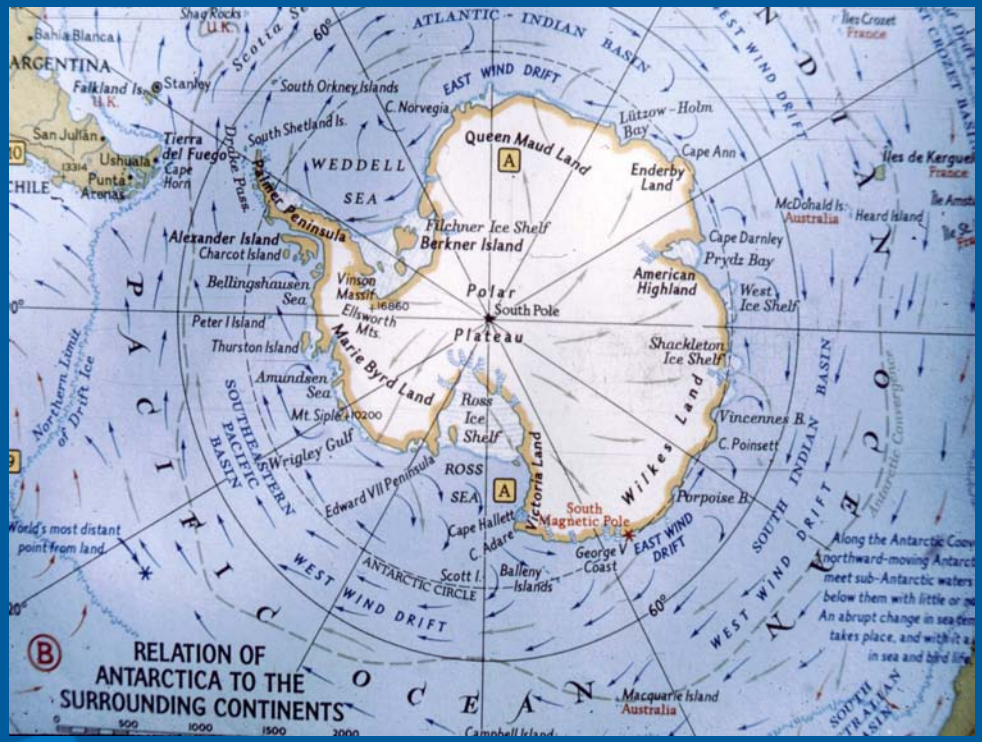
Michael Castellini
School of Fisheries and Ocean Sciences
Dean

UNIVERSITY OF ALASKA FAIRBANKS

www.sfos.uaf.edu




Arctic Maps
North Pacific Ocean
Bering Sea
Japan
Alaska (USA)
China
CANADA
Siberia
ARCTIC CIRCLE
Approximately 66°33' North Latitude
ARCTIC OCEAN
90° N
NORTH POLE
RUSSIA
Greenland
Greenland Sea
Iceland
Finland
North Atlantic Ocean
Norway
Sweden
United Kingdom
Ireland
EUROPE

