MISSILE DEFENSE AGENCY

Fact Sheet

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Ballistic Missile Defense Intercept Flight Test Record

(as of April 8, 2016)

The Missile Defense Agency conducts regular intercept flight tests. These tests provide data to anchor models and simulations that can then be used to verify performance and confirm the technological progress of the Ballistic Missile Defense System. The MDA also conducts regular, rigorous non-intercept tests, including sensor characterization flight tests, ground tests, and wargame exercises. Testing to date has given us confidence in the basic design, effectiveness, and operational capability for short-, medium-, and long-range ballistic missile defense.

Overall Test Record

- 74 of 91 hit-to-kill intercept attempts have been successful across all programs since the integrated system began development in 2001
  - Includes Aegis Ballistic Missile Defense (BMD), Ground-based Midcourse Defense (GMD), Terminal High Altitude Area Defense (THAAD), and PATRIOT Advanced Capability-3
- 49 of 62 hit-to-kill intercept attempts have been achieved for THAAD, Aegis BMD, and GMD test programs since 2001

Ground-based Midcourse Defense (GMD)

- 9 successful intercepts in 17 attempts since 1999
- Causes of Failures:
  - IFT-4 – Kill vehicle's infrared sensor cooling malfunctioned
  - IFT-5 – Kill vehicle and booster did not separate
  - IFT-10 – Kill vehicle and booster did not separate
  - IFT-13c* – Interceptor failed to launch due to problematic software configuration
  - IFT-14 – Interceptor failed to launch after a silo support arm did not retract, triggering an automatic abort
  - FTG-06 – Kill vehicle and system sensor performance issues
  - FTG-06a – Kill vehicle guidance error in final seconds of flight
  - FTG-07 - Kill vehicle and booster did not separate
- FTG-03 is characterized as a "no-test" – Target malfunctioned after launch, interceptor was not launched

Date	Test Name	Hit
Ground-Based Interceptor (GBI)		
2-Oct-99	IFT-3	✓
19-Jan-00	IFT-4	x
8-Jul-00	IFT-5	x
14-Jul-01	IFT-6	✓
3-Dec-01	IFT-7	✓
15-Mar-02	IFT-8	✓

Date	Test Name	Hit
Ground-Based Interceptor (GBI)		
14-Oct-02	IFT-9	✓
11-Dec-02	IFT-10	x
15-Dec-04	IFT-13c*	x
14-Feb-05	IFT-14	x
1-Sep-06	FTG-02*	✓
25-May-07	FTG-03	N/A

Date	Test Name	Hit
Ground-Based Interceptor (GBI)		
28-Sep-07	FTG-03a	✓
5-Dec-08	FTG-05	✓
31-Jan-10	FTG-06	x
15-Dec-10	FTG-06a	x
05-Jul-13	FTG-07	x
22-Jun-14	FTG-06b	✓

* EKV Characterization Test (Intercept not an objective)
Light shaded areas show tests involving operationally configured interceptors. Dates correspond to time zone of interceptor missile launch location.

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Aegis Ballistic Missile Defense

- 33 successful intercepts in 40 attempts against ballistic missile targets
- Includes one Standard Missile (SM)-6 and four SM-2 blast fragmentation (non hit-to-kill) intercepts
- Causes of Failures:
  - FM-5 – SM-3 Block 0 interceptor divert and attitude control malfunctioned
  - FTM-11 – Fire-control malfunctioned because of operator error; SM-3 Block IA missile was not launched
  - Pacific Blitz exercise – One target was intercepted, another was missed due to infrared seeker failure
  - JFTM-2 – SM-3 Block IA interceptor divert and attitude control malfunctioned
  - FTM-16 Event 2 – Third stage rocket motor pulse failure
  - FTI-01 – Inertial Measurement Unit failure
  - FTO-02 E2a – Failure review ongoing
- FTO-02 E1 and FTO-02 E2 are characterized as a "no-tests" – Target malfunctioned, interceptor was not launched

Date	Test Name	Hit
SM-3 Interceptor		
25-Jan-02	FM-2	✓
13-Jun-02	FM-3	✓
21-Nov-02	FM-4	✓
18-Jun-03	FM-5	x
11-Dec-03	FM-6	✓
24-Feb-05	FTM-04-1 (FM-7)	✓
17-Nov-05	FTM-04-2 (FM-8)	✓
22-Jun-06	FTM-10	✓
7-Dec-06	FTM-11	x
26-Apr-07	FTM-11 Event 4	✓
22-Jun-07	FTM-12	✓
31-Aug-07	FTM-11a	✓
6-Nov-07	FTM-13**	✓✓
17-Dec-07	JFTM-1	✓
1-Nov-08	Pacific Blitz	x

Date	Test Name	Hit
SM-3 Interceptor		
19-Nov-08	JFTM-2	x
30-Jul-09	FTM-17	✓
27-Oct-09	JFTM-3	✓ ✓
28-Oct-10	JFTM-4	✓
14-Apr-11	FTM-15	✓
1 Sep-11	FTM-16 Event 2	x
9-May-12	FTM-16 Event 2a	✓
26-Jun-12	FTM-18	✓
25 Oct-12	FTI-01	x
12-Feb-13	FTM-20	✓
15-May-13	FTM-19	✓
10-Sep-13	FTO-01	✓
18-Sep-13	FTM-21**	✓
3-Oct-13	FTM-22	✓
6-Nov-14	FTM-25	✓

Date	Test Name	Hit
SM-3 Interceptor		
25-Jun-15	FTO-02 Event 1	N/A
4-Oct-15	FTO-02 Event 2	N/A
20-Oct-15	ASD-15 Event 2	✓
1-Nov-15	FTO-02 Event 2a	x
9-Dec-15	FTO-02 Event 1a	✓

SM-2 Block IV Interceptor* **		
24-May-06	Pacific Phoenix	✓
5-Jun-08	FTM-14	✓
26-Mar-09	Stellar Daggers	✓
29-Jul-15	MMW Event 2	✓

SM-6 Dual I Interceptor* **		
28-Jul-15	MMW Event 1	✓

Terminal High Altitude Area Defense (THAAD)

- 13 successful intercepts in 13 attempts
- Current test program began in 2006 and all tests involve the operationally configured interceptor
- FTT-04, FTT-10, and FTT-11 are characterized as "no-tests" – Target malfunctioned after launch, interceptors were not launched

Date	Test Name	Hit
THAAD Interceptor		
12-Jul-06	FTT-03	✓
13-Sep-06	FTT-04	N/A
26-Jan-07	FTT-06	✓
5-Apr-07	FTT-07	✓
26-Oct-07	FTT-08	✓

Date	Test Name	Hit
THAAD Interceptor		
25-Jun-08	FTT-09	✓
17-Sep-08	FTT-10	N/A
17-Mar-09	FTT-10a	✓
11-Dec-09	FTT-11	N/A
28-Jun-10	FTT-14	✓

Date	Test Name	Hit
THAAD Interceptor		
4-Oct-11	FTT-12**	✓✓
25-Oct-12	FTI-01	✓
10-Sep-13	FTO-01	✓
4-Oct-15	FTO-02 Event 2	N/A
1-Nov-15	FTO-02 Event 2a	✓✓

** Salvo/Dual Intercept / *** Blast Fragmentation Interceptor
Light shaded areas show tests involving operationally configured interceptors. Dates correspond to time zone of interceptor missile launch location.