A Warming Arctic and National Security

Rear Admiral Dave Titley, USN (ret.), Ph.D.
Director, Center for Solutions to Weather and Climate Risk
Penn State University

Climate Change. Challenges. Solutions

15 February 2014
Why Care About Climate Change?

- It’s About **People**
- It’s About **Water**
- It’s About **Change**
Four Climate Components to Security

- Arctic
- Infrastructure
- Security
- Energy
• It’s an Ocean
• It’s Changing
• It’s not a Vacuum
Arctic Sea Ice (1994 – 2012)
Arctic Trade Routes: Today & Tomorrow

Northern Sea Route
2025: 6 weeks open
41' controlling draft

Transpolar Route
2025: 2 weeks open
Deep ocean transit

Northwest Passage
2025: intermittently open
33' controlling draft

Sea route distances:
Distance from the Bering Strait to Rotterdam

Courtesy: US Navy
DoD Arctic Strategy

Desired End-States:

- Secure and Stable Region
- Safeguard US National Interests
- Protect US Homeland
- Pursue responsible stewardship
- Work cooperatively
White House Releases Implementation Plan for the National Strategy for the Arctic Region

Posted by Patrick Ventrell on January 30, 2014 at 01:09 PM EST

Today, the White House released the Implementation Plan for the National Strategy for the Arctic Region. The Administration solicited input from Alaska Natives, the State of Alaska, Congress, academia, industry and others to develop an Implementation Plan that sets forth the guidelines for Federal Departments and Agencies to execute the National Strategy for the Arctic Region. The Implementation Plan complements and builds upon existing initiatives by Federal, State, local, and tribal authorities, the private sector, and international partners, and also focuses efforts where opportunities exist and action is most needed. It is designed to meet the reality of a changing Arctic environment and uphold our interests in safety and security, protect the environment, and work with international partners to pursue our global objective of combating the effects of climate change as described in the President’s Climate Action Plan.

While the Implementation Plan is designed to guide the activities of Federal Departments and Agencies, successful implementation will depend upon active engagement and coordination with Alaska Natives and the State of Alaska. The Implementation Plan will be reviewed on an annual basis to ensure that progress continues to be made in
Navy’s Arctic Experience

1926
Admiral Byrd’s first OVER-flight of North Pole

1946
USS Midway tests carrier capabilities

1955-57
Sealift support to construct Distant Early Warning (DEW) line stations

1970’s
Cold weather Underway Replenishment experiments

1990’s
Submarines continue transits and research

1942-45
World War II: Dutch Harbor, Attu & Kiska

1951-52
Sealift support to enlarge Thule Air Force Base

1958
Nautilus first under-ice transit

1984-85
Arctic undersea exercises

2000’s
Continuing Naval exercises
Arctic Considerations

Today

Poorly Charted

Limited Infrastructure

Harsh Operating Environment

Security Concerns

Transportation Access

One Scenario

The Arctic is not a vacuum – the changes in the region will also impact Asia
Navy Arctic Roadmap

Framework

Composition

Execution

Phase 1 (FY10)
- Fleet readiness assessment
- External studies
- Strategic implementation plan
- Advocate for UNCLOS™
- Monitor Polar SATCOM Program™
- Innovative Readiness Training (IRT)™
- Arctic TTX & LOE
- POM-12 investments for air-ocean-ice numerical prediction

Phase 2 (FY11-12)
- POM-11 CBA, NSP, & SPPs address the Arctic
- Arctic SAREX, Arctic Edge, Northern Edge NANOOK™
- ICEX-11
- Support National Ocean Policy / Marine Spatial Planning Implementation For Arctic™
- Environmental assessments
- Interagency partnership for air-ocean-ice numerical prediction

Phase 3 (FY13-14)
- Execute POM-14
- Implement expanded / new cooperative partnerships
- Arctic UUV operations
- Update roadmap ICW ODR

Navy recognized as a valued joint, interagency, & international partner in the Arctic

*** Indicates recurring action
I. Contribute to safety, stability, & security in the region

II. Safeguard U.S. maritime interests in the region

III. Protect the American people, our critical infrastructure, & key resources

IV. Strengthen existing & foster new cooperative relationships in the region

V. Ensure Navy forces are capable and ready

Towards the desired end state: a safe, stable, and secure Arctic
Arctic Trends Assessment

**Commercial activity remains limited through 2030**

- Shipping, oil, & gas extraction to grow *after* 2030
- Fishing to grow but only gradually
- Tourism & maritime research will increase the most

*Harsh operating environment will remain the greatest limiting factor*
Naval Studies Board Recommendations


Address naval coastal installation vulnerabilities

Prepare for increase in Humanitarian Assistance, Arctic missions

Address emerging technical requirements (e.g. polar ops)

Address partnership demands

Support research & development

Navy action is already underway
## Arctic Roadmap Implementation Plan

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Primarily undersea and air presence</td>
<td>• Be ready to respond to contingencies and emergencies</td>
<td>• Operate deliberately for sustained periods as needed</td>
</tr>
<tr>
<td>• Surface ship presence in open water</td>
<td>• Periodic presence</td>
<td>• Manned, trained equipped:</td>
</tr>
<tr>
<td>• Specify Requirements</td>
<td>• SAR, DSCA, FoN</td>
<td>• Sub, surface, air, space, cyberspace</td>
</tr>
<tr>
<td>• Investment decisions</td>
<td>• Deliver capability</td>
<td></td>
</tr>
<tr>
<td>• Targeted increases</td>
<td>• Gain additional experience and expertise</td>
<td></td>
</tr>
<tr>
<td>• Gain experience and expertise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• S&amp;T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Exchanges</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Exercises</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Update Doctrine, CONOPS, TTPs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Strengthen Partnerships</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The roadmap leads to a force that is capable and ready to operate in the Arctic as needed

---

**UNCLASSIFIED**

Assured C2 – Battlespace Awareness – Integrated Fires

---
Required Capacity…

- Ice breakers
- Ice hardened USN vessels
- Observations
- Navigation surveys and infrastructure
- Arctic domain awareness
- Bases for support
- Port(s)
- Energy infrastructure
- Communications

Awareness & Infrastructure
Initial Navy investments in today’s budget

Recapitalize aging suite of global atmospheric models

Interagency collaboration

Revolutionary advancement National predictive architecture
Unexplored Contingencies
Leadership Counts
Discussion