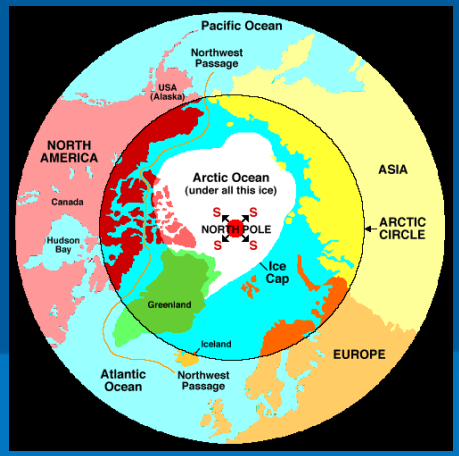

ATLANTIC - INDIAN BASIN
PACIFIC OCEAN
INDIAN OCEAN
ARGENTINA
CHILE
Bahia Blanca
Falkland Is. U.K.
Stanley
South Orkney Islands
C. Norvegia
South Shetland Is.
San Julian
Tierra del Fuego
Ushuaia
Punta Arenas
Cape Horn
Drake Pass.
WEDDELL SEA
Palmer Peninsula
Alexander Island
Charcot Island
Bellingshausen Sea
Peter I Island
Thurston Island
Amundsen Sea
Mt. Siple
SOUTHEASTERN PACIFIC BASIN
Wrigley Gulf
Edward VII Peninsula
Northern Limit of Drift Ice
World's most distant point from land
Queen Maud Land
Lützow-Holm Bay
Cape Ann
Enderby Land
Filchner Ice Shelf
Berkner Island
Vinson Massif
16860
Ellsworth Mts.
Polar Plateau
South Pole
American Highland
West Ice Shelf
Cape Darnley
Prydz Bay
Marie Byrd Land
Ross Ice Shelf
Shackleton Ice Shelf
Wilkes Land
Vincennes B.
C. Poinsett
Porpoise B.
ROSS SEA
Victoria Land
Cape Hallett
