

Arsenal-Wide

Spot News

Dial 112

The Redstone Rocket

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VOL. XV; NO. 29

REDSTONE ARSENAL, HUNTSVILLE, ALABAMA

NOVEMBER 30, 1966

AOA TO HEAR R&D CHIEF



DECORATED FOR SERVICE—Wearing his newest medal, Col. George H. McBride pauses by a Hawk missile display after being presented the Legion of Merit by Maj. Gen. John G. Zierdt, Commanding General, U. S. Army Missile Command. The award honored him for exceptionally meritorious service while serving as Project Manager of the Hawk air defense missile system the past 27 months. Col. McBride, who has been nominated for the rank of Brigadier General, is being transferred from Redstone Arsenal.

Gen. Betts Will Speak At Redstone December 7

Lt. Gen. Austin W. Betts, the Army's Chief of Research and Development, will deliver the principal address at the annual meeting of the Tennessee Valley Post of the American Ordnance Association.

Election of post officers will be another highlight of the meeting scheduled for the evening of Dec. 7 at the Redstone Officers Open Mess.

John H. Goodloe, president of the local post, said that Gen. Betts had accepted his invitation to speak at the meeting.

Gen. Betts was named to his position in April, after serving as Deputy Chief of Research and Development for 18 months. He plans

to arrive in Huntsville on the morning of the 7th and will spend the day with Major General John G. Zierdt and key members of his staff being briefed on classified weapons research programs underway at the U. S. Army Missile Command.

In a presentation titled "Science and the Simple Problems," Gen. Betts will outline Army research and development efforts aimed at arriving at solutions to pressing problems posed by the Vietnam fighting. He also plans to show a 20 minute film portraying some of the problem areas in Vietnam and attempts to solve them.

A 1934 graduate of the U. S. (See GEN. BETTS on Page 3)

4th ETC Men Provide Full Thanksgiving Treat Locally

The picture of American GI's presenting a holiday dinner to tattered and hungry foreign children is a familiar and heart-warming one.

But charity has no international boundaries to soldiers as the same benevolent attitude is expressed no matter where the servicemen are stationed. Evidence of this are the men of the 4th Enlisted Training Company, of the U. S. Army Missile & Munitions Center &

School. Their idea to help needy families started in a conversation among the men at the 4th ETC. A private said, "A few of us were griping about not being able to be home for Thanksgiving. But the more we thought about it, the more we realized that our situation wasn't nearly as bad as some others. We at least knew we'd have a good meal, but what about (See 4TH ETC on Page 2)

Key Executives Review Nike-X Developments

Key Department of Defense, Army and industry executives met yesterday in Winston-Salem, N. C., for an annual review of the status of the Army's Nike-X missile defense system research and development program.

The system is under development as a defense against intercontinental and submarine launched ballistic missiles. It is the nation's highest funded defensive missile research and development project and is the only such missile system in development in the Free World.

Brig. Gen. I. O. Drewry, Nike-X Project Manager said the meeting is held "to provide officials in the Defense Department and industry who are responsible for managing the complex program with a common understanding of the progress made in the preceding year and development goals for the coming year."

He noted that the meeting, similar to ones held in the past, has no bearing on a governmental decision this year with regards to production and deployment of the system.

Keynote speaker for the opening session of the meeting last night was Daniel J. Fink, Department of Defense Deputy Director for Strategic Systems.

Some 60 persons from six military and Defense organizations and seven industrial firms that are participating in Nike-X development are attending the meeting. Today's sessions are being held in facilities of the Western Electric Company.

Among those present for the opening of the meeting — which will end this afternoon—were Lt. Gen. A. W. Betts, Army Chief of Research and Development and acting Nike-X System Manager; Charles S. Lerch, DOD Assistant Director for Defensive Systems; and Dr. Russell D. O'Neal, Assistant

Secretary of the Army for Research and Development.

Representatives of the Nike-X contractor organization include: W. E. Burke, Vice President of Western Electric; L. W. Morrison, Executive Director of Defense Systems Division, Bell Telephone Laboratories which is responsible for Nike-X design and development; George M. Bunker and W. B. Bergen, Presidents of Martin Marietta and the Martin Company respectively; J. P. Rogan and T. W. Stephens, Vice Presidents of Douglas Aircraft; G. A. Hoyt, Vice President of General Electric; B. P. Holmes, J. F. Albrandi and Dr. Martin Schilling, Vice Presidents of the Raytheon Company; and G. C. Probst, Vice President of Sperry UNIVAC.

(See KEY EXECUTIVES, Page 3)

Yates To Present Paper To Engineer Group In New York

A U. S. Army Missile Command aerospace engineer, Robert E. Yates, will present a technical paper at the 1966 meeting of the American Society of Mechanical Engineers.

The meeting is set for Nov. 27-Dec. 1 in New York City.

At the Missile Command, Yates has worked in the Army Inertial Guidance and Control Laboratory of the Research and Development Directorate since last May. He came to Redstone Arsenal from Brown Engineering Co. in Huntsville, where he was employed for two years.

Yates, a native of Grundy, Va., holds bachelor and master of science degrees in electrical engineering from the University of Tennessee.

DEADLINE

Because the Rocket suspends publication between Christmas and New Year, no stories about help for the needy can be accepted after Dec. 16.



MAW KILLS TANKS—Looking at a model of the shoulder-fired MAW missile, being developed to kill enemy armor, are British Nationals who visited Redstone Arsenal recently. At left is Col. E. G. Woodman of the British Army Defense Staff in Washington and at right is E. Brelsford, Defense R&D Staff. Briefing the visitors is Lt. Col. John H. Boyes, MAW Project Manager at the U. S. Army Missile Command.

The Redstone Rocket

The Redstone Rocket is published weekly, on Wednesdays. The publisher will receive editorial content for publication in the Rocket only through the Information Office, Army Missile Command, Redstone Arsenal, Ala., Bldg. 5250, Room A-136, Extension 876-1400 or 876-1500.

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Rocket Ruminations

That there should one man die ignorant who had capacity for knowledge, this I call tragedy.
—Thomas Carlyle

Kid Stuff Is For Kids

Current indications forecast the Grim Reaper will gather a bumper crop of automobile accident victims this coming holiday season.

This estimate is based on National Safety Council statistics reflecting the old gentleman's performance during past holidays.

Each year he continues to wield his keen-bladed scythe on the world's congested highways, weeding out the unsafe drivers. His selection process is not always



accurate. Sometimes his swinging blade slays the innocent as well as the guilty.

There is no assurance that you will escape the death-dealing cutting edge this year. You can, however, stack the odds in your favor against this happening.

This may be accomplished by remembering that the automobile you drive is not a toy. It is a useful machine that is only as reliable as the person sitting behind the wheel.

If you remember this, and operate the vehicle according to safe driving rules and practices, the Grim Reaper will probably allow you to travel safely to your destination.

However, should you be the type of thrill-seeker that puts your car through kid-stuff capers on crowded or icy roads, your chances of meeting the old fellow are excellent. You will find a gleeful reaper extending his gnarled hands to help you drive yourself to death.

(AFNB)



WOMAN OF THE YEAR—Maj. Gen. John G. Zierdt, Commanding General of the Army Missile Command, presents the MICOM Woman of the Year Award to Edith Gibbs along with Certificates of Achievement to the six ladies who had been considered for the award. Mrs. Gibbs, who is chief of the Data Processing Office of the Supply and Maintenance Directorate, thus becomes the MICOM nominee for the Army Materiel Command judging. This is the fifth time that she has been nominated. Each of the women nominated has made significant contributions to the MICOM mission during the past year. In the above picture are, left to right, Kathleen Wysong, Hercules Project Office, Lucille Chapman, Comptroller and Director of Programs, Elizabeth Ferguson, Computation Center, Gen. Zierdt, Mrs. Gibbs, Mary Hoots, Research and Development Directorate, Sara Jones, Procurement and Production, Directorate, and Helen Joiner, the Command historian.

4TH ETC

(Continued From Page 1)

those who wouldn't?" he continued.

This prompted the company to see what they could do to make someone's Thanksgiving more pleasant. They contacted the Salvation Army to see who they could help.

A plan was begun to buy food by asking for contributions from the men in the company. Captain Lee W. Eberhardt, commanding Officer, 4th ETC said, "At first I thought that if we could collect enough for one family our efforts would be considered a success."

