

# European Phased Adaptive Approach (EPAA) Ballistic Missile Defense

- A Technical Overview -



















DISTRIBUTION STATEMENT A. Approved  
for public release; distribution is unlimited.

## Missile Defense Conference, Moscow, Russia

**RDML Randall M. Hendrickson, USN**  
**Deputy Director**  
**Missile Defense Agency**  
**May 3-4, 2012**



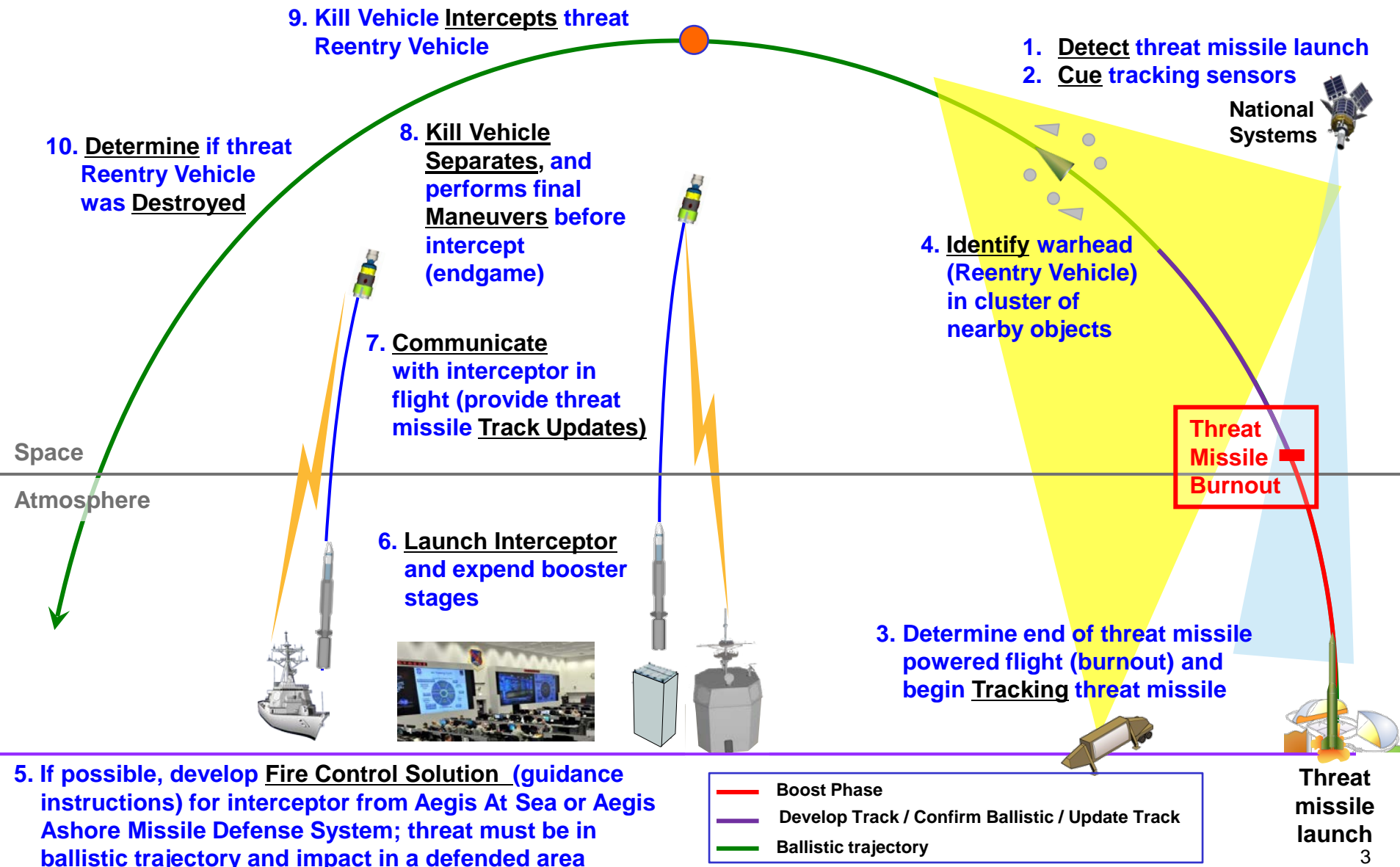
# European Phased Adaptive Approach To Developing And Deploying Missile Defense