C. Adare
South Magnetic Pole
George V Coast
Scott I.
Balleny Islands
ANTARCTIC CIRCLE
EAST WIND DRIFT
WEST WIND DRIFT
SOUTH INDIAN DRIFT
Macquarie Island Australia
McDonald Is. Australia
Heard Island
Iles de Kerguelen France
Iles Crozet France
RELATION OF ANTARCTICA TO THE SURROUNDING CONTINENTS

Marine Focus for the North

The known issues:

- Changes in Arctic sea ice
- Increased economic drivers / resources
- Changes in fisheries
- Increased human marine impact / traffic
- Ocean acidification
- Social impacts on Arctic populations
- Permafrost / ocean interactions
- Public information / perception

What are the opportunities and what are the risks?

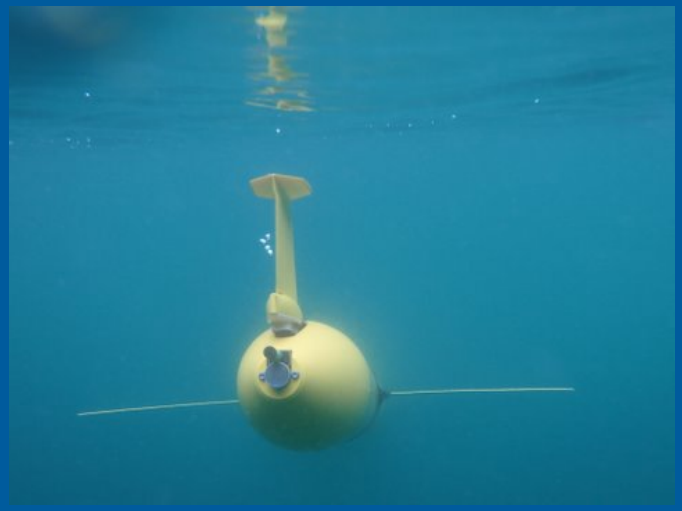


Challenge:

How cover this vast area?

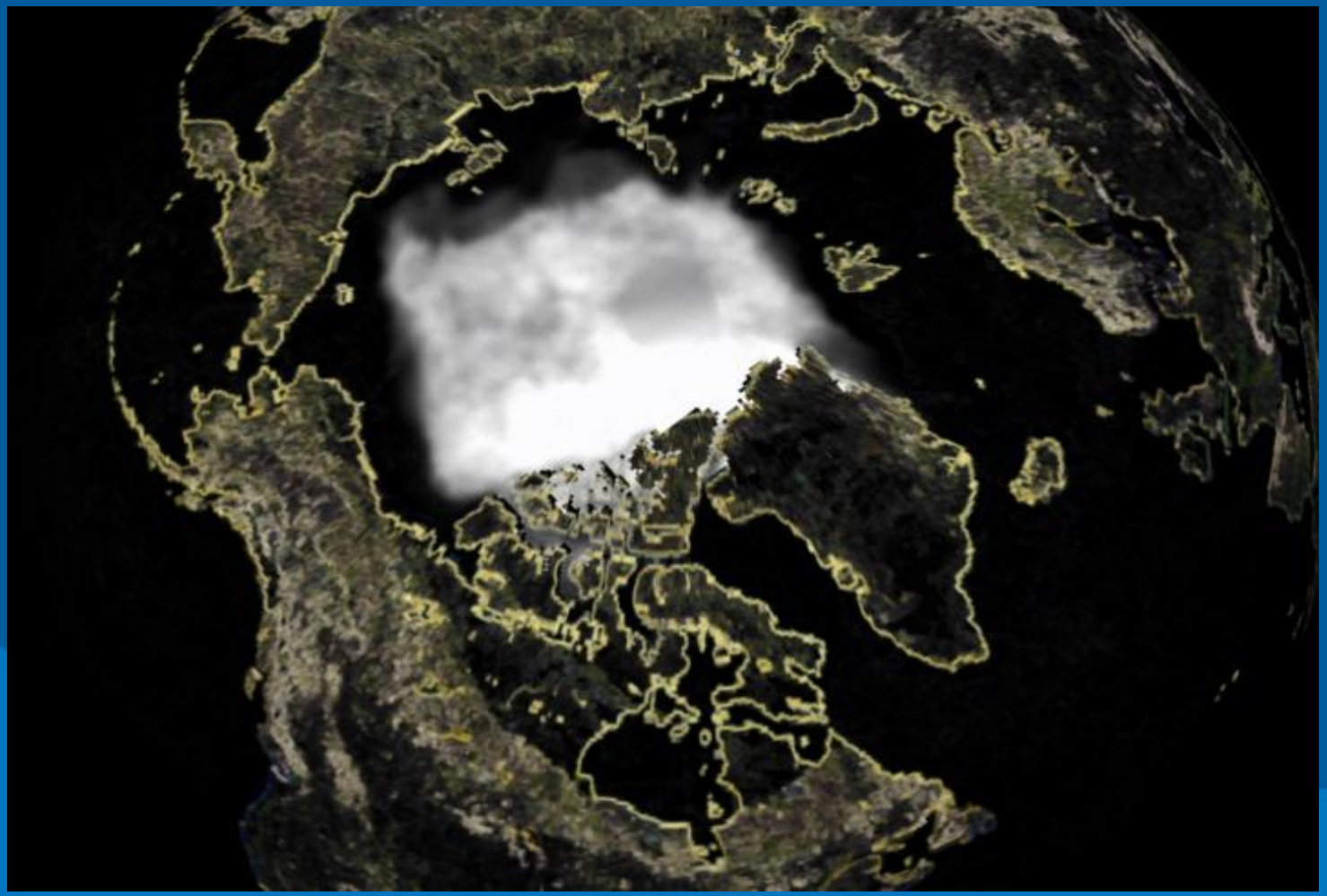
- Ocean observing systems
- Remote monitoring
- Satellite and aerial technology