But the idea caught on, and \$60 dollars was collected, enough for far more than one family. Fresh fruit, potato chips, cakes, candy and hams, and all the trim-

ings were bought. As the men packed the food into boxes before delivery to the waiting families PFC Williams said, "I feel great. To know our efforts will help someone else enjoy Thanksgiving means a lot to me."

The group of smiling soldiers echoed his sentiments.

Drive Safely

What do other station wagons have that a Volkswagen doesn't?

1 A snazzy looking body.

Compared to other station wagons, a Volkswagen comes off kind of plain, styleless and boxy looking. But that's the beauty of it. Because it's shaped like a box it can hold about twice as much as stylish wagons. And because we make the body higher instead of longer, it'll park in 4' less space than stylish wagons.

2 An engine in the front.

Most station wagons devote about 1/3 of their space to carrying an engine around. But our engine is in the rear, out of the way, so most of a Volkswagen's space can be devoted to space. And with that extra weight in the rear, it gets extra traction in mud and sand and snow.

3 A drive shaft.

(It makes that big mound in the floor, from front to back, forcing the middle passenger to sit with his knees in the air.) Naturally, wagons with engines in the front have to use a drive shaft to make their rear wheels go. But not the Volkswagen. It uses a rear engine to make its rear wheels go.

4 A radiator, a water pump and hoses.

All very necessary if your wagon uses water, but a VW never touches the stuff. It's

cooled by air. There's nothing to boil over, nothing to freeze up and no place to put antifreeze.

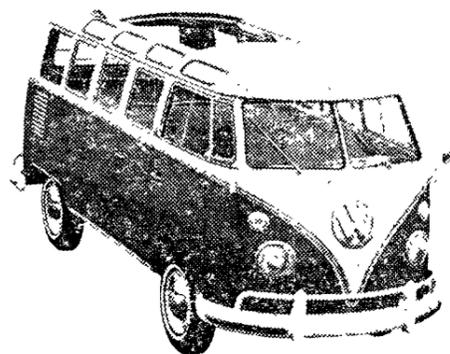
5 A frame.

Most other wagons have bulky frames. But instead of a frame, 13,000 spot welds join the Volkswagen body into one solid piece of steel. So loading 3/4 of a ton may cause a strain, but on you, not it.

6 All of the above.

That's our Volkswagen Station Wagon. Because of what it doesn't have, it doesn't have much in common with other wagons. It doesn't look like one, it doesn't act like one and it can carry about twice as much as one.

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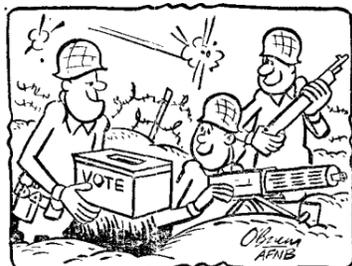
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FIRST LOCAL CAPTAINS—The first three officers to be promoted to captain under new authority given local commanders at the U. S. Army Missile & Munitions Center & School, are congratulated by Col. Erwin M. Graham, MMCS commandant. The new captains are (left) Gordon G. Froehlich, William W. Richard, and Harry M. Laska.

Three Made Captains Here Under New Promotion Law

The first local captain promotions made under field commanders authority were conferred at the Missile & Munitions Center & School, Nov. 1.

Under provisions of a new "decentralization promotion authority," MMCS Commandant, Col. Erwin M. Graham, made the first three promotions. The authorization empowers local commanders in the grade of colonel or higher to promote to captain those qualified within their commands.

The authority given by Department of the Army was accompanied by a statement designed to prevent such promotions from becoming "automatic."

"The delegation of authority is granted in the recognition that commanders in the field have the best capability to evaluate and determine those worthy of promotion. Hence, this delegation makes it incumbent on the commanders to assure that individuals pro-

moted to captain truly merit such promotion."

The young officers receiving the first bars at MMCS under the plan are Captains Gordon G. Froehlich, William W. Richard, and Harry M. Laska. All are Ordnance officers and college ROTC graduates. Cpt. Froehlich is training officer in the Office of Operations, while Cpt. Richard's duties are as a technical officer in the New Missile & Literature Directorate. Cpt. Laska is a course monitor in the Nike Division, Air Defense Department.

FOOD AND BOOKS

U. S. AID TO Vietnam in next 12 months will provide upwards of 500,000 tons of rice and other food grains, public health outlays will almost double, 4,000 new teachers will be trained and 8 million more text books will be distributed.

GEN. BETTS

(Continued From Page 1)

Military Academy, Gen. Betts was born in Westwood, N. J. Nov. 22, 1912. For the past decade he has held positions of increasing responsibility in both the Army staff and Department of Defense dealing with the research and development of nuclear weapons and guided missiles.

KEY EXECUTIVES

(Continued From Page 1)

Gen. Drewry said that while no decision on production of the system has been announced, the Nike-X development program is, nevertheless, proceeding at a rapid pace. Meetings such as the one now underway are necessary, he added, because of the "Wide range of activities carried on at dozens of locations and lumped together under the common heading of Nike-X research and development.

These activities include not only design, development and testing of hardware such as the system's radars, missiles and data processing equipment, but also such non-hardware programs as development of deployment concepts, analysis of an enemy's missile attack capabilities, ways to reduce cost and increase the effectiveness of the system, reduction of time it would take to deploy the system once it is given a go-ahead, and the application of new technology to the system.

"In all of these areas we have made significant advances in the past year," he said. "Through meetings such as this one in Winston-Salem we are able to get together at one setting our technical people from industry, our policy makers from Washington, the arms branch which might use Nike-X, our production planning experts and the managers who make the day-to-day decisions."

Nike-X is a system consisting of advanced radars to detect, track and sort missile targets, Zeus interceptor for long range engagements and Sprint missiles for short range engagements, and computers associated with the radars to control system operations. The interceptor missiles, both of which are launched from underground cells, are guided during flight by the system radars.

Some 3,000 firms contribute directly and indirectly to the Nike-X research and development program which is funded this year at \$447 million.

Included among the top level defense managers scheduled to attend were representatives from the Army Materiel Command, the Defense Department's Advanced Research Projects Agency, Department of Defense Research and Engineering, Office, Secretary of the Army, Army Air Defense Command and Army Corps of Engineers.

Pershing Modification Contract Is \$1 Million

A \$1,069,740 contract has been awarded the Martin Company, Orlando, Fla., by the U. S. Army Missile Command to provide in-

strumentation modification kits for the Pershing weapon system.

Pershing is the Army's longest range ballistic missile, capable of delivering a nuclear warhead on a target ranging up to 400 nautical miles. It is in operation with U. S. soldiers in the United States and Europe, as well as with the West German Air Force.

The weapon system is managed from the Missile Command. Lt. Col. Edwin Rudd is Pershing Project Manager.

The Missile Command's Procurement and Production Directorate negotiated the contract with Martin, Pershing prime contractor.

PHONE CALLS

MARS (MILITARY AFFILIATE Radio System) station at Ft. Sill, Okla., has new transmitter in operation providing direct voice communication with South Vietnam. It will permit soldiers in South Vietnam to call family and friends in the United States free of charge. Person being called in States pays only for call to Ft. Sill Other similar stations are at Ft. Sam Houston, Ft. Hood and Ft. Bliss, Tex. (AFNB)

five duty training plus travel time.

Other trainees on active duty training will not be granted leave between basic and advanced training but will be given a total payment for accrued leave upon release from active duty training.

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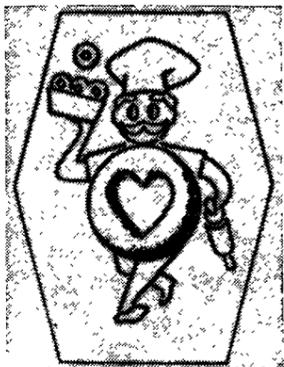
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SOCIAL ^{and} CLUB EVENTS

University Plans Program Of Carol Singing Outdoors

The newly organized UAH Choir will present a University Christmas Carol Program at 4:30 p.m., Sunday, Dec. 4 on the steps of Morton Hall. The public is invited to attend this special function.

