



Polaris Missile Developed After Many Fears Hurdled

Washington, (Science Service) — Polaris, America's trump in the deadly missile game, is no mere missile. It is an enormously complex missile system.

The instrument itself is a 30-foot, solid-fueled, submarine-launched rocket that can leap out of water and streak 1,500 miles to its target carrying an atomic warhead.

The Polaris system represents the work of many prominent men.

Rear Adm. Hyman G. Rickover, father of the world's first atomic submarine Nautilus, saw the atomic submarine's potential as a missile base capable of remaining submerged and hidden for long periods of time in enemy waters.

Proposal Shelved
In 1954, Adm. Rickover formally proposed a Polaris-like system. But the Nautilus had just been launched and was not yet proved and missiles were unreliable. The Rickover proposal was shelved.

Later, the reduction of the size of the megaton bombs and improvements in missile thrust and guidance reduced objections to the concept of submarine-launched missiles.

In 1955 at Dr. Wernher von Braun's headquarters in Huntsville, Ala., the Army and Navy joined in work on a 1,500-mile missile. The Navy, however, began to fear liquid-fuel missiles were too dangerous for submarine use.

Potentially simpler and safer than liquid-fuel rocket engines, solid-fuel rockets were far from perfected. The solid-fuel rocket was in some ways as fool-proof as a Fourth of July rocket which it resembles. But thrust per pound of fuel was low. A missile with enough fuel to go 1,500 miles was much too big for a submarine to carry.

A chemist whisked out of Germany after World War II, Dr. Karl Klager, attacked the problem for Aerojet-General Corporation of Azusa, Calif., a subcontractor of the Lockheed Missiles and Space Division, which then had the Navy's prime contract for Polaris development.

Dr. Klager's team not only increased thrust per pound, it also hit on a crucial (and top secret) system of cutting off the thrust at just the right

time. This cut-off must be exactly timed if the missile is to be at proper altitude and on proper course to begin the long, unguided glide to its target.

Polaris was taking shape as a compact missile about 30 feet long. Through its solid fuel, a star-shaped hole was cast to afford a longer burning surface and improve the missile's performance. A synthetic material from which

foam rubber is made was found to bind the fuel together.

Meanwhile, the Massachusetts Institute of Technology and General Electric Company worked on the guidance system. A missile computer was developed into which target and navigational data are fed just before the missile is launched.

To supply the missile's "brain" with precise information on the submarine's position, a new navigational system had to be devised.

Underwater launching also posed problems. The Navy did not want the missile to ignite until the missile was away from the submarine. A mis-

fire might destroy a whole sub and its crew.

A compressed air system was devised. It can shoot the missile 50 to 100 feet into the air from a submarine far below the surface of the ocean. Then the missile engine ignites.

Today, the system seems ready. Beginning next fall a U.S. Polaris submarine with 16 Polaris missiles should be sailing at all times.

One Polaris missile could destroy a city the size of Washington, D.C.

The Navy expects to increase the Polaris range to 3,000 miles. And it plans a fleet of 45 Polaris submarines costing \$100,000,000 each. Ap-

propriated for the development of the Polaris system through June of this year: \$2,742,648,000, or about \$15 for every man, woman and child in the United States.

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Foreign Language Department At Medford High Is Reviewed

The advent of jet aircraft, world diplomacy, and constantly diminishing travel restrictions in "Iron Curtain" countries have increased the demand for foreign languages in high schools in recent years.

Recognizing this demand, the Medford school system has increased its foreign language selection to five and has added facilities to assist students in learning the conversational aspect of the language more readily.

Medford High school's foreign language laboratory was explained, and the department was reviewed by members of the staff for school board members and interested lay citizens this week. The meeting was one in a series of monthly sessions at which the system's curriculum is reviewed.

Participating in the discussion were Miss Dorothy Wilson, head of the high school's foreign language department; Mrs. Naomi Van Dyke, Mrs. Edna Stewart, Mrs. Maxine

Smith, Assistant School Superintendent Elliott Becken, and several high school girls who demonstrated the use of tape recorders in the laboratory.

Need for Languages
Instructors discussed reasons why foreign languages are taken, the need for them in today's world, and some of the differences in teaching today compared to some years ago when conversational language was minimized.

Becken said the laboratory is a relatively simple type lab designed for a minimum of trouble. It was constructed at a comparatively low investment, he noted, and material used in the booths may be removed and reused if demand for or use of the lab ever declines to a point where it is considered not needed.

The laboratory is also designed to add a unit for the instructor to monitor individual booths and to converse with the student. Such a unit is planned at Crater High school's new foreign language lab, Becken said, and Medford school officials plan to have it demonstrated to determine if it is practical in the local lab.

Explain Technical Aspects
Ted Christensen of the Veri Walker company, Medford, explained technical aspects of the laboratory, and the possibilities for expanding it to include a monitoring system in the future. The Veri Walker company cooperated with

school officials in designing and installing the laboratory. Becken noted that only a few high schools in Oregon offer five foreign languages. A total of 371 students, or 17.5 per cent of the total enrollment in the secondary grades, are taking a foreign language, he noted.

Of the total number, 273 are taking Spanish, 12 Russian, 44 German, 137 Latin and 105 French.

In addition to secondary grade offerings, an elective activity in grades five and six is elementary conversational Spanish, in which 214 students are participating. Elementary Spanish is conducted on an elective basis such as band, and other extra-curricular activities.

