Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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July 24, 2015

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Coast Guard and Maritime Transportation
FROM: Staff, Subcommittee on Coast Guard and Maritime Transportation
RE: "A Hearing on the Federal Radionavigation Plan, H.R. 1684, the Foreign Spill Protection Act of 2015, and H.R. ----, the National Icebreaker Fund Act of 2015"

PURPOSE

On Tuesday, July 28, 2015, at 10:00 a.m., in 2253 Rayburn House Office Building, the Subcommittee on Coast Guard and Maritime Transportation will hold a hearing to examine the Federal Radionavigation Plan, H.R. 1684, the Foreign Spill Protection Act of 2015, and H.R. ----, the National Icebreaker Fund Act of 2015. The Subcommittee will hear from United States Coast Guard, United States Department of Transportation, and a private sector witness.

BACKGROUND

Federal Radionavigation Plan

The Federal Radionavigation Plan (FRP) is the federal government's primary policy and planning document for positioning, navigation, and timing (PNT) systems and data. The plan describes the federal government's role, responsibilities, and policies regarding PNT systems. It also highlights the importance of PNT systems and data in providing for safe transportation and enhanced commerce within the United States. The first version of the FRP was released in 1980 as part of a Presidential Report to Congress and is required by the National Defense Authorization Act for fiscal year 1998 (10 USC 2281 (c)). The FRP is updated every two years through the joint efforts of the Department of Defense (DOD), Department of Transportation (DOT), and the Department of Homeland Security (DHS). Each Department shares in the responsibility to implement and maintain PNT systems, track capability gaps, and take actions to close those gaps. PNT systems are integral to U.S. national security, the safe operation and reliability of critical infrastructure, and economic prosperity.

The document covers the policies and operating plans for the following PNT systems:

- Global Positioning System (GPS)
- Augmentations to GPS
- Instrument Landing System (ILS)
- Very High Frequency (VHF) Omnidirectional Range (VOR)
- Distance Measuring Equipment (DME)
- Tactical Air Navigation (TACAN)
- Aeronautical Nondirectional Beacon (NDB)
- Microwave Landing System (MLS)
- Internet Time Service (ITS)
- Radio Station WWVB signal
- Two-Way Satellite Time Transfer (TWSTT)
- Network Time Protocol (NTP)

Global Positioning System (GPS)

One of the most well-known PNT systems is the Global Positioning System (GPS). GPS is a space-based navigation system that provides position and timing information globally with a high degree of accuracy. Originally developed for the military, GPS was made available for civilian use by President Ronald Reagan in response to Korean Air Lines flight 007 being shot down for straying into Soviet airspace as result of imprecise navigation. In 1996, GPS became available for civilian use free of charge and at its intended accuracy level by Presidential Decision Directive NSTC-6.

PNT systems are operated by the federal government in an effort to ensure safe transportation and to support commerce within the United States. Today, much of the navigation and operation of transportation systems are dependent on GPS. In the maritime transportation system nearly all recreational, fishing, commercial, and foreign vessels rely on at least one, if not several, GPS based systems for navigation, collision avoidance, and safety of life at sea.

The United States Coast Guard (Coast Guard) also relies heavily on GPS data to successfully execute its daily operations. In addition to relying on GPS technologies as a primary means of safely navigating its aircraft, cutters, and small boats, the Coast Guard also maintains several GPS dependent technologies essential to search and rescue, environmental stewardship, drug and migrant interdiction, ice breaking, aids to navigation, ports and waterways security, and other missions. These technologies include:

1. *Automatic Identification System (AIS):* AIS is a very-high frequency (VHF) line-of-sight system required by federal law and international standards to be carried on most commercial vessels. It enables the Coast Guard to track the movement of the vessels and helps the vessels themselves avoid collision. It is dependent on position and timing information received by GPS satellites.