Highlighting the program, which will include community carol singing and special Christmas music by the UAH Choir and brass ensemble, will be the lighting of a large wreath, signifying the opening of the Holiday Season at the Huntsville Campus. Woody Beck, a junior at UAH, will accompany the program with a special narration.

SGA President Ron Sanders will introduce Dr. Charley Scott, director of academic affairs, who will extend Season Greetings from UAH.

"It is hoped that this will become an annual tradition at the University of Alabama in Huntsville," remarked Choir Director D. Royce Boyer, assistant professor of music. "I have been extremely pleased with the progress of the choir, and I'm anticipating more extensive activities for next year."

The 37 member Choir presented its first program at the November meeting of the University Club and will give another performance Monday, Nov. 28 for the Metropolitan Kiwanis Club in Huntsville.

TOOL ENGINEERS TO HEAR THREE SPEAKERS DEC. 6

The American Society of Tool and Manufacturing Engineers will hear three speakers at the Dec 6 meeting after 6 p.m. at the Redstone Officers Open Mess.

William J. Webb of the Bolden Die Supply Company will speak on Blanking and Forming for limited production. Howard Achler of Kaufmann Urethane Tooling will talk about Urethane Tooling Applications and Edward Bennett of Minnie Punch and Die Company will tell about the Bennett Die and Minnie Die Systems, both of which he personally developed.

Reservations are being handled by W. H. Turner 536-9795 and Tim Jose 852-1321.

SODALITY COFFEE SCHEDULED FRI.

Redstone Arsenal's Catholic Women's Sodality is holding a benefit coffee after 9 a.m. Mass Friday to gather toys for needy children's Christmas stockings.

Members of the Sodality are requesting each member to bring a toy and to invite neighbors to do the same.

The Coffee will begin at 10 a.m. in the social room of the Post Chapel. Christmas cards will also be on sale during the event, the proceeds to be used for the scholarship charity and fund.



PRACTICE FOR CHRISTMAS VESPERS—Five of the 70-odd voices in the four Redstone Protestant choirs belong to sons and daughters of SSG and Mrs. George F. Provanca. Practicing with the Chapel and Junior Choir Director, Pvt. Myron Groszmann at the piano are: (left to right): Elizabeth and Michael, Chapel choir members; Patrick, Junior choir; and David and Diana in the Cherub choir. Next year the Sergeant predicts two in each of the choirs ranging from teen to tot. The Vesper service is scheduled Dec. 18 at 7 p.m. in the Redstone Arsenal Post Chapel.

Protestant Choirs Will Present Christmas Songs

The four choirs of the Redstone Arsenal Protestant Chapel will present a Christmas Musical Vesper Service Sunday, Dec. 18, at 7 p.m. with approximately 70 voices joining in seasonal song.

The four choirs are the Chancel (adult), the Chapel (grades 7-12), the Junior (grades 3-6) and the Cherub (kindergarten, first and second grades).

The Chancel and Cherub Choirs are under the direction of Mrs. M. W. Pettit and the Chapel and Junior Choirs are directed by Pvt. Myron Groszmann; a student at the Missile and Munitions Center and School. He was a music major at the University of Georgia until this fall. J. Floyd Wilson, a music major at Oakwood College, is the Chapel organist. Mrs. J. R. Walters will serve as pianist for the Cherub choir.

The first portion of the program will include traditional Italian, French, Bohemian, German, Spanish, Czech and English carols. The Junior Choir will sing the recently discovered "Twas In The Moon of Wintertime", known as the first carol of the New World. This song, set in part to an early French hymn was written by a French missionary serving the Huron Indians about 1650.

An instrumental feature of the Vespers will be the duet "Cantique de Noel" by Adam played by Lynn Mehlinger, violinist and Elizabeth Graham, harpist accompanied by the organ.

The second part of the program will present Roy Ringwald's composition "The Song of Christmas" which was written for, and first performed by the Fred Waring Choir. In this work the Chancel

Choir will be joined by several members of the teen choir who are voice students, and by members of the Redstone Park Protestant Chapel Choir including their director, Spec. 5 Joe Cuthbert. The cantata accompaniment will be provided by Mr. Wilson at the organ and chimes and Sherry Lothrop at the piano. Soloists will include Jean Kirkland, Peggy Sturdivant, Phyllis Bayer, Edward Vondrak and Myron Groszmann. The "Song of Christmas" comprises original music, excerpts from familiar carols and abridged verses from the scriptures which will be narrated by Fred Niedermeyer and Margaret Gannon.

The public is cordially invited to attend this program and the social hour which will follow.

Value Engineers To Meet Tonight

Value Engineers of the Redstone Chapter will meet tonight at 6:30 p.m. at the Chrysler Huntsville Operations Research Park on Wynn Drive.

Guests are invited to this meeting which includes a visit of the plant facilities, according to the Chrysler Huntsville Operations manager, A. E. Douyard. He said, "This (visit) will give other contractors a candid view of what is going on in contractor facilities to provide value engineering and cost reduction programs."

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MAW Facts

(Medium Anti-tank/Assault Weapon System)

EDITOR'S NOTE: This is one of a series of updated facts about the Army's missile arsenal and the missiles still in the research stage of development that promise to strengthen the Nation's defense capabilities. Improvements, modifications and even silhouettes change the capabilities and increase the accuracy of this arsenal as technology advances. Department of Defense has approved each of these facts for public release.

(Medium Anti-tank/Assault Weapon System)

TYPE: Surface-to-surface guided missile;

TRAJECTORY: Line-of-sight; **GUIDANCE:** Command to line-of-sight;

PROPULSION: Recoilless launched, solid propellant rocket motors;

STATUS: Engineering development;

PRIME CONTRACTOR: McDonnell Aircraft Corporation;

WEAPON SYSTEM MANAGER: Lt. Col. John H. Boyes MAW Project Manager U. S. Army Missile Command.

MAW is being developed for the infantryman as a medium anti-tank/assault weapon system.

MAW is the Army's first guided missile system light enough to be carried by one man—and shoulder fired—yet, having a warhead big enough to kill most armor and other infantry targets encountered on the battlefield.

It will be far superior in range, accuracy and hit probability to the 90mm recoilless rifle which it will replace.

Now in engineering development, MAW employs a command-to-line-of-sight guidance system and consists of three main items: a tracker, a recoilless launcher and a missile. The tracker includes a telescope for the gunner to sight the target, a sensor device and an electronics package.

The tracker is reusable and is attached to the launcher for each firing.

Inclosed within the launcher, the missile is never seen by the

gunner and after firing the launcher is discarded.

Featuring a unique propulsion system, the missile contains several pairs of small rocket motors mounted in rows around the missile body.

In operation, the gunner sights the target through the telescopic sight, then launches the missile. While he holds his sight on the target, the tracker senses missile position relative to the gunner's line of sight and sends command signals over wire to the missile. This causes the rocket motors, or side thrusters, to fire.

As commands are sent continually to the missile, the side thrusters apply corrective control forces. The thrusters are fired at appropriate roll angles so that the missile is automatically guided throughout its flight.

Because of its weight, MAW is particularly desirable in airborne and airmobile operations. And in situations where terrain is difficult to negotiate for wheeled and tracked vehicles—such as assault river crossing operations, heavily wooded or mountainous areas—MAW emerges as the most effective weapon in infantry operations for assault and anti-tank roles.

In fact, it can be set up and fired easily on any terrain.

Deployed at the platoon level, MAW as a defensive weapon will cover armor approaches into the platoon area; offensively, it may be used against hard or soft targets.

The MAW system is managed by the U. S. Army Missile Command Ala. LTC. John H. Boyes is Project Manager.

