

Ground-based Midcourse Missile Defence

PLAN

A missile shield to protect the United States from nuclear, biological or chemical attack by rogue states, namely North Korea or Iran, branded by the Bush administration as part of an "axis of evil." The system being deployed relies on interceptors destroying warheads – carried by intercontinental ballistic missiles (ICBMs) – during midcourse, while above the earth's atmosphere

THREAT

North Korea: Appears to be about to test fire prototype

Taepo-dong 2C missile capable of reaching U.S. mainland. Pyongyang reportedly possesses six to eight nuclear weapons and at least 40 **No-dong** missiles with a range of 1,300km



Iran: Test fired **Shahab 3ER** in May. Based on North Korea's **No-dong**, it is believed to have a reach of 2,000km which can threaten Israel, U.S. bases in the Gulf and foreign troops in Iraq. U.S. insists Iran's uranium-enrichment programme is to make nuclear weapons. Tehran says it is to make fuel for a power plant



CONCEPT

1

Launch detection: Satellites in geosynchronous orbit – 36,000km above earth – use infrared detectors to sense ICBM heat plumes during boost-phase

NORTH KOREA ICBM launch site

BOOST-PHASE

Threat cloud
Warhead
Decoy balloons
Typical ICBM reaches speed of 7km/sec in 250 seconds

MIDCOURSE-PHASE

2

Threat cloud: **Cobra Dane** radar on **Shemya Island** tracks warhead and decoys released by ICBM

3

Intercept: Command centre orders launch of **Ground-Based Interceptors (GBIs)** from **Fort Greely** and **Vandenberg**. Each interceptor carries single **Exo-atmospheric Kill Vehicle (EKV)**

EKV Designed to track and destroy warheads by collision. Cost: \$20-\$25 million

Rocket thruster

Fuel tank

Raytheon AERJET

Attitude control system

Liquid nitrogen cryogenic cooling system

Length: 140cm
Diameter: 61cm
Weight: 63.5kg

Vandenberg
Los Angeles

Cheyenne Mountain Command Centre

GBI

Three-stage silo-launched rocket – reaches speed of 5.9km/sec

Countermeasures

Decoy balloons, fitted with small heaters, mimic heat signature of warhead

Liquid nitrogen shroud reduces warhead's heat signature

Insulation

5

100 seconds before impact: Infrared sensors detect warhead from heat emitted by nuclear decay of payload

Combined velocity 24,000km/h

6

Kill: EKV must collide with **sweet spot** – area where payload is located – to pulverize warhead

Kill Vehicle: Upon release, EKV uses star tracker to establish exact position in space. In-flight tracking updates guide EKV towards threat cloud

