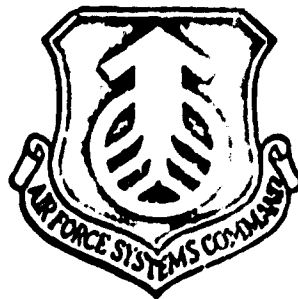


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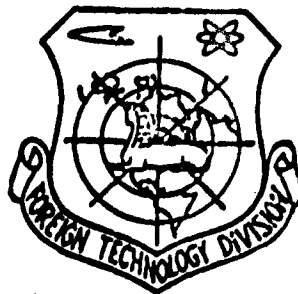
FOREIGN TECHNOLOGY DIVISION



A GUIDED MISSILE EXPLODES IN A LAUNCHING SILE

by

Xie Chu



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A GUIDED MISSILE EXPLODES IN A
LAUNCHING SILO

by Xie Chu

Early in the morning at 3 A.M. the sky above the small American town of Damascus was suddenly illuminated by a flash. After several seconds there came the thunderous sound of an explosion and a tremendous cloud rose up into the sky. The most dangerous accident in intercontinental nuclear guided missile history had occurred . . .

This occurred on September 19, 1980. It was a sudden explosion in a launching silo in Arkansas. The Titan II intercontinental guided missile in the silo was equipped with a powerful 100 million ton TNT equivalent nitrogen warhead. The tremendous shock force threw the nuclear warhead out of the launching silo more than 100 meters into the grass. The nuclear warhead did not explode nor did any radioactive material leak out. The residents living in the 8-16 kilometer area surrounding the accident were all evacuated and after several hours returned home. At the time of the explosion the guided missile fuel (hydrazine) produced toxic gases which soared up to the sky and so the

American United Airlines Company prohibited aircraft from flying within a 24 kilometer radius of the accident area.

The Titan II is America's largest, powerful nuclear warhead intercontinental guided missile - 4-5 times larger than the Minuteman II. Yet, although the thrust of the liquid propellant used by this type of guided missile is greater than the solid propellant used by the Minuteman guided missile its use is not as convenient as the solid fuel. It began to be actively used in 1963 and has already been used for 20 years. It is a relatively obsolete nuclear weapons system. At the beginning of the 1970's, the United States considered putting this type of missile out of service but afterwards because it was a useful bargaining counter in the American-Soviet Nuclear Strategic Arms Limitations Talks it was retained. A commentary in the American magazine "Newsweek" stated: "The Titan II being kept in active service up until today has more political reasons than strategic factors."

The United States now has 1,054 intercontinental ballistic missiles which are land based. Among them, 1,000 are of the Minuteman type and only 54 are of the Titan type. The launch positions of these guided missiles are not on the earth's surface but are launching silos hidden below the earth's surface. This is advantageous for raising the power of survival when encountering an enemy surprise attack.

There are 18 launching silos for the Titan II spread over Arkansas and the others are deployed in Kansas and Arizona. This explosion took place in a launching silo on a mountain 72 kilometers north of Little Rock, only 6 kilometers from the small town of Damascus. The launching silo is 44.5 meters deep, on the top is a heavy 750 ton reinforced concrete cover and the blast of the explosion broke and scattered the cover in all directions.

The cause of the explosion accident was a dropped wrench socket. Sometime after 7 o'clock on the evening of the 18th a maintenance team was in the process of doing maintenance work on a guided missile in the launching silo which was 31 meters in height and 3 meters in diameter. On the third work level in the launching silo one technician was not careful and dropped a wrench socket down. He was 21.3 meters distance from the bottom of the launching silo. Although the metal socket was only 1.35 kilograms yet when dropped from such a high place it produced a large impact force. It rebounded on the bottom of the launching silo and hit the guided missile's first stage fuel reserve tank which is also the thin aluminum alloy casing of the missile.

When the casing cracked, the liquid fuel toxic steam began to escape. The concentration of steam inside the silo began to increase and so the maintenance personnel went out from inside the silo. Because there were signs of a fire

inside the silo an automatic spray from the fire prevention system immediately poured 100,000 gallons (370,000 liters) of water into the silo. Yet the concentration of escaping steam continued to increase.

After six and one half hours, two specially trained airforce emergency personnel risked entering the silo and attempted to block up the leaking tube and stop the continual escape of liquid fuel steam. They discovered that the concentration of toxic steam in the silo was very high and its being mixed with the oxygen molecules in the air increased the danger of natural explosion. They had no hope of repairing it and therefore it was best for them to quickly leave. Just as they were withdrawing from the silo opening the explosion occurred. This was at 3:01 A.M. on the morning of the 19th.

Airforce Sergeant David Livingston died of chemical pneumonia by inhaling toxic steam. One other airforce personnel was critical and twenty others were injured. The explosion caused the solid underground silo to turn into the ruins of a 75 meter wide bomb pit. The guided missile and silo body structure flew off in all directions in pieces.

This guided missile explosion stirred up a dispute between the American government and the public. Critics thought that America's strategic nuclear weapons system was not reliable. The United States Airforce Commander Hans Mark

(he is a rocket specialist) maintained that this was a man-made accident and that the guided missile itself was completely reliable. He also said that the Soviet Union was also still in the process of manufacturing and using liquid fuel guided missiles and that this area of technology was not obsolete.

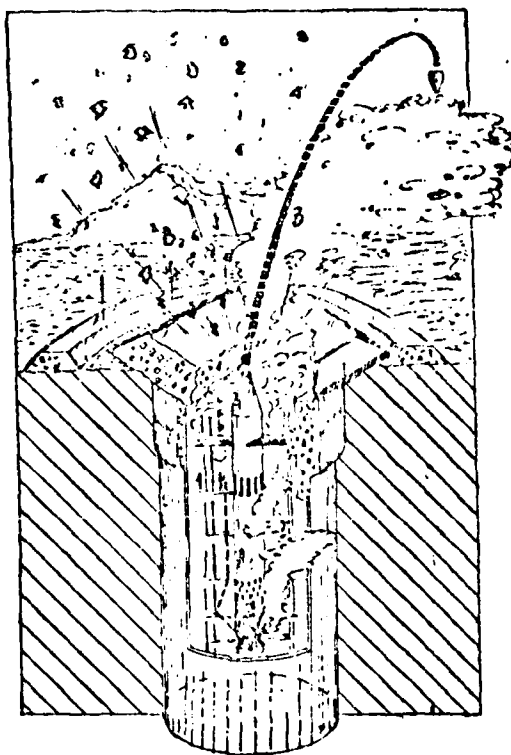


Chart 1 Schematic Chart of the Launching Silo Expulsion

1 is the position of the person who dropped the wrench socket; 2 is the hit guided missile casing; 3 is the thrown nuclear warhead. It can also be seen in the chart that when the explosion occurred the 750 ton movable door was blown to pieces and scattered.