2. *Differential GPS (DGPS)*: DGPS augments the GPS system used by the Coast Guard and vessel operators to more precisely ascertain position using GPS receivers. Most recreational boaters rely on the signal provided from this system to hand held GPS

devices to safely navigate. The Coast Guard uses the system for many of its operations including the setting of aids-to-navigation.

3. *Rescue 21*: Rescue 21 is the Coast Guard's primary maritime distress system. It allows the Coast Guard to focus search and rescue efforts by determining a vessel's location based on a distress call over the radio. The system utilizes Digital Selective Calling to receive GPS position transmissions from vessels in distress. As such, it is dependent on both position and timing information received from GPS satellites.

4. *Search and Rescue Satellite-aided Tracking (SARSAT)*: SARSAT is a system of satellites that transmit distress calls and GPS position data from devices such as Emergency Position Indicating Radio Beacons (EPIRB) to Coast Guard and other first responders. Most commercial vessels are required to carry an EPIRB under federal law.

5. *Vessel Management System (VMS)*: VMS is a satellite-based system used to track commercial fishing vessels and ensure their compliance with restrictions on fishing locations. It relies on GPS for position and timing information to guide enforcement actions.

6. *Electronic Navigation Systems*: Federal law and international standards require all large commercial vessels to be equipped with electronic navigation systems. These vessels, as well as smaller commercial vessels and a sizable portion of recreational vessels, navigate solely using electronic navigation systems. These systems typically include an electronic charting system coupled with a GPS feed that shows the vessel's location on the chart, the direction of its motion, and its speed. While the charting function will still work without GPS, it would only provide an estimate of a vessels position based on the last GPS signal received.

Back-up Plan

In September 2001, the Department of Transportation published the *Vulnerability Assessment of the Transportation Infrastructure Relying on the Global Positioning System* (commonly referred to as the "Volpe Report") to assess the vulnerabilities to critical infrastructure identified by *The President's Commission on Critical Infrastructure Protection* in 1997. One of the most significant vulnerabilities highlighted by the Commission and addressed in the "Volpe Report" was the government's plan to adopt the GPS as the sole basis for radionavigation data.

This report explained the vulnerability of GPS and similar Global Navigation Satellite Systems (GNSS) to disruptions from both intentional and unintentional interferences. It also described the degree to which the United States had begun to base its critical infrastructures on GPS. The report identified the terrestrial-based radionavigation system, known as Enhanced Long Range Aids to Navigation (eLORAN), as a possible solution to the growing problem. Providing accuracy, integrity, and continuity, eLORAN was expected to meet the requirements

for non-precision aviation approaches, and maritime harbor navigation, and provide timing and frequency backup capability to GPS.

Long-Range Aids to Navigation (LORAN)

Enhanced Long-Range Aids to Navigation, which was never developed, was designed to replace the legacy Long-Range Aids to Navigation (LORAN) system. LORAN was a VHF based position and timing system operated by the Coast Guard. It served as the primary means of electronic navigation for vessels and some aircraft from World War II until the advent of GPS, at which time it continued to operate as a back-up system. The fiscal year 2010 Department of Homeland Security Appropriations Act (P.L. 111-83) gave the Coast Guard authority to terminate the transmission of LORAN signals upon certification by the Commandant of the Coast Guard that termination of the signal would not adversely affect maritime safety and certification by the Secretary of DHS that LORAN infrastructure was not needed to house another system to act as a back-up to GPS. Those certifications were made and the signal was terminated on February 8, 2010.