Two Languages Added
Two languages were added to the high school curriculum this year. They are Russian and German. Mrs. Stewart said there appears to be no question as to the importance of Russian today.

Mrs. Van Dyke, Spanish instructor, and Mrs. Smith, French and German instructor, as well as Mrs. Stewart, indicated that until recently there was public apathy regarding foreign language. Americans, they said, considered English the language to be used in world diplomacy and travel.

In more recent years, however, the picture has changed, and prospective diplomats and travelers are becoming aware that they will be better received in a foreign country if they at least show they tried to learn the language previously.

The instructors also pointed out that foreign languages are important because of their contribution to the English language. Mrs. Stewart noted that more than 50 per cent of the English words are derived from Latin, and German, French and Spanish have contributed numerous words. The Russian language is contributing more regularly, they noted.

The importance of foreign languages in relation to art, music, literature and travel was noted.

Weathermen Want Storms for Tiros

Washington (Science Service) — Meteorologists hope for bad weather for Tiros I, the weather satellite launched recently. They hope the satellite will provide photographs of cloud patterns involved in the birth or growth of storm fronts or hurricanes.

Photographs might provide clues that would enable meteorologists to understand weather disturbances better and eventually to predict them better. Meteorologists in the meteorological satellite section of the weather bureau will be responsible for the analysis and interpretation of the cloud data. They have worked closely with the National Aeronautics and Space Administration in the Tiros development.

POISON SOURCE
St. Louis — About one-third of the world annual supply of commercial arsenic is produced in the United States.

Solar Cells Get Better; Cost Drops

Chicago, (Science Service) — Silicon solar cells for converting light directly into electricity now have a conversion efficiency of 14 per cent. When announced in 1954 by their inventors at the Bell Telephone laboratories, the cells' efficiency was only six per cent.

The American Power conference here was told that with 100 per cent efficiency, cells covering an area 300 miles long and 20 miles wide could produce enough electricity for the whole world. Dr. C. A. Escoffery of International Rectifier corporation, El Segundo, Calif., said that solar cells already cost less per kilowatt hour than flashlight batteries, and costs will continue to fall.

"The main economic problem is now one of reducing the cost of storage-battery systems," Dr. Escoffery said. The battery systems are needed to store the electricity for use when needed.

Grange Notes

Upper Applegate Grange
A short business meeting was held by the Upper Applegate Grange recently. A potluck dinner preceded the meeting. Many families of the community attended.

Mason Anderson was appointed Grange insurance agent taking Edward Finley's place. Finley recently resigned.

The Grange voted to again sponsor a 4-H scholarship for summer school in Corvallis. The Red Cross was granted permission for the use of the hall on Saturday for their talent show.

After the meeting the evening was spent in visiting and dancing. The music was furnished by Mr. and Mrs. John Bettencourt and George Frago.

The next meeting will be held April 8.

Lake Creek
C. C. Haggard, director of safety for the California Oregon Power company, will be a guest speaker at Lake Creek Grange Friday, April 8, at 8 p.m. All persons in the community are invited.

Haggard will present a film on rescue breathing. Los Angeles — (UP) — Comedian Bob Hope received the Freedom Foundation at Valley Forge Award Tuesday.

4-H Club News

Needles and Pins
The Needles and Pins 4-H club met in the home of Mrs. Victor Hay, Eagle Point, recently. Mrs. Margaret Miller attended the meeting and consented to be co-leader.

Members worked on their sewing for an hour following the business session. Refreshments were served. Carmen Farlow, Reporter.

Needle Crafts Girls
Members worked on their head scarves at a meeting of Eagle Point Needle Crafts Girls 4-H club Friday. Pin cushion and needle case material was discussed.

The next meeting will be Friday in the High school at 3:15 p.m. Mary Kathryn Sindors, Reporter.

Desert Pegasus
Members of the Desert Pegasus 4-H club will meet on April 16 at the Dun ranch to practice for coming 4-H events.

Dale West, a member, attended the horse show in Grants Pass April 2. Phillip McGuire became a member at the last meeting. Kathy McGuire, Acting Reporter.

Culinary Cuties
Miss Norma Hague, county 4-H club agent, judged food projects made by members of the Culinary Cuties 4-H club at a meeting recently at the Applegate school. She also gave pointers which will be helpful at the coming fair.

Sandy Brewster and Mary Herriott gave a demonstration on making jelly.

Plans were made for the second day of testing water of wells in the community, which is the club's community service project. Sandy Brewster, Reporter.

Reese Creek Renegades
Members of the Reese Creek Renegades 4-H club took a test on the dairy cow at a recent meeting at the home of Mr. and Mrs. Clifford Moore. They also finished a judging program and discussed planting plants in front of the grade school gym in Eagle Point.

Plans were made for a field trip to Snider's Dairy, a visit to John Amber's sheep ranch, Ashland, and a club tour. Bob Scoble was in charge of the game. Kay Stephenson, Reporter.

Eagle Point Ranchers
The Eagle Point Ranchers Livestock club met at the 300 Point vocational agricultural building recently. The meeting was called to

order by Mike Higday. The 4-H club pledge was led by Brian Dowell. The roll call was taken and there were 15 members present and 4 visitors present.

There was no old or new business so Mike Higday showed the club "Modern Swine Worm Control."

Mrs. Burrill served refreshments after the meeting. The next meeting will be April 11 in the Eagle Point vocational agricultural building. Anyone interested in joining the club is invited.

Frances Huffman, Reporter.

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