Autonomous Underwater Vehicles (AUV) or gliders



Zig-zag through water column making measurements.
Transmits data every 6-hours via Iridium.

Challenge #2:
How put scientists and students into the Arctic ?



RV Sikuliaq

First ice-strengthened research vessel in the UNOLS fleet. Global class.

Long-standing replacement for the Alpha Helix

Alpha Helix

Transferred from Scripps in 1980

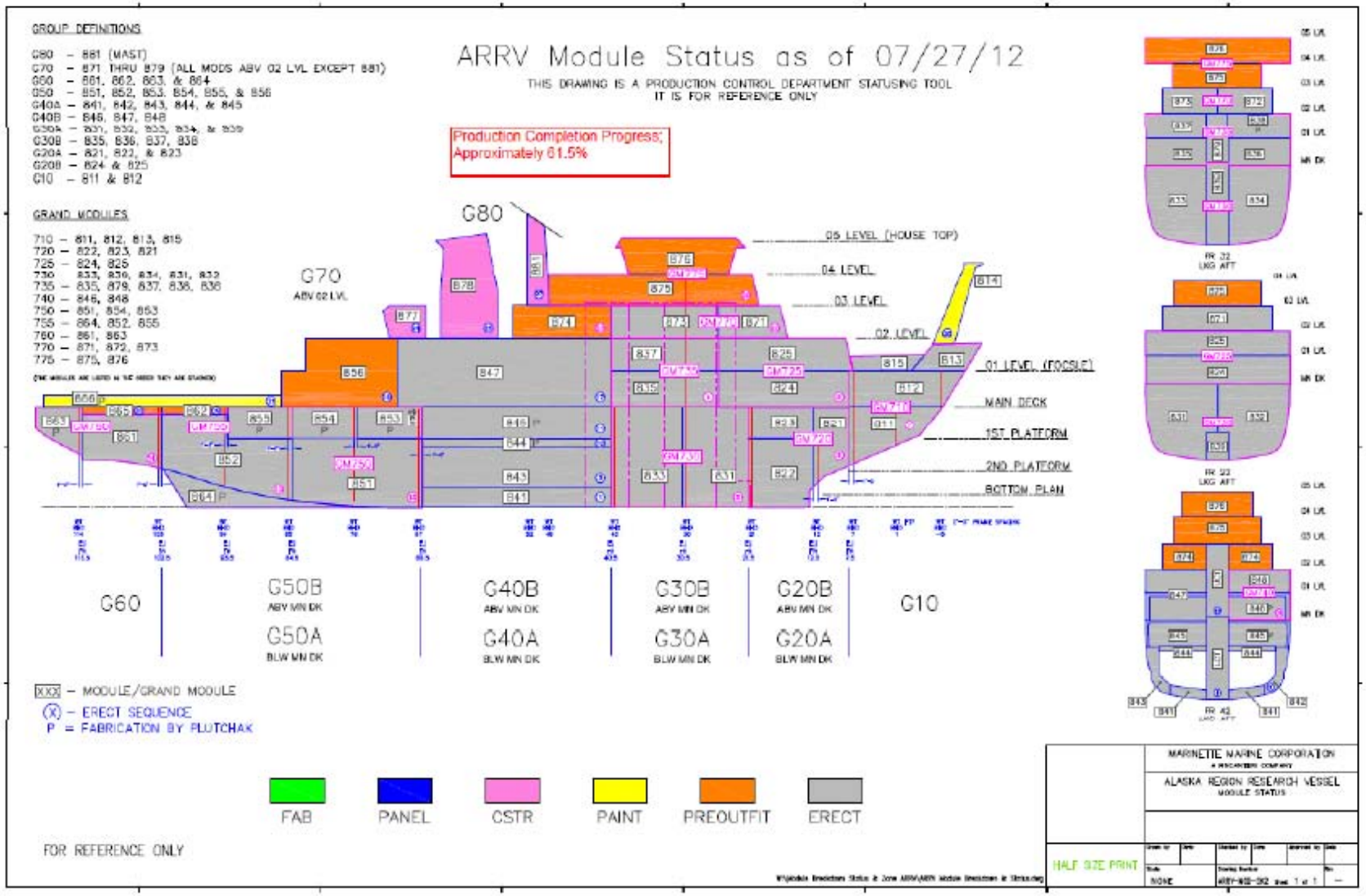
R/V Sikuliaq

- Length: 260+
- Beam: 52 feet
- Endurance: 45 days
- Icebreaking capability: 2.5 ft at 2 knots
- Scientists: 26
- Ability to transmit data real-time to classrooms, the public

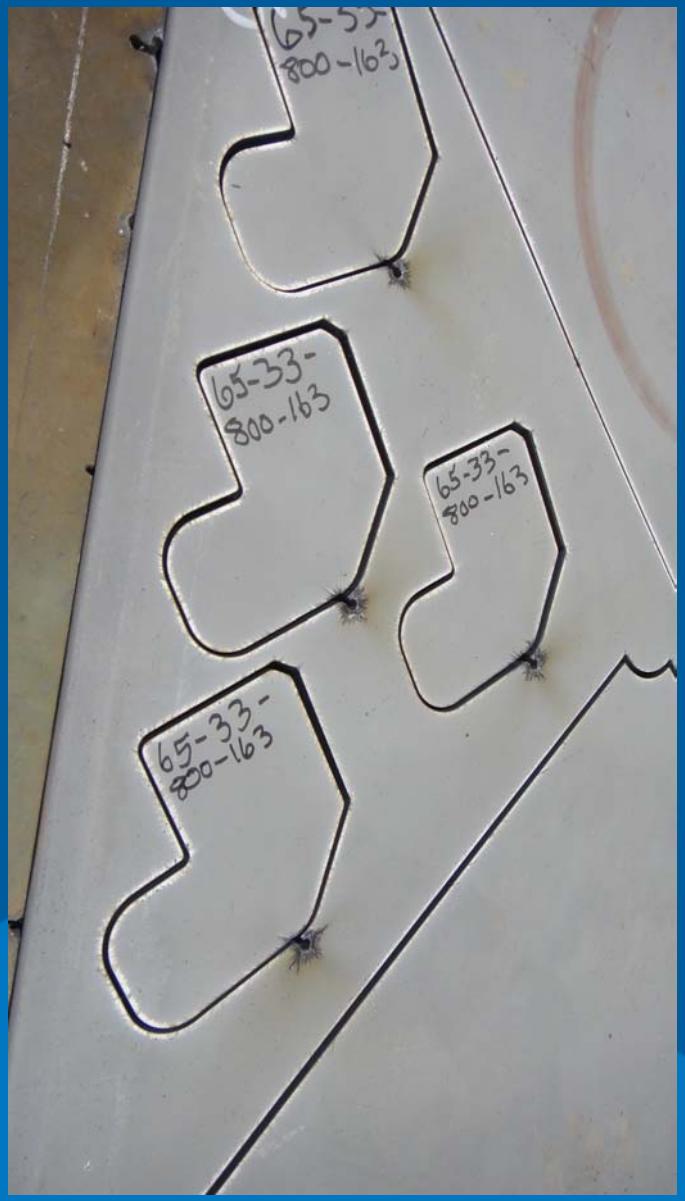
- Currently being constructed at Marinette Marine Corporation in Wisconsin
- Launch date: Oct 13, 2012