With the termination of the LORAN signal, DHS initiated a study to determine whether a back-up system is needed for GPS. Section 219 of the Coast Guard Authorization Act of 2010 (P.L. 111-281) required the Department to complete its determination as to whether a back-up system is needed by April 10, 2011. On September 19, 2011, DHS published *An Analysis on Whether a Single Domestic Backup Navigation System is Needed for Global Positioning System (GPS).* The report concluded that adequate backup for position and navigation uses within maritime, aviation, and terrestrial navigation modes exist. However, the report found that not having a GPS backup system posed a significant problem due to the loss of timing data and services. DHS determined that further evaluation regarding a single, domestic backup was needed. In 2014, section 219 of the Howard Coble Coast Guard and Maritime Transportation Act of 2014 (P.L. 113-281) prohibited the Secretary of DHS from dismantling or disposing of infrastructure that supported the former LORAN system until the later of one year after the enactment of the law, or a determination is made that the infrastructure is not required to provide a positioning, navigation, and timing system to backup GPS in the event of a disruption. The Secretary has yet to make such a determination.

The San Diego Incident

The San Diego Incident is widely cited as a clear indication of the wide ranging impact a disruption in GPS can have in a short amount of time. The incident occurred in January, 2007 when Navy technicians in San Diego turned on a test signal which interfered with GPS reception. The unintentional interference affected GPS reception in San Diego harbor, in the downtown area, and the international airport. The maritime DGPS system and AIS were shut down causing ships and recreational boaters to lose navigation data including position information. The first responder pager network was shut down and upwards of 150 cellphone base stations were degraded or shut down. This situation was relatively minor, and the fix was simple once the cause was identified. It does, however, amplify the importance of a seamless GPS backup. Since the incident, GPS has become increasingly imbedded in the Nation's critical infrastructure.

H.R. 1684, the Foreign Spill Protection Act of 2015

The Oil Pollution Act of 1990 (OPA) was enacted in response to the 1989 T/V Exxon Valdez oil spill in Alaska. The Exxon Valdez incident highlighted the lack of federal funding available to respond to spills and the limits in federal law regarding damage payments. OPA established an oil spill prevention, response, liability, and compensation regime that partially uses Clean Water Act authorities. Prevention measures include double hulls for tankers, the use of towing vessels, and vessel communication systems, as well as liners for onshore facilities. Response measures are in the form of contingency planning, national response units, Coast Guard district response groups, and tank vessel and facility response plans. Liability measures define "Responsible Parties" as vessels, onshore and offshore facilities where the owner or operator are required to pay for removal costs and any damages created by a spill. Compensation allows an injured party to seek payment for spill damages occurring to natural resources, personal or real property, subsistence use, or loss of revenues. OPA also created the Oil Spill Liability Trust Fund (OSLTF) financed by a per barrel tax on oil, recovery costs from responsible parties, civil and criminal penalties, and interest income. The OSLTF is available to clean up spills, in the absence of a responsible party, or if the responsible party is unable or unwilling to fund clean-up measures.

Section 1001 of OPA (definitions) paragraph (10) defines "foreign offshore unit" as a facility located in whole or part in the territorial sea or on the continental shelf of a foreign country and used to explore, drill, produce, store, handle, transfer, process, or transport oil. OPA Section 1002 (Elements of Liability) generally states that a responsible party for a vessel or facility where a spill occurs or poses a substantial threat of a discharge of oil in or upon navigable waters or adjoining shoreline of the U.S. is liable for damages and cleanup costs as a result of an incident. A "foreign offshore unit" is not referenced in section 1002.

OPA covers oil spills originating in the United States. It also allows foreign claimants to recover removal costs or damages if recovery is covered by a Treaty or agreement between the United States and the claimant's country or if there is a comparable remedy for U.S. claimants. When there is no responsible party for an oil spill originating in foreign waters that reach U.S. waters and shores, the OSLTF covers the costs of cleanup and damages. However, the OPA limits cleanup and claims from the OSLTF to $150 million and $850 million, respectively.

H.R. 1684 would amend OPA to add a new subsection (e) at the end of section 1002, (33 U.S.C. 2702). The new (e) would make a Foreign Offshore Unit liable for removal costs and damages for the purposes of OPA and would be treated as a responsible party in the same manner as an offshore facility.