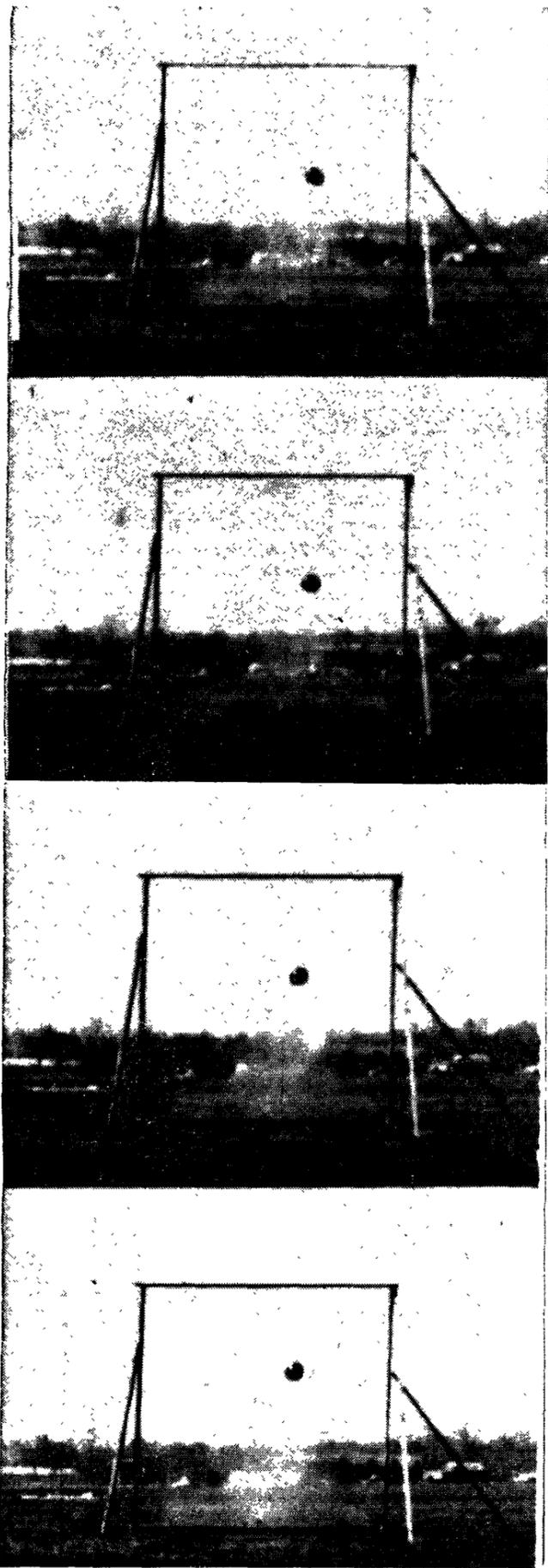
McDonnell Aircraft Corporation, St. Louis, Missouri, is prime contractor.



NO TIME FOR MONKEY SHINES—Even though they have a visitor, there's still no time for any monkey business for the men at the Bien Hoa air base air traffic control tower, one of the busiest in Vietnam. Airman First Class Robert L. Graves, (with friend on shoulder) and Vietnamese Air Force Technical Sergeant Thi Dao Van are air traffic controllers at Bien Hoa AB.



SOIL-CEMENT BASE covered by aluminum-matting used by Air Force engineers to construct a runway at Tuy Hoa is capable of handling all tactical and support aircraft in Vietnam. (AFNB)



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SPORTS

All-Sports Stun Leaders To Tighten Supply Race

The front-running Auto Center must have felt like they had been attacked by a pair of hungry bear cats as they went about their business of trying to increase their lead in the Supply Management League last week.

That was just about the story of their match with the All-Sports Trophies as Chet Wysocki and Mel Webb went on a back-to-back pin spilling splurge that netted them 1200 sticks and a clean sweep setback for the leaders.

As a result of the efforts of the terrific tandem, the Management League race has developed into a real barn burner with the eighth place team trailing the leaders by a mere seven points.

Wysocki opened with a 208, dropped slightly to 198 in the middle and then cleaned up with a 214 for a league-leading 620. Webb picked up the middle game slack with a 224 and ended his series with 580.

The sweeper boosted the Trophies into third two points off the pace and a single point behind the Huntsville Brick and Tile keglars.

HUBCO profited by the All-Sports sweep by taking three out of four from the Pin Busters as Tom Lindsay shot a 569 total.

The 7-Ups kept the Debuggers from making it a four-team scramble when they scored a four-for-four sweep as Jerry Gist had games of 210 and 205 and totaled 591. The 7-Ups are in eighth place and the Debuggers are tied with the Pin Busters for fourth.

But before any of these outfits have a chance to start counting their laurels they are going to have to contend with the fast rising Pearsall Flower five. The florists got off to a rocky start but have hit their stride the last few weeks and are right back in the thick of things.

Last week Joe Williams and John Montana were the pace setters as the Pearsall crew took all four from Lily Flagg. Williams shot a 585 and Montana helped the

cause along with a 549. The last match on the card ended in a stalemate as the Shoot n Scoot and Mangler fives each walked away with a pair of points. Roy Parmalee was the top gunner with a 560 for the Scooters.

Pasch, Ready Post Honor Roll Totals

Thanksgiving Day was responsible for a great reduction in the bowling action at Redstone last week but it failed to hold back the high scoring antics of the few who went through their weekly paces.

One of the leagues that bowled during the week was the A-B-C Officers league and the eight-team wheel made the most of it with their best night of maple mauling of the season.

Carl Pasch and Duane Ready were the king pins with Honor Roll counts, equalling the number of better than 600 series that had been rolled in ten weeks previously.

Pasch got off to a bad start but came rolling back with games of 232 and 235 for a 622 count as the Hopefuls slapped a clean sweep at the Lucky Strikes. Ready hit the Honor Roll right on the nose with a consistent 195, 211, 194 series.

His shooting was the highlight of the Pin Splitters 3 to 1 win over the Mixers. Russ Gale chipped in with a 556 for the winners and Art Wilkins paced the losers with a 546.

Saturn drove into a tie with the Wheezers for the league lead by taking three out of four in their match. Tom Rodgers hit for 545 in the winning attack and Jim Bochnowski turned in a 562 effort for the Wheezers.

The final match on the card turned into another sweep with the Black Jacks taking the measure of the War Hawks. Ron Macy was the leader with 522.

YACHT CLUB TO MEET

The Redstone Yacht Club will meet at 7:30 p.m. in the clubroom of Bldg. 3614 Friday.

Members are invited to bring guests. Prospective members are also welcome according to the hospitality chairman.

ARMY'S STRATEGIC COMMUNICATIONS Command has new Deputy Commanding General, Brig. Gen. Joyce B. James, formerly DCS/Operations for STRATCOM. General James assumed duties Nov. 1, succeeding Brig. Gen. Walter B. Bess, who has retired. (AFNB)



DISCUSS PROCUREMENT—Col. E. J. McGinnis, left, Director of the Army Missile Command Procurement and Production Directorate, talks over procurement matters with Col. C. L. P. Medinnis, Commanding Officer of the Southwest Procurement Agency, Pasadena, Calif., and Harold G. Blinkenberg, chief of the General Support Missile Branch of the Agency during their visit to Redstone last week.

B CO. HEADS FOR NINETEEN Retire FOOTBALL CROWN

With only a single defeat through their first 10 games, the powerful Company B team goes into the final two weeks of the MMCS Flag Football season clinging to a narrow lead.

With two games left in the rugged 12-game schedule, B Company sports a 9-1 record. However, they're closely followed by the 7th ETC at 7-2, and Headquarters Company with a 7-3 mark.

Company B played Headquarters company while the second-place 7th ETC met the 4th ETC in Monday games. The results were not available at press time.

1 with Brig. Gen. Clarence C. Harvey, Jr., serving as the presiding officer.

Retirees for the month are Col. Sam J. Clark, Col. Curtis L. Ferrell, Col. William F. LaHatte, LTC Almon R. Roth, LTC John H. Weaver, Maj. Al S. Medlock;

SGM Everett G. Ermish, ISG Omar L. Edwards, MSG David Alperovitz, SFC Wayne M. Morgan, SFC Lawrence F. Leonard, SFC Joseph E. Cormier, SFC Porter R. Prady, SSG Henry L. Gotreaus;

SSG James L. Milner, SGT George R. Brown, SP5 Columbus A. Pruitt, CW2 Riley W. Churchill and CW2 William F. Hess.

All games are at the Redstone Arsenal football field. Starting time for the clashes are 4:15 and 5:30 p.m. The season ends December 9th.

Here are the standings through November 27th:

1. Company B	9-1
2. 7th ETC	7-2
3. Hq Co	7-3
4. 2nd ETC	6-4
5. 4th ETC	3-5
6. Company C	3-8
7. 3rd ETC	0-12

Drive Safely!

12 Teams Open Basketball Season

The Redstone Arsenal company-level basketball season opened Monday with three games. (No scores available at press time.)