Shipyard engineering and management offices
Where our shipyard office trailer is
Shipyard shipping/receiving and warehouse
Blast and paint building
Where steel is cut
Where the modules are put together to make the ship
Where modules are built
Side launch ways
MARINETTE MARINE CORPORATION SHIPYARD
MARINETTE, WISCONSIN

Sikuliaq keel-laying ceremony April 2011

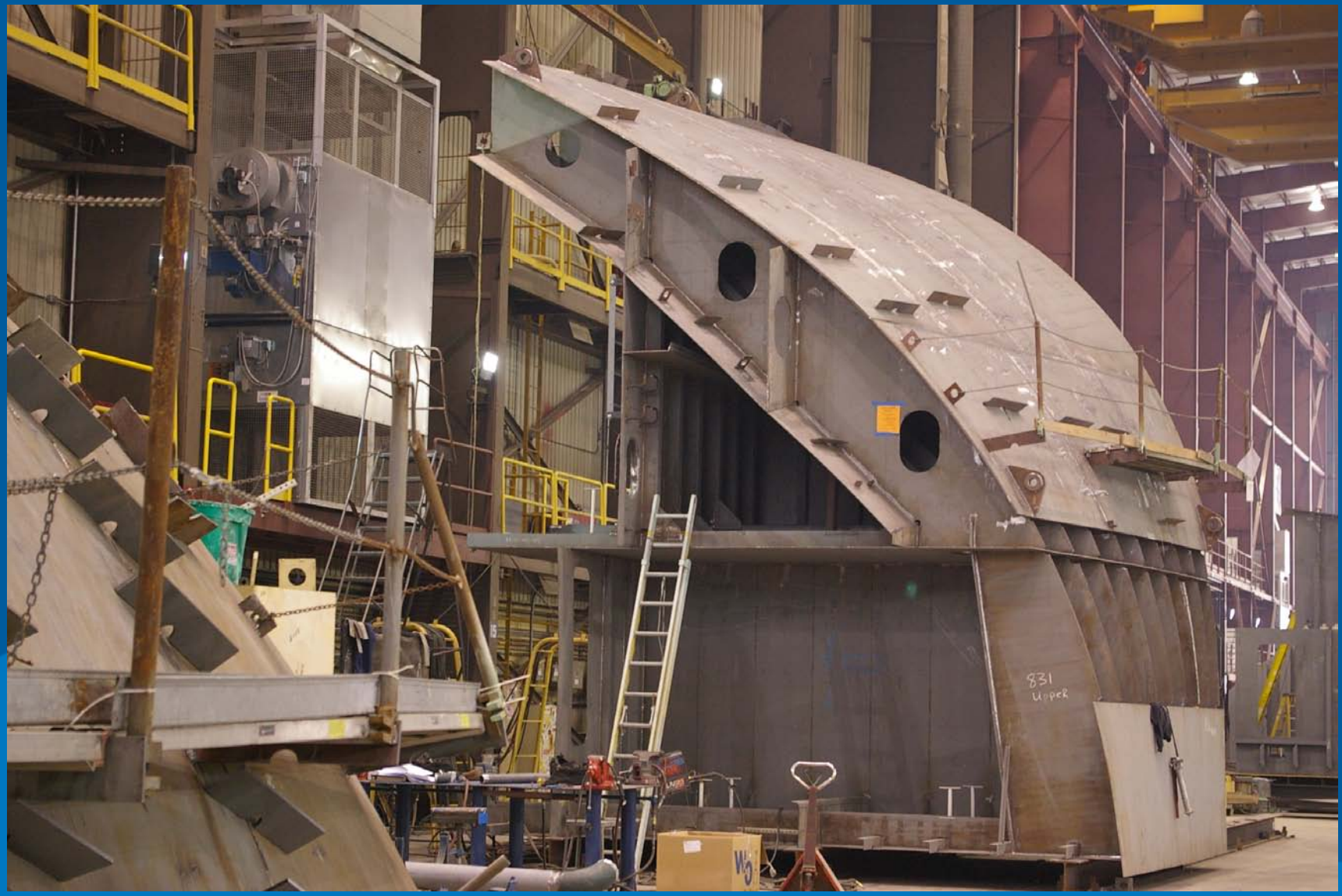


Latest Construction Status



Computer control of plasma cutters

1/8” accuracy in total module


831
Upper

Stern view with tractor Z-drive units

Detail of the ice reamer

Marinette Marine Corporation
SIKULIAQ
SEWARD, ALASKA

UNIVERSITY OF ALASKA FAIRBANKS