



## Hawaii Missile Defense White Paper February 2017

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### Key Missile Defense Points for Hawaii

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- Distance from North Korea to Hawaii – around 4,500 miles (approximately 20 minutes for a ballistic missile)
- Shortest distance on a trajectory path for a possible midcourse intercept from Ft. Greely, Alaska – around 2,500 miles
- Shortest distance on a trajectory path for a possible midcourse intercept from Vandenberg Air Force Base, California – around 3,100 miles
- After final separation of a long-range missile, a debris cloud of hundreds of objects in space including the warhead forms and expands up to a couple of miles as the warhead moves towards its target
- Long-range discrimination sensors from Hawaii need to be able to discriminate the warhead from the debris to increase probability of an intercept

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### Current U.S. Operational Capability to Defend Hawaii from North Korea

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- Early-Warning Capabilities
  - DSP early-warning satellites
  - SBIRS satellites
  - AN/TPY-2 radar in Japan in forward-based mode
  - U.S., Japanese, and Korean Aegis BMD vessels equipped with SPY-1 radar
- Tracking Capabilities
  - Sea-Based X-Band (SBX) discrimination radar based in Hawaii needs to be in the mid-Pacific -- underneath/or close to the intercept point -- to increase reliability and confidence in shooting down-long range ballistic missiles
- Intercept Capabilities
  - 37 GBIs currently fielded; 44 GBIs by the end of 2017 to defend the U.S. homeland and Hawaii from North Korean long-range ballistic missiles
  - Multiple shots from interceptors are required to defeat one North Korean long-range missile
  - Only one shot opportunity to defend Hawaii because distances are too far to allow for second or third shot opportunities from the 37 GBIs based in California and Alaska
- Command and Control
  - Air Operation Center and the Pacific Integrated Center for Integrated Air and Missile Defense for the battle management of the Pacific is located at Hickam Air Base at Pearl Harbor
  - NORTHCOM and C2BMC (Command and Control, Battle Management and Communications) at Schriever Air Force Base in Colorado Springs, Colorado are responsible for command and control in defense of Hawaii

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### Increase, Enhance, and Operationalize Hawaii's Missile Defense Capabilities

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#### Enhance Current Capabilities Today

- Enhance the ground-based ballistic missile defense system's sensor discrimination capabilities from Hawaii to increase the probability of a kill, reduce the number of shots needed, and to stay ahead of the North Korean threat.
  - Increase operational dwell time of SBX radar
  - Operationalizing AN/TPY-2 radar already deployed to Hawaii linking it with C2BMC to increase tracking and discrimination for GBIs deployed in the U.S. mainland
- Emergency activation of operations for Aegis Ashore in Kauai would provide additional layers of homeland ballistic missile defense and provide second and third possible shot opportunities for Hawaii
  - SM-3 Block IB and IIA have some inherent capability above requirements to intercept intercontinental-range ballistic missiles
  - 2008 - SM-3 Block IB interceptors employed by Aegis Ashore are enhanced versions of the SM-3 Block IA that was used to precisely shoot down a fuel tank on a satellite that was traveling faster than the speed of an ICBM. This was a successful "engage on remote" sensor of the SBX in the Pacific in conjunction with Aegis BMD
  - Dec 9, 2015 - First successful intercept test from the Aegis Ashore site at the PMRF using the SM-3 Block IB interceptor, which was used as evidence to certify the capability of Aegis Ashore in Romania. Today, this site defends southeast Europe and millions of Europeans from Iranian ballistic missiles

- The Aegis Ashore site at the PMRF is a representative proven system that was used to demonstrate Aegis Ashore capability from Romania against ballistic missiles coming from Iran
- In 2018, Poland will deploy the same Aegis Ashore site with new SM-3 block IIA interceptors that will provide a longer range shot opportunity and a 2<sup>nd</sup> layer to defend northern Europe from Iranian ballistic missiles
- Baseline 9 software employed by Aegis Ashore at the PMRF enables launch and engage off of far-away remote sensors on Aegis BMD ships, as well as air and land-based sensors
- The Aegis Ashore site at PMRF will be modernized per the US Navy's Destroyer modernization program updated to fire the SM-3 Block IIA missile and will be used again in 2018 to conduct an operationally representative flight test to produce evidence to certify the next generation BMD capability being deployed to the European Aegis Ashore sites.
- Deploy longer-range SM-3 IIA interceptors once declared operational
- Language in the 2016 National Defense Authorization Act
  - "The Secretary of Defense and the Chairman of the Joint Chiefs of Staff shall jointly submit to the congressional defense committees an evaluation of...the efficacy of making the Aegis Ashore site at the Pacific Missile Range Facility operational; deploying the preferred alternative for fielding a medium-range ballistic missile defense sensor for the defense of Hawaii..."

### Future Capabilities to Consider

- Deploy and operationalize a radar at PMRF that meets the Missile Defense Agency's long-range discrimination requirements in the Hawaiian operations area to enhance and bring more reliability to the GBIs and the lower level of SM-3 interceptors for emergency activation of Aegis Ashore in Hawaii
  - Increasing the probability of a kill for the GBIs designated to protect Hawaii
  - Providing discrimination and tracking for Hawaii that supports a 2<sup>nd</sup> and 3<sup>rd</sup> layer of defenses of an activated Aegis Ashore with SM-3 IIA interceptors
- Provide additional shot opportunities and additional layers of defense for Hawaii
  - Deploy transportable GBIs to Hawaii or further west in the Pacific to extend the range, provide additional shot opportunities, and increase the effectiveness of GMD against long-range North Korean ballistic missiles
  - Equip U.S. fast-attack submarines with SM-3 block IIA interceptors
  - Introduce heavy cruiser platform specifically designed to hold up to 300 vertical launch systems and equipped with the discrimination radar
  - Permanently deploy the SBX radar on Midway
  - Make Aegis Ashore at PMRF fully capable of air and missile defense with SM-3 Block IB and IIA missile defense interceptors and SM-6 and SM-2 air and missile interceptors
  - Add an additional Aegis Ashore sites to Hawaii for 360-degree coverage
  - Add overhead sensor capability to Hawaii

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### Reasons to Operationalize Aegis Ashore in Kauai

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1. Provide Hawaii with missile defense equal to that of the other 49 states and deter North Korea from launching a ballistic missile strike targeting the Hawaiian Islands
2. Defend 1.42 million Americans in Hawaii, to the best of our capabilities, from the threat of conventional and nuclear-armed long-range North Korean ballistic missiles
3. Defend the U.S. Pacific Command and the Pacific Fleet from North Korea's growing capabilities
4. An operational layered missile defense in Hawaii sends a strong message of deterrence to North Korea and changes the calculus of a successful attack on Hawaii.
5. Missile defense is critical to keep the Pacific Region stable, help to prevent Japan and Korea from becoming nuclear to protect themselves and to prevent conflict.
6. Deploying a long range discrimination radar and operationalizing Aegis Ashore in Kauai would not reduce the Pacific Missile Range Facility's capability to continue operating as a testing range since it can be used for both.
7. The U.S. needs to continue developing more cost-effective means to reduce the costs of missile defense intercepts, such as the development of directed energy, hypervelocity powder guns, and electromagnetic railguns, and testing these systems to stay ahead of the threat.