The league consists of 12 teams, 10 from MMCS and two from the Directorate of Arsenal Support Operations (DASO).

Plenty of action is available with three games nightly, (Monday thru Thursday), at the Post gym. Game times are 6:00, 7:15 and 8:30 p.m.

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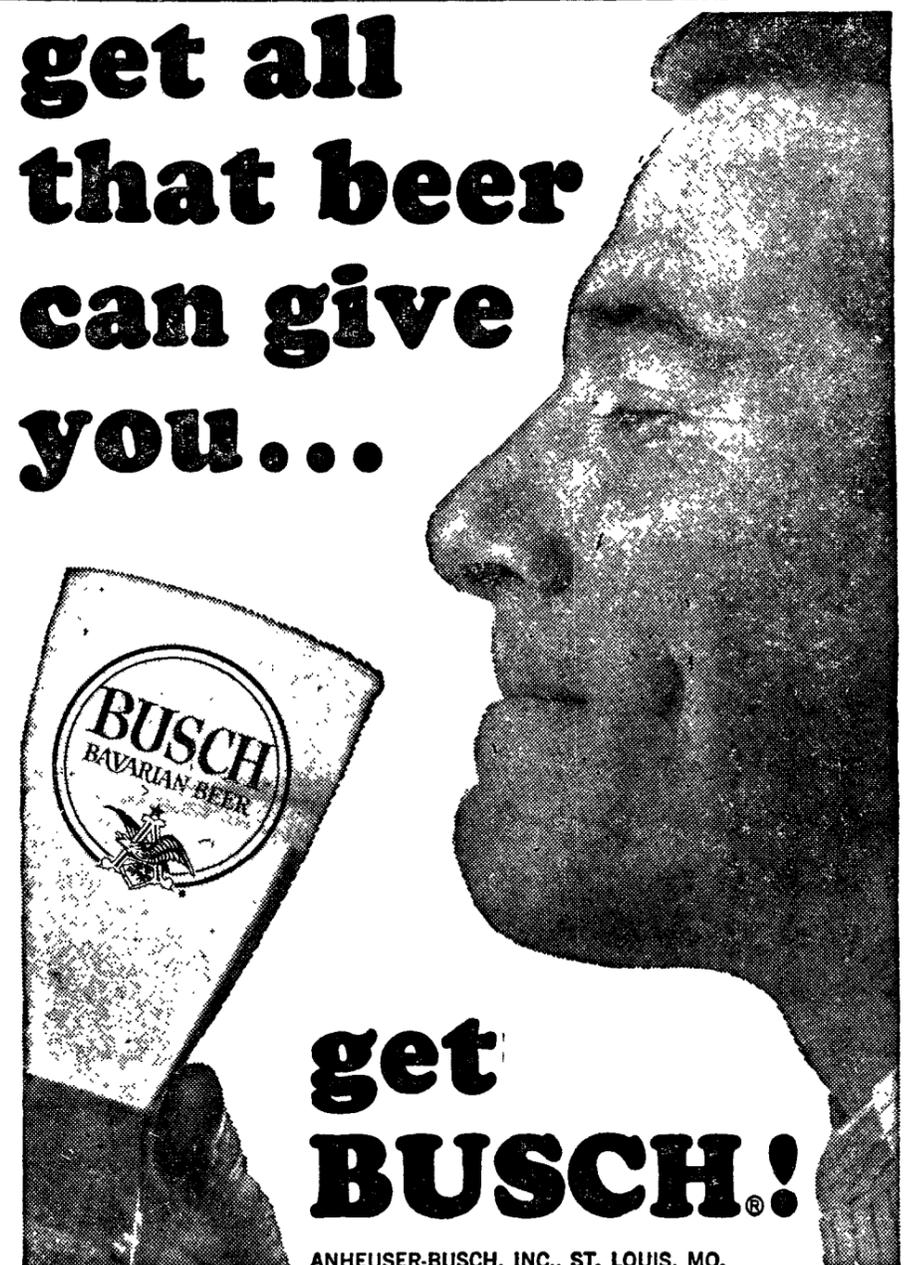
Tues. thru Thurs. Orchestra starts 7:30 p.m. Floor shows 8:30-10:45.
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LTC WILLIAM H. CLAUSEN
Senior Liaison Officer For Combat
Development Command At Missile Command

Combat Development Has Two New Liaison Officers

The U. S. Army Combat Development Command has assigned a new senior liaison officer at the U.S. Army Missile Command. The new senior liaison officer is LTC William H. Clausen who recently returned from an assignment in Europe with the USAREUR Inspector General' Division's Technical Proficiency Inspection Branch. LTC Clausen found the assignment one of the most satisfying he has filled, he said. The job took the Colonel

into many European countries of U. S. Allies and gave him an opportunity to observe and work directly with foreign as well as domestic troops.

The second liaison officer assignment is Maj. Harold D. Frear who is a former Missile Command Officer, The Major held positions in the Missile Intelligence Directorate and in the Sergeant Project Office before reassignment in Vietnam where he was a sub-sector advisor for one year.

The third liaison officer in the Combat Development Liaison Office here is Maj. W. M. Stoller. Maj. Stoller has been here since 1965.

LTC Clausen is a native of Grovertown, Ind. His parents live at North Judson, Ind. The colonel, a graduate from Purdue University, was a mathematics teacher at Stockwell.

During World War 11, he served in the Pacific Theater. He was recalled for active service in 1950. Since then, he has served two tours in Europe and one year in Iran in addition to his service in the United States.

LTC Clausen is married to the former Miss Helene Puschner. They have a three and one-half year old son, John R.

Maj. Frear's mother, Mrs. Mrs. Helen Frear lives at 723 Fir Street in Pocatello, Idaho where he began attending college at Idaho State. Maj. Frear served three years in the United States Air Force before receiving an appointment to the U. S. Military Academy from which he graduated in 1965. He has also taken graduate work at the University of Alabama in Hunts-

School Still Growing, Celebrates Birthday

"Growing" is the best way to describe the U. S. Army Missile & Munitions Center & School as the 14th anniversary of the \$90 million facility approaches.

Its growth can be seen vividly as MMCS celebrates its December 1, 1952 founding. New buildings rise throughout the school complex and the bustle of students increases weekly as more foreign and

U. S. Soldiers arrive to study missile and ammunition subjects ranging from pistol bullets to the gigantic Pershing missile system.

With the monthly inputs of students averaging over 700 and rapidly increasing the Redstone Arsenal facility presently has over 3000 in training. This will give MMCS a total graduate list of over 10,000 in the present fiscal year alone.

To train these men, over 2300 military and civilian instructors, work on three-shift, round-the-clock schedules. Classrooms for this mushrooming student body now include six buildings just completed and several soon to be finished.

Enlisted Training Companies to administer the multitude of military functions necessary for all soldiers will soon number ten.

ville.

Mrs. Frear's parents, Mr. and Mrs. Charles L. Petch live at Hubbard Lake, Mich. The Frear's have two children, Kimberly Ann and Daniel Scott.

The major has served in Germany as well as Vietnam. He is a graduate from several service schools including the Artillery Career Course and the Guided Missile Staff Officers Course.

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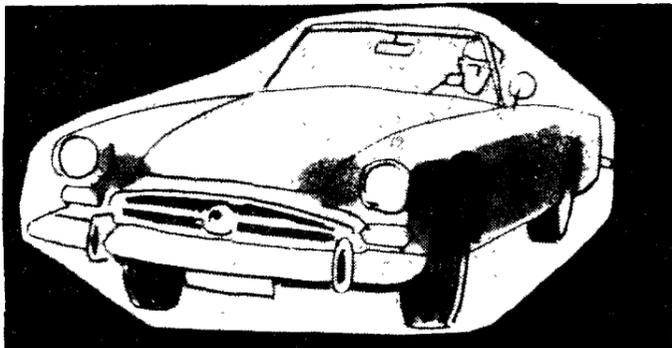
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ABMs Pack Punch Against Marauding Missiles

Nike-X Missile Defense System & Kwajalein Test Site Facts

Page 8

The Redstone Rocket — November 30, 1966

EDITOR'S NOTE: This is one of a series of updated facts about the Army's missile arsenal and the missiles still in the research stage of development that promise to strengthen the Nation's defense capabilities. Improvements, modifications and even silhouettes change the capabilities and increase the accuracy of this arsenal as technology advances. Department of Defense has approved each of these facts for public release.