H.R. 1684 would also amend the Clean Water Act to include a new paragraph (13) to section 311(b) (33 U.S.C. 1321(b)). This new paragraph would address discharges of oil from Foreign Offshore Units that reach navigable waters of the United States, adjoining shore lines or waters of the contiguous zone. Under paragraph 13, a Foreign Offshore Unit would be subject to section 311(b)(3) which prohibits discharges. The owner or operator of the unit would be subject to the penalties established under the subsection. The section also defines Foreign Offshore Unit as it is defined in section 1001 of OPA.

H.R. ----, the National Icebreaker Fund Act of 2015

The 11 missions of the Coast Guard include: ports, waterways, and coastal security; drug interdiction; aids to navigation, search and rescue; living marine resources; marine safety; defense readiness; migrant interdiction; marine environmental protection; ice operations; and other law enforcement. All but two missions (drug and migrant interdiction) have some level of polar icebreaker support and were noted as having mission gaps in the 2012 Coast Guard High Latitude Mission Analysis Report.

The Coast Guard icebreaker fleet includes two heavy ice breakers - Coast Guard Cutter (CGC) POLAR SEA (not operational) and CGC POLAR STAR as well as the CGC HEALY, a medium ice breaker. The table shows the status and capabilities of the vessels.

Platform	Year Commissioned	Service Life Design	Estimated End of Service Life	Icebreaking Capacity
POLAR STAR	1976	30	2020-2023	6 ft @3 knots (kts) / 21 ft back & ram
POLAR SEA	1978	30	2014 (inactive)	6 ft @3kts/ 21 ft back & ram
HEALY	2000	30	2030	4.5 ft @ 3kts/ 8 ft back and ram

U.S. Coast Guard Polar Icebreaker Preliminary Operational Requirements Document July 2014

The *Preliminary Operational Requirements Document (P-ORD) for the Polar Icebreaker Recapitalization Project* dated July 24, 2014, is described as the initial statement of operational performance requirements. The P-ORD is derived from the Polar Ice Breaker Mission Need Statement, the functional capabilities derived in the Polar Icebreaker Concept of Operations, early sponsor analysis, and historical baseline requirements. The P-ORD summary states it was developed by a 45 member, 11 agency integrated product team to describe the initial operating requirements that span the doctrine, organization, training, material, leadership, education, personnel and facilities spectrum needed to meet the mission performance gaps identified in the 2012 High Latitude Mission Analysis Report.

The P-ORD identifies the operational and mission support functional capabilities for a polar icebreaker. The functional capabilities include: breaking ice; maneuverability, sea keeping and navigation; escorting vessels; conducting boat and aviation operations; defense/offense operations; intelligence operations; sensors; boarding operations; search and rescue; damage control; towing vessels; marine environmental response; science and survey missions; command and control; communications; mission support; diving operations; underway refueling and replenishment; and heavy lifting.

Over the 2006-2013 period, the P-ORD showed the CGC HEALY operated at 106 percent of targeted operational capacity, the CGC POLAR SEA at 53 percent capacity due to mechanical problems, and the POLAR STAR was non-operational. The P-ORD recommends a polar icebreaker per year operation range between 3,300 operational hours (185 Days Away From Home Port or DAFHP) and 4,050 operational hours (225 DAFHP). In comparison to the P-ORD per year operation range, in 2013 CGC HEALY had 2,577 operational hours (145

DAFHP). After renovations the POLAR STAR was reactivated in December 2012. In 2013, the POLAR STAR went through ice trials and in 2014 it had 2,508 operational hours (189 DAFHP). The last year showing operational hours for CGC POLAR SEA was 2010 with 2,236 operational hours (115 DAFHP). Both CGC HEALY and CGC POLAR STAR are below the P-ORD recommended range for operational hours and the POLAR SEA is inactive. The inability to meet P-ORD hour targets creates mission gaps to meet all icebreaker mission activities.