| Phase I: Today's Capability   | Phase II: Enhanced Medium-Range Missile Defense (By 2015)  | Phase III: Enhanced Intermediate-Range Missile Defense (By 2018)  | Phase IV: Early Intercept of IRBMs and Potential ICBMs (By 2020)  |
|---|--|---|---|
|  <p>Aegis BMD 3.6.1 with SM-3 IA</p> <p>SM-3 IA</p>           |  <p>Aegis BMD 4.0.1/5.0 with SM-3 IA/IB</p> <p>Aegis Ashore 5.0 with SM-3 IB (Romania)</p> <p>SM-3 IB</p> |  <p>Aegis BMD 5.1 with SM-3 IA/IB/IIA</p> <p>Aegis Ashore 5.1 with SM-3 IB/IIA (Poland and Romania)</p> <p>SM-3 IIA</p> |  <p>Aegis BMD 5.1x with SM-3 IA/IB/IIA</p> <p>Aegis Ashore 5.1x with SM-3 IB/IIA/IIB (two sites)</p> <p>SM-3 IIB</p> |
|  <p>AN/TPY-2 (FBM)</p>  |  <p>AN/TPY-2 (FBM)</p>  |  <p>AN/TPY-2 (FBM)</p>   |  <p>AN/TPY-2 (FBM)</p>   |
|  <p>C2BMC AOC Ramstein</p> <p>ALTBMID Interim Capability</p> |  <p>C2BMC Updates</p> <p>ALTBMID Lower Tier</p>  |  <p>C2BMC Updates</p> <p>ALTBMID Upper Tier</p>   |  <p>Enhanced C2BMC</p>  |
| <p>Potential EPAA Surge</p>  <p>THAAD</p>                  | <p>Potential EPAA Surge</p>  <p>THAAD Launch on Remote</p>  | <p>Potential EPAA Surge</p>  <p>THAAD Full Network</p>   | <p>Potential EPAA Surge</p>  <p>THAAD Full Network</p>   |



# 10 Steps To Missile Intercept

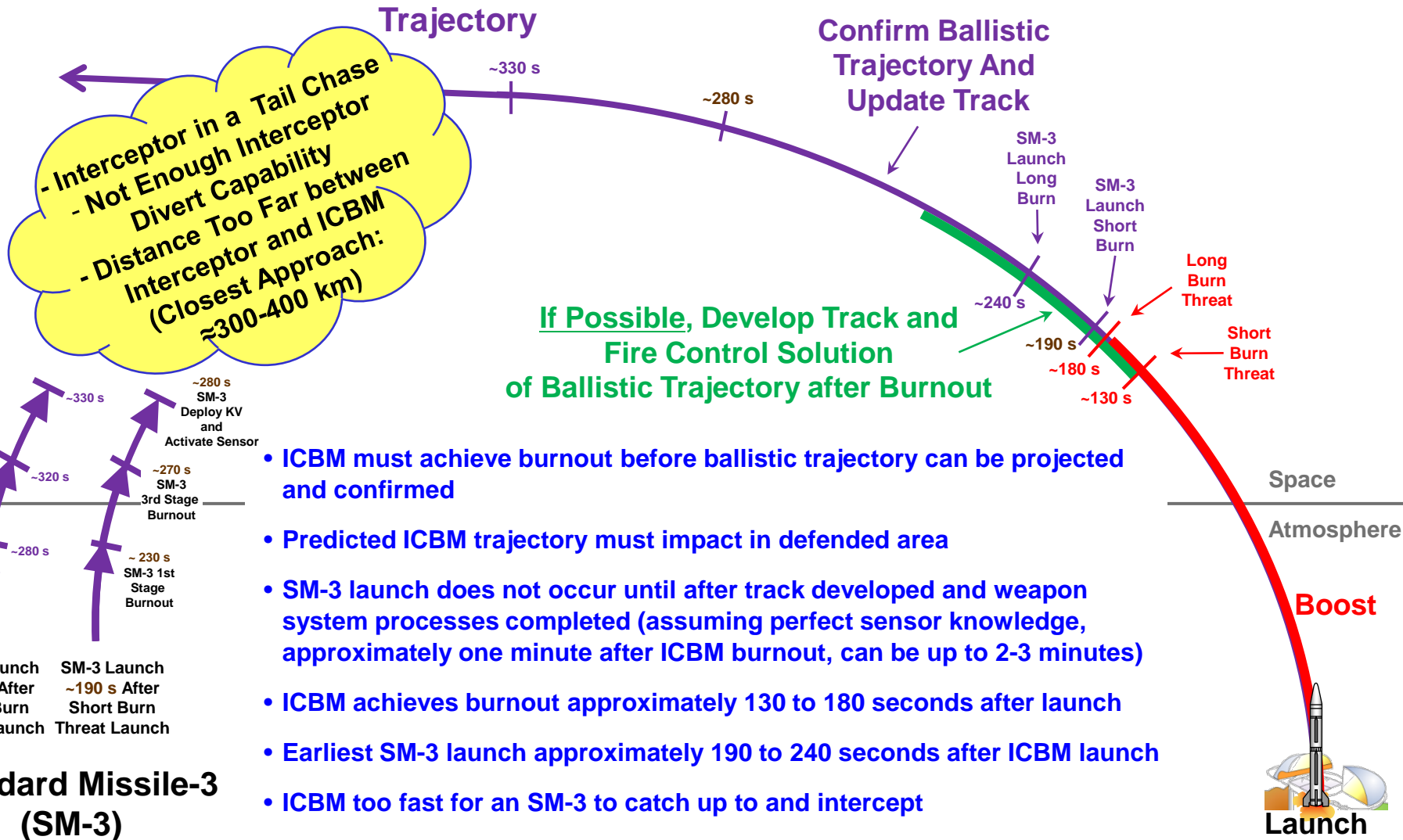
## - Aegis Missile Defense -





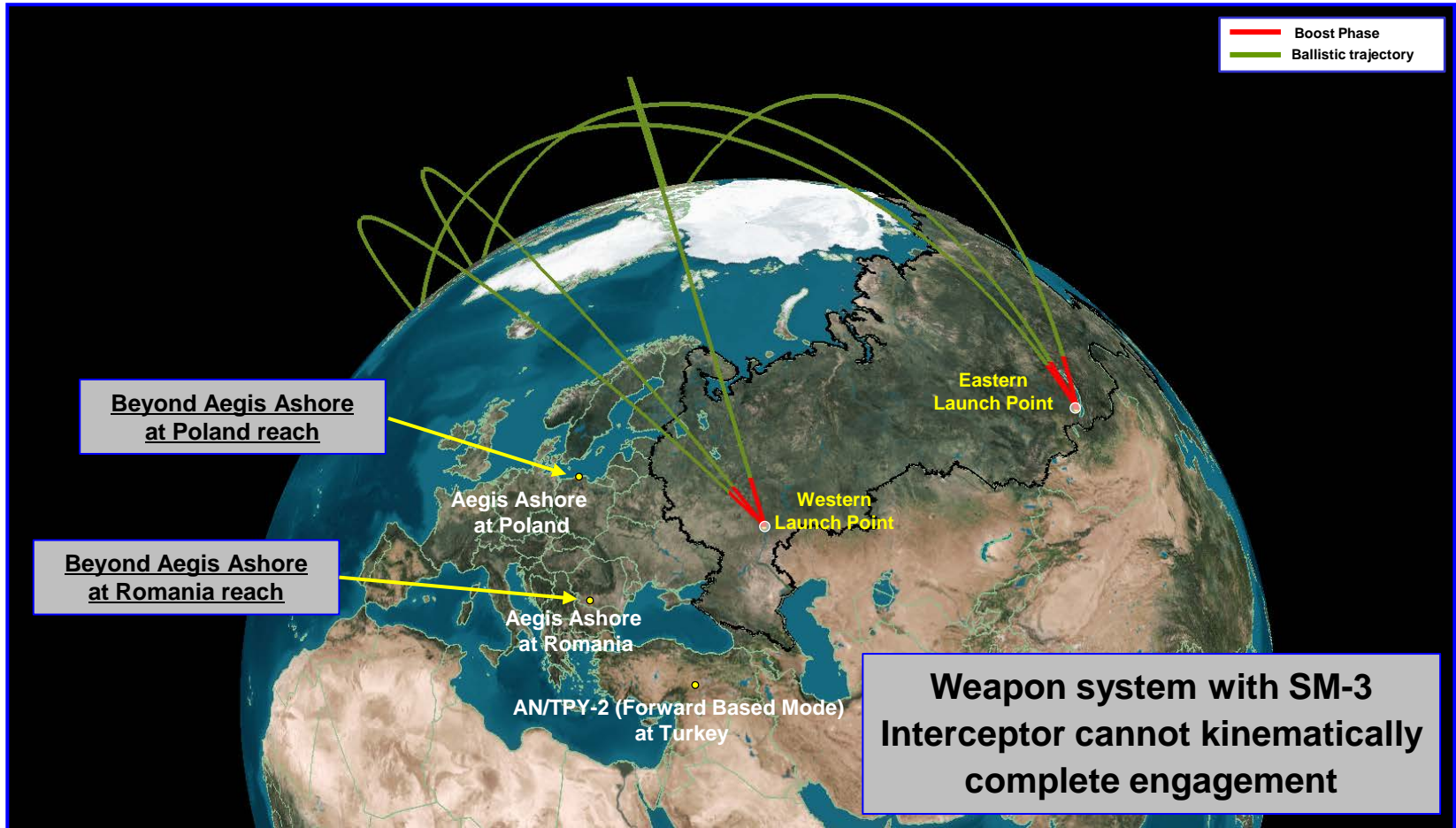
# EPAA U.S. Aegis Missile Defense

## - SM-3 Interceptors Cannot Intercept Russian ICBMs -





# EPAA Ballistic Missile Defense System – Incapable of Intercepting Russian ICBMs –



**Russian ICBMs launched towards U.S. travel on Polar trajectories and are too fast for deployed SM-3 to intercept either ICBM itself or reentry vehicle**





# Perceptions and Facts About EPAA Missile Defense System

- **Perception:** Russian ICBM and SLBM trajectories to U.S. pass through EPAA defense design
  - **Fact:** Few Russian strategic missile trajectories pass near EPAA assets
  - **Fact:** Majority of trajectories to U.S. take a Polar route, north and east of EPAA assets
- **Perception:** Launch of missile defense interceptors occurs well before burnout of the targeted ICBM
  - **Fact:** Fire control solution only generated for coasting/non-powered object on ballistic trajectory
  - **Fact:** Interceptor launch will not occur until approximately 60 seconds (at earliest) after threat missile's powered flight (boost) ends, and after initial ballistic trajectory track is established
- **Perception:** Boost phase intercept of ICBMs and SLBMs possible by EPAA assets
  - **Fact:** During powered flight (boost) threat missile trajectory is not ballistic
  - **Fact:** Intercept is not possible during boost phase due to unobtainable fire control solution
  - **Fact:** Inadequate interceptor thrust and divert
- **Perception:** Aegis Ashore in Poland, close to Russia, makes it easier to intercept Russian ICBMs
  - **Fact:** Intercept is impossible due to delays inherent in missile defense engagement:
    - Threat burnout must occur before fire control solution development
    - Interceptor launch and fly-out must occur before kill vehicle deployment and activation
  - **Fact:** Error basket (threat missile location uncertainty) too large
  - **Fact:** Sufficient interceptor divert capability not attainable for uncertain threat missile position
  - **Fact:** Fire control solutions result in tail chase; interceptor closest approach 100s of kilometers



# European Phased Adaptive Approach (EPAA) Summary

- **Addresses the growing ballistic missile threat to NATO countries in Europe and U.S. homeland**
- **Not oriented towards Russian Federation**
- **Not capable of intercepting Russian ICBMs or SLBMs**
- **Cannot engage boosting ICBMs or SLBMs**

**EPAA Capabilities Do Not Undermine Strategic Stability**  
– Supported By Technical Analysis –