SERVICE: U. S. Army;
PROJECT RESPONSIBILITY: Brig. Gen. I. O. Drewry, Nike-X Project Manager, U. S. Army Materiel Command, Redstone Arsenal, Alabama;

SYSTEM MISSION: The Nike-X missile defense system is being developed to intercept and destroy intercontinental ballistic missiles and submarine launched ballistic missiles during the terminal portion of their flight. Major subsystems are: TWO PHASED ARRAY RADARS, TWO INTERCEPTOR MISSILES, ASSOCIATED COMMAND AND CONTROL EQUIPMENT, AND DATA PROCESSING EQUIPMENT.

INTERCEPTOR MISSILE DATA

ZEUS

TYPE: Surface-to-air;
SPEED: Supersonic;
PROPULSION: Solid propellant (3 stages);
GUIDANCE: Ground commands via radar;
WARHEAD: Nuclear;
LENGTH: About 50 feet;
DIAMETER: 3.6 feet maximum (body);
THRUST: Over 450,000 lbs (booster);
STATUS: Development;
MILITARY DESIGNATION: None;

SPRINT

TYPE: Surface-to-air;
SPEED: Supersonic, high acceleration;
PROPULSION: Solid propellant (2 stages);
GUIDANCE: Ground commands via radar;
WARHEAD: Nuclear;
LENGTH: 27 feet;
DIAMETER: 4.5 feet maximum (body);
THRUST: Not releasable;
Status: Development;
MILITARY DESIGNATION: None.

GROUND EQUIPMENT DATA

RADARS: Multi-function Array Radar (MAR) and Missile Site Radar (MSR), both phased array radars capable of performing multiple functions. (A third radar for long range surveillance and target acquisition is under study.)

DATA PROCESSING: High speed digital computers located

with the radars.

COMMAND AND CONTROL SYSTEMS: Automatic electronic, co-located with radars.

LAUNCHERS: Vertical underground cells.

STATUS

Pilot model of MAR undergoing testing at White Sands Missile Range. Tactical MAR (TACMAR) to be constructed at Kwajalein Test Site along with first MSR. High speed digital computers under development. Launching cells installed at White Sands and at Kwajalein. Sprint firing tests underway at White Sands.

SYSTEM DESCRIPTION

The Nike-X missile defense system is an outgrowth of development work started by the Army in 1957 on the Nike Zeus anti-missile missile system. The name Nike-X came into being in 1963 when the Nike Zeus development program was re-oriented.

The older designation was dropped in favor of the newer one which incorporated "X" for experimental. At the present time, the Nike-X system is the only ballistic missile defense system of its type under advanced development in the Free World. Its development has been given the highest national priority.

The Nike-X system is similar in concept to earlier Nike Ajax and Nike Hercules anti-aircraft missile systems which were developed as a defense against long range bombers. Like the anti-aircraft Nike systems, Nike-X would use radars to detect and track targets, computers to perform engagement calculations and interceptor missiles which can be guided in flight to destroy the targets.

The Nike-X system is designed to engage and destroy in flight the warheads of attacking intercontinental ballistic missiles and submarine launched ballistic missiles—or any long range weapons which show ballistic characteristics.

To enable it to engage a large number of attacking missiles simultaneously and discriminate against decoys or other devices which an enemy might fly with his missiles to penetrate our defenses, a number of technological improvements have been made to the system. These include the incorporation of high speed, multiple function phased array radars, ultra high speed data processing equipment and interceptor missiles with both increased range and acceleration.

The two major radars in the system are the Multi-function Array Radar (MAR), and the Missile Site Radar (MSR). A third radar for longer range surveillance and tracking of targets is now under study for possible inclusion in the system. Unlike conventional ra-

dars, phased array radars do not have moveable antennas, but use electronic beam steering which, because of its inherent speed, allows the radars to look in virtually every direction at once. In addition, the phased array principle allows the radars to handle numerous targets at once. Instead of projecting a single beam as conventional radars do, phased array radars may project thousands of beams.

The MAR is designed to perform the functions of four separate types of radars. These are target detection, target discrimination (sorting), target tracking and interceptor tracking and guidance. The MSR is designed to perform many of the same functions, but on a more limited scale.

The Nike-X system will use two interceptor missiles. One of these, the Zeus missile, is designed to intercept targets outside the earth's atmosphere. The second interceptor, the Sprint missile, would be used against targets which have re-entered the atmosphere and are at relatively short ranges.

The Zeus missile was originally developed for the Nike Zeus system and was carried over into the Nike-X system. In July, 1962, a Zeus missile launched from Kwajalein Island in the Pacific performed the Free World's first intercept of an ICBM target in flight. The target had been launched by an Air Force ICBM at Vandenberg Air Force Base on the California coast 5,000 miles away. Since that time a number of similar intercepts have been made by the Zeus. The Zeus also accomplished another first when it intercepted a U. S. satellite in orbit. These targets were not destroyed, however, since the Zeus missiles carried electronic measuring equipment instead of live nuclear warheads. An improved version of the missile which will be larger and heavier than the present version is under development.

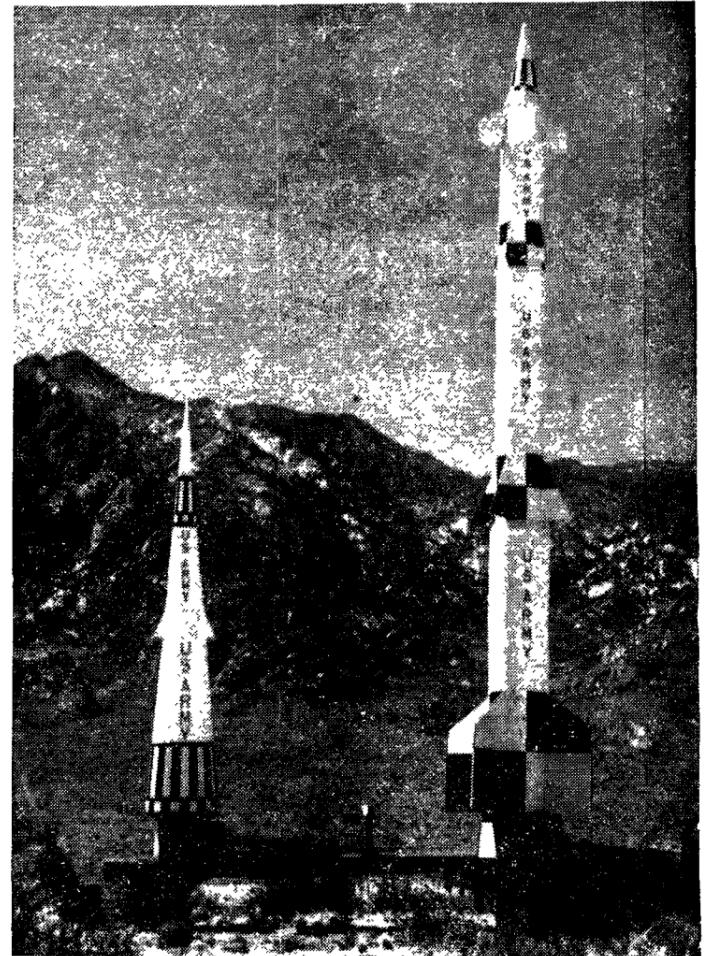
The Sprint missile was designed specifically for the Nike-X system to give it the ability to perform intercepts in an extremely short period of time. Flight time of the Sprint is measured in seconds.

The Sprint missile is designed for extremely high acceleration. The only figures released to date place the Sprint acceleration "well in excess of 100 G's." If the Sprint and a 30 caliber machine gun bullet were fired at the same instant the Sprint would pass the bullet in less than three seconds. Flight tests of the Sprint have been underway more than a year at White Sands Missile Range.

A unique feature of the Sprint



HEADQUARTERS, Kwajalein Test Site M/Sgt. Herbert F. Campbell (left), Supervisor, Administrative Office; Cpt. Don DeMen, Adjutant.



