

DISPOSITION FORM

SECURITY CLASSIFICATION (If any)

FILE NO.

ORDAB-DLM

SUBJECT

Submarine Launched Ballistic Missiles

TO AOMC PIO

FROM ORDAB-DL

DATE 21 Apr 60

COMMENT NO. 1

ATTN: Mr. Jim Funkhouser

Mr. von Tiesenhausen/fga/3-1813

1. In 1944 when the V-2 became operational and tactical concepts were developed for the deployment of this weapon, Mr. Klaus Riedel originated the following idea to extend the range of action of the V-2: Development of a number of submarine trailers which could be towed by a regular submarine from Europe to the East Coast of the USA and return. The submarine trailers shall be V-2 launchers and shall be designed to house, prepare, check and fire one V-2 missile. The idea was presented to the Army (in charge of the V-2) and received full support by Oberstleutnant (Lt. Col.) Stegmeier and in turn by General Zanssen in Peenemunde.

a. In September or October 1944 a group of six engineers were separated from their other activities in Peenemunde - Kolpinsee and were assigned to work out this project known under the code name: Prufstand (Test Stand) XII. The project was secret with limited access; so the number of people involved was kept to a minimum. The engineers working on the original design were:

(1) Mr. Hans Hueter, now Project Director Agena-Centaur, NASA - Huntsville, Alabama.

(2) Mr. Bernard Tessmann, now Deputy Director, Test Laboratory, NASA, Huntsville, Alabama.

(3) Mr. Georg von Tiesenhausen, now Chief, Future Launch Systems Study Office, NASA, Huntsville, Alabama.

(4) Mr. Heinz Hilten, now Post Engineer, Redstone Arsenal.

(5) Mr. Hannes Luehrsen, now Post Engineer, Redstone Arsenal.

(6) Mr. Hermann Hufen, Germany, residence unknown.

(7) Mr. Klaus Riedel - Died in an automobile accident in 1944.

b. The preliminary design consisted of laying out the submarine launcher in cooperation with the Vulcan Werft (shipyard) in Stettin and designing launch supports, slide rails, exhaust ducts, service platforms, lox tank, plumbing, check-out equipment, trim tanks, hatches, etc., inside the container.

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REPLACES NME FORM 96, 1 OCT. 48, WHICH MAY BE USED.

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c. As the design progressed it became necessary to build a test model particularly with respect to the performance of the exhaust ducts. Test Stand I in Peenemunde was prepared and a full size exhaust system was erected. The missile was statically fired from various heights and the jet deflected upward through the ducts.

d. Next, a wooden mock-up was built which included the whole area around and below the missile tail in order to study the accessibility of various accessories and missile components.

e. The Vulcan Werft in Stettin completed drawings of the launching container early in 1945 and incorporated the interior design features necessary for a launch.

f. The launcher container included a number of ballast tanks which could be flooded or blown and thus enable the container to float in any position either totally or partially submerged horizontally or vertically. The missile was fixed in the forward half of the container, guided by the four fins sliding in channels and by two pins protruding from the forward part of the fuselage. In launch position the missile was supported under the fins by radial brackets. Under the missile there was a square flame funnel leading to the jet deflector. Two opposing flame ducts deflected the exhaust 180° upward. The ducts ran outside the hull and were thus water cooled from three sides. The gases escaped at the forward end of the container. The lid of the forward hatch was actuated by hydraulic cylinders.

g. The central part of the container included the crew and control compartment accessible from the outside and from the missile compartment. The control chamber had two floors at right angles to each other and the controls could also swing in two planes to accommodate for horizontal and vertical container position. Prior to launch the crew would move to the submarine tug and launch would occur by remote control.

h. Below the control chamber, surrounded by insulation, was the liquid oxygen storage tank which provided sufficient oxidizer including boil-off losses for three to four weeks. The fuel, ethyl alcohol, was stored on board the missile. Power was provided by cable from the tug.

2. There has never been a submarine missile launching of this type in Germany during, before or after World War II. So, nobody could have witnessed any firings of that kind.

3. Solid propellant rockets were fired from a submarine. The submarine commander was the brother of Dr. Steinhoff. This took place in about 1942. Dr. Steinhoff was quite involved in this project and is now with AVCO.

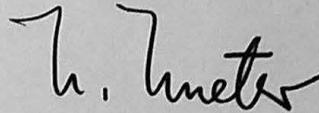
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4. Originally the JUPITER IRBM was planned for use by the Army. Due to the interest of the Navy in late 1955 for a shipboard launched IRBM, the JUPITER was then designed to serve this purpose. The Systems Support Equipment Laboratory developed a support equipment and board launch concept which considered the important implications of ship motions, missile training, emergency missile dumping, missile tail grab and release mechanisms, etc. After the development had proceeded for several months, the handling of large quantities of liquid propellant on board a ship was considered to be too hazardous (according to a study by the Vitro-Corporation), so the Navy cancelled the project and turned to solid propellants. Though finally adopted by the Air Force the JUPITER system still includes features which came into the design due to its various prospective customers.

5. A study on a submarine launched JUPITER IRBM was made in 1955 by G. von Tiesenhausen, RSA-L&H- 5 Oct 55: Project Navy, "A Study on Submersible Launching Containers for Guided Missiles." This study is classified "SECRET."



HANS HUETER

Dir, Systems Support Equip Lab

10 Incls

1. Dwg A EW-233-72-27 B17
2. Dwg A, Pr 12 Elevated Position
3. Dwg J EW-233-2-1-37
4. Dwg J EW-233-1-23 BL29
5. Dwg J EW-233-1-23 BI-27
6. Dwg J EW-233-1-19 B124
7. Dwg J, Apparatus - Msl Launching & Loading
8. Dwg J EW-233-1-23
9. Sketch
10. Sketch