With its last renovation, the POLAR STAR was reported to have a seven-to-ten year window of operation. In order to avoid additional mission gaps the Coast Guard has been urged by Congress to determine options and costs for reactivating the POLAR SEA for a similar seven-to-ten year span. Coast Guard estimated renovation costs in 2013 as $100 million for 3 years of repair work; with estimates increasing the longer the POLAR SEA remains inactive. The fiscal year (FY) 2016 Coast Guard budget request includes $6 million for the Material Condition Assessment (MCA) for the POLAR SEA to allow the Coast Guard to identify and assess the level of effort required should a decision be made to return the vessel to active service and extend its service life.

The Coast Guard Acquisition Directorate reported in May 2015 that the Coast Guard is in the analyze/select phase of acquiring a new polar icebreaker. The P-ORD notes the limitations facing the Coast Guard in acquiring a new polar icebreaker, mainly uncertainty in funding in the Acquisitions, Construction and Improvements (AC&I) account. The Coast Guard, in its FY13 budget, estimated a contract being awarded in five years and ship delivery within a decade. In FY14, however, the Coast Guard estimated four years to award a contract. The FY 2015 and FY 2016 budget requests refer only to initial acquisition activities and make no projections of future contract awards.

The Coast Guard received $7.6 million in FY 2013 and $2 million in FY 2014 for a total of $9.6 million for initial acquisition activities. No funding was appropriated in FY 2015 due to the slow obligation rate of appropriated funds. The House Committee on Appropriations recommends $4 million for FY 2016. The Committee's FY 2016 appropriations bill report notes the lack of a viable acquisition program for a new, polar icebreaker and expresses concern that existing funding requests by the Administration do not reflect Coast Guard requirements. The Committee also notes that it is unreasonable for the Coast Guard to bear the full cost burden for a new ice breaker when the vessel would support multiple executive branch agency missions, including icebreaker needs of the U.S. Navy.

The 2014 Howard Coble Coast Guard and Maritime Transportation Act restricted the use of Coast Guard icebreaker acquisition funds to the construction of an icebreaker that could carry out Coast Guard missions. Other executive branch agencies could contribute funds to support other capabilities for their additional missions.

H.R. ----, the National Icebreaker Fund Act of 2015, would provide an alternative funding process for alteration or renovation of Coast Guard icebreakers or the lease or charter of private icebreakers for the Coast Guard to reduce the potential for future mission gaps.

H.R. ---- would create a National Icebreaker Fund. The uses of the fund would include alteration or renovation of icebreakers, including design work for these actions, and lease or charter of icebreakers for the Coast Guard. New construction is not an eligible use of the Fund. Amounts in the fund would only be obligated or expended if authorized by law. The bill allows deposits into the Fund from appropriations, receipts from selling an ice breaker, unobligated fund transfers, and nonfederal contributions.

The bill sets out limitations on the amounts in the fund. It would not allow funds to be used to lease, charter, alter, or renovate any vessel built in a foreign shipyard, unless authorized by law. It would also require the use of U.S. shipyards for vessel alterations or renovations. In addition, expenditures of Department of Homeland Security funds would be restricted to the lease, charter, renovation, or alteration of icebreakers capable of conducting Coast Guard missions. The National Science Foundation and the Department of Defense would be allowed to use Fund monies for missions related to Antarctic research and resupply or national defense missions, respectively.

Budget requests submitted to Congress for the Fund would be required to specify the amount requested for programs, projects, and activities for icebreaker alterations and renovations and for programs, projects, and activities for icebreaker leases or charters.

The bill would also direct the Secretary of the department in which the Coast Guard is operating, in consultation with the Secretary of State and the Director of the National Science Foundation, to enter into an agreement with nations that operate facilities in Antarctica to establish a mechanism to provide icebreaking services necessary to supply those facilities by constructing, leasing or chartering, renovating, operating, or maintaining an icebreaker for that purpose.

WITNESSES

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