NIKE-X INTERCEPTORS: Sprint (left), Zeus (right)

is that it is "popped" from its underground launching cell rather than flown out under its own power. An encased charge of propellant—called a gas generator—is placed under the missile when it is loaded into the cell. At launch the gas generator is ignited and its gasses eject the missile from the cell. The Sprint first stage is ignited once the missile is in the air. The missile is then immediately turned on a trajectory which will carry it directly to an intercept point. Because it will reach very high velocities in the relatively dense portions of the atmosphere portions of the Sprint's skin are heated by air friction to temperatures higher than those in its own rocket motors.

Following initial tests at White Sands the Sprint will be launched from cells at the Kwajalein Test Site in the Pacific.

TYPICAL ENGAGEMENT

During an attack a typical Nike-X engagement might go as follows: First the warheads would be detected and identified by the MAR. If necessary, while continuing to search for new warheads, the MAR could also go into a discrimination mode. That is, it would begin to sort out the real warheads from decoy devices by means of special radar techniques.

Under some conditions a long range Zeus missile might be launched and guided via one of the radars to detonate in the midst of the suspect objects to destroy some and disrupt the flight of the others.

In the course of an engagement some warheads might reach the

edge of the atmosphere since ICBM nosecones travel at speeds upward of 18,000 MPH. Or, they may be allowed to enter the atmosphere in order to filter out certain types of decoys. In this case quick reacting Sprint missiles might be used to perform the intercepts.

During an engagement, both the MAR and MSR could perform target and interceptor tracking. From this precise tracking data the system computer calculates guidance commands which are transmitted to the interceptors causing them to close with the warheads and destroy them.

SYSTEM FUNDING:

To date, slightly over \$2.3 billion dollars have been spent in the development of a missile defense. This includes early work done on the Nike Zeus system.

For Fiscal Year 1967 (July 1966-June 1967), \$447 million has been requested for continued Nike-X R&D production planning and construction at Kwajalein. Another \$33 million has been requested for operations at the Kwajalein Test Site.

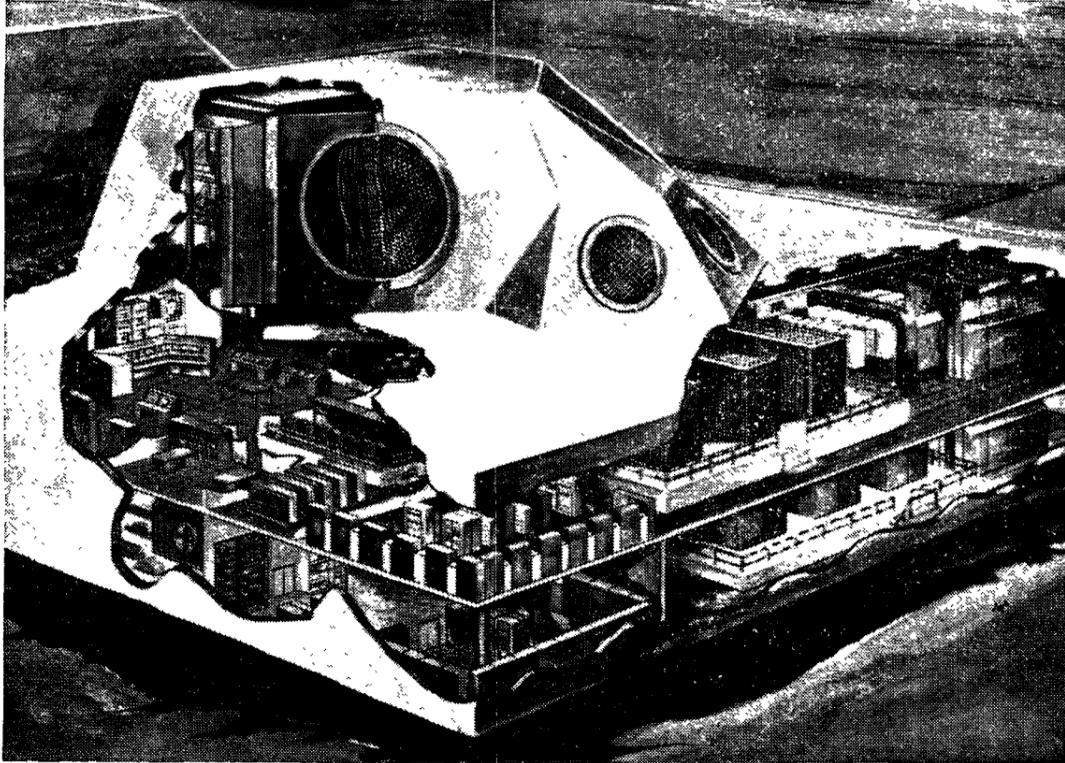
SYSTEM CONTRACTORS:

Some 3,000 firms are involved in the Nike-X development program as contractors, subcontractors and vendors. Major contractors are:

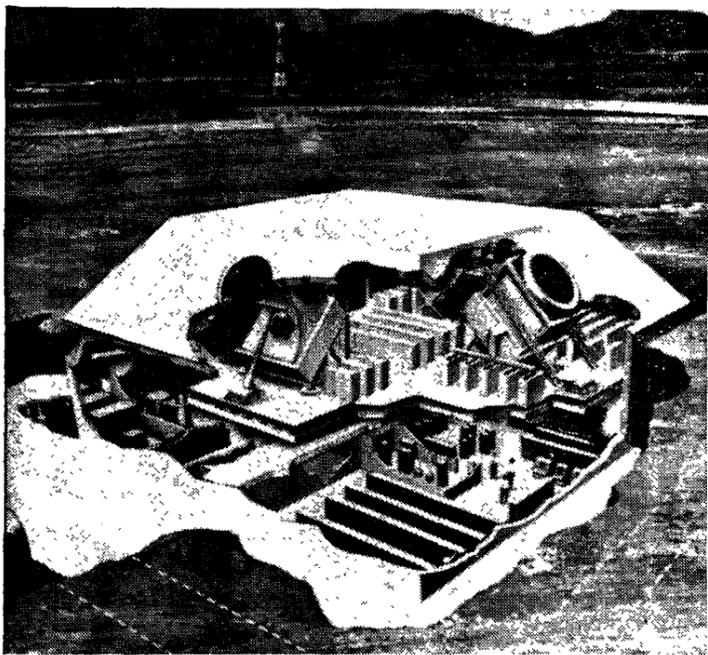
Western Electric, Prime;
Bell Telephone Laboratories, System design and development;
Martin/Orlando, Sprint missile;
Douglas Aircraft, Zeus missile;
General Electric, MAR equipment;

Raytheon, MAR and MSR equip-

(Continued on Page 9)



ARTISTS CONCEPT of Nike-X Tactical Multi-function Array Radar (cut-away).



ARTISTS CONCEPT OF NIKE-X MISSILE SITE RADAR.

ABMs PACK

(Continued From Page 8)

ment; Hercules Powder Company, Sprint propellant; Thiokol Chemical Corporation, Zeus propellant; Sperry UNIVAC Division, Computer design.

KWAJALEIN TEST SITE

In addition to managing the development of the Nike-X system, the Nike-X Project Office also operates the Kwajalein Test Site in the Pacific. The Test Site is classified as a National Range and is used not only for Nike-X testing and research and development work, but also by other defense agencies, notably the Department of Defense's Advanced Research Projects Agency (ARPA). The test site occupies all or parts of nine islands in the Kwajalein Atoll in the Marshall Islands and is 2,100 miles southwest of Hawaii. It employs some 3,500 persons and encompasses installations and equipment valued at some \$500,000,000.

HISTORY

In late 1958 when the Army was searching for a test site for its Nike Zeus anti-missile missile system, it chose the Kwajalein Atoll in the Marshall Islands in the mid-Pacific. Kwajalein, a Navy operated facility, had been used as a refueling stop and logistics base for the atomic tests at Eniwetok. It was being put in stand-by condition when the Army selection team arrived.

While it had certain facilities that would enhance its physical value (an airstrip, housing, etc.) Kwajalein had one overriding quality. It was near the Western Test Range ICBM impact area. Thus, ICBMs fired down the test range could also be used to develop and test the anti-missile system.

From this start Kwajalein and several other islands in the Kwajalein Atoll known collectively as the Kwajalein Test Site have become one of the nations most important test sites.

ACTIVITIES

While several islands in the Kwajalein Atoll are used in range operations, the most heavily instrumented are Kwajalein, the largest island in the Atoll, and Roi-Namur, 50 miles north of Kwajalein.

On Kwajalein the Army constructed a complete Nike Zeus system including the massive Zeus acquisition radar, a discrimination radar, two target tracking radars, two smaller missile site radars and an elaborate battery control building/data processing center complex as well as missile launching facilities. In addition a great deal of technical support equipment was installed including optical, telemetry and communications systems.

On Roi-Namur ARPA installed the 84-foot-dish TRADEX radar of its Project PRESS (Pacific Range Electromagnetic Signature Study) and its associated equipment.

In July, 1962, the Kwajalein Test Site made history when a Zeus missile fired from Kwajalein and controlled by ground based equipment there successfully intercepted a target ICBM in flight. Since then a number of similar intercepts have been made.

At present the primary mission of the Test Site is detailed research into the physical phenomena of missile flight both inside and outside the earth's atmosphere. Facilities at the Test Site are being upgraded constantly.

Preparations are underway for construction of a Nike-X system at the Test Site. Fifty-five acres of fill have been added to Kwajalein Island for the construction of a Nike-X Multi-function Array Radar. In addition, the island of Meck, located some 17 miles north of Kwajalein, has been graded for construction of missile launching cells and the Nike-X Missile Site Radar.

DESCRIPTION

Kwajalein Island covers roughly 740 acres. Roi-Namur, roughly three-quarters Kwajalein in size, is really two islands (Roi and Namur) connected by causeways.

The two islands were Japanese strongholds during World War II and were taken during bitter fighting in January-February, 1944. A total of 502 Americans and an estimated 8,400 Japanese lost their lives. Roi-Namur is still dotted with Japanese pill boxes, command posts and gun emplacements.

The Nike-X System Project Manager at Redstone Arsenal, Ala., is the range commander responsible to the Commanding General of the Army Materiel Command for operation and maintenance of the Kwajalein Test Site. His representative "on the ground" is the Commanding Officer of the Kwajalein Test Site who is in charge of technical operations as well as community support.

The largest employer of Kwajalein is the Logistics Support Contractor followed by the Western Electric Company the Nike-X prime contractor. Other major contractors include Bell Telephone Laboratories (responsible for system design and development), MIT (ARPA contractor for Project Press), Martin-Zachry (Corps of Engineers construction contrac-

tor), and Ling-Temco-Vought's Kentron Hawaii subsidiary (range instrumentation).

OTHER DATA

LAND AREA: 740 acres—AVERAGE ELEVATION: 5.9 ft. above mean sea level—LOCATION: Lat. 8° 44' N, Long: 167° 55' E. (4,300 miles West by Southwest of San Francisco.) LENGTH: 3 miles.

CLIMATIC DATA: TEMPERATURE: average 83°, high 95°, low 70°, RELATIVE HUMIDITY: average 82% — RAINFALL: yearly average 101 inches, Max., monthly 30.4 in., max., 24 hr. period 17 in.

AIRCRAFT FACILITIES: runway, 6,700 ft. in length, hard surfaced and lighted for night operation. Taxiway, 6,700 ft. in length, hard surfaced. AIR OPERATIONS TERMINAL BUILDING: Passenger and cargo service, operations and traffic control. Administration Offices, Weather and Aerological Center and Offices for American Red Cross representative, and Thrust Territories Representatives. Each month the Kwajalein air terminal handles approximately 1,300 passengers, 190 tons of freight

and 37 tons of mail. RELIGIOUS: All Faiths Chapel, Sunday School Building, and Chaplain's Office.

RECREATION: 2 swimming pools, 4 tennis courts, basketball court, 3 baseball diamonds, 4 theaters, Boy Scout house, 4 club house buildings, yacht club house, Scuba club house, 2 barbecue pits, 2 picnic shelters, golf course, boat harbor, beach and small arms range.

RETAIL STORE FACILITIES: Commissary for groceries. Retail store with barber shop and beauty shop.

OTHER FACILITIES: Daily newspaper, radio station, trailer and permanent housing, Bachelor Officers Quarters, barracks and piers for ocean going vessels.

TO WEST POINT

NINETY-SIX GRADUATES from the latest class of Army's Military Academy Preparatory School, Ft. Belvoir, Va., are now attending Military Academy at West Point. (AFNB)

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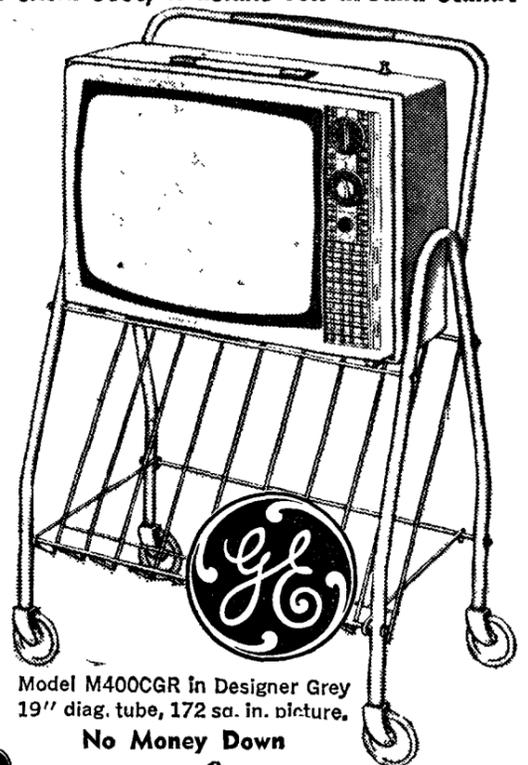
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LTC K. C. Johnson Asks 'How Important Am I?'

The guest speaker for graduation ceremonies Wednesday at the U. S. Army Missile & Munitions Center & School urged U. S. soldiers and Marines to ask themselves, "How important am I?"

Lt. Col. Kenneth C. Johnson, Deputy Chairman, Army Missile Command, Missile Support Group, addressed 113 U. S. Army and Marine Corps graduates in formal ceremonies at the Redstone post theatre.

He called the missile and munitions graduates, "the middleman between the manufacturer and the fighting unit."

He emphasized that the U. S. can build the best weapons sys-

tem and ammunition in the world, and have the best combat ready fighting units. But he warned, "We will not be able to successfully fight these systems or items if adequate support is not available. This support is your job."

Reavis O'Neal Jr., representing the Association of the U. S. Army, presented AUSA service school educational achievement plaques to four students who achieved a 96 or above grade average in their studies.

They were: 1/Lt. Michael D. Haney, 96.7; 2/Lt. James M. Kaye, 97.2; Marine L/Cpl. T. P. Deugenio, 96.6; and Pvt. James M. Heitman, 97.2.

Other honor graduates included, PFC Kenneth J. Lloyd, PFC William P. Hakanson, PFC Marnix A. Van Ammers, Pvt. James R. Telfer and Pvt. James O. Collins.

Theater Schedules

Theater No. 1

Wed.-Thur., Nov.30-Dec.1.
 "Dead Heat on a Merry-Go-Round" (M)
 FRI., Dec. 2.
 "Born Free" (F)
 SAT. Dec. 3.
 "Country Boy" (F)
 SUN.-MON., Dec. 4-5.
 "Alvarez Kelley" (M)
 INCREASED ADMISSION: adults 50c, children 25c
 TUE., Dec. 6.
 "The Texican" (F)
 Two shows nightly at 6:00 and 8:30 p.m. Saturday matinee at 1:00 p.m. Sunday matinee at 2:00 p.m.

Theater No. 2

WED., Nov. 30.
 "Country Boy" (F)
 FRI., Dec. 2.
 "Alvarez Kelley" (M)
 INCREASED ADMISSION: adults 50c, children 25c
 SAT., Dec. 3.
 "The Texican" (F)
 SUN., Dec. 4.
 "Any Wednesday" (M)
 INCREASED ADMISSION: adults 50c, children 25c
 TUE. Dec. 6.
 "A man Could Get Killed" (M-YP)
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Italian Visitors Touring U. S. Defense Installations

Allied officers of the Italian Army are getting a whirlwind look at the U. S. Army Missile Command here this week as part of a Department of Defense tour throughout industry and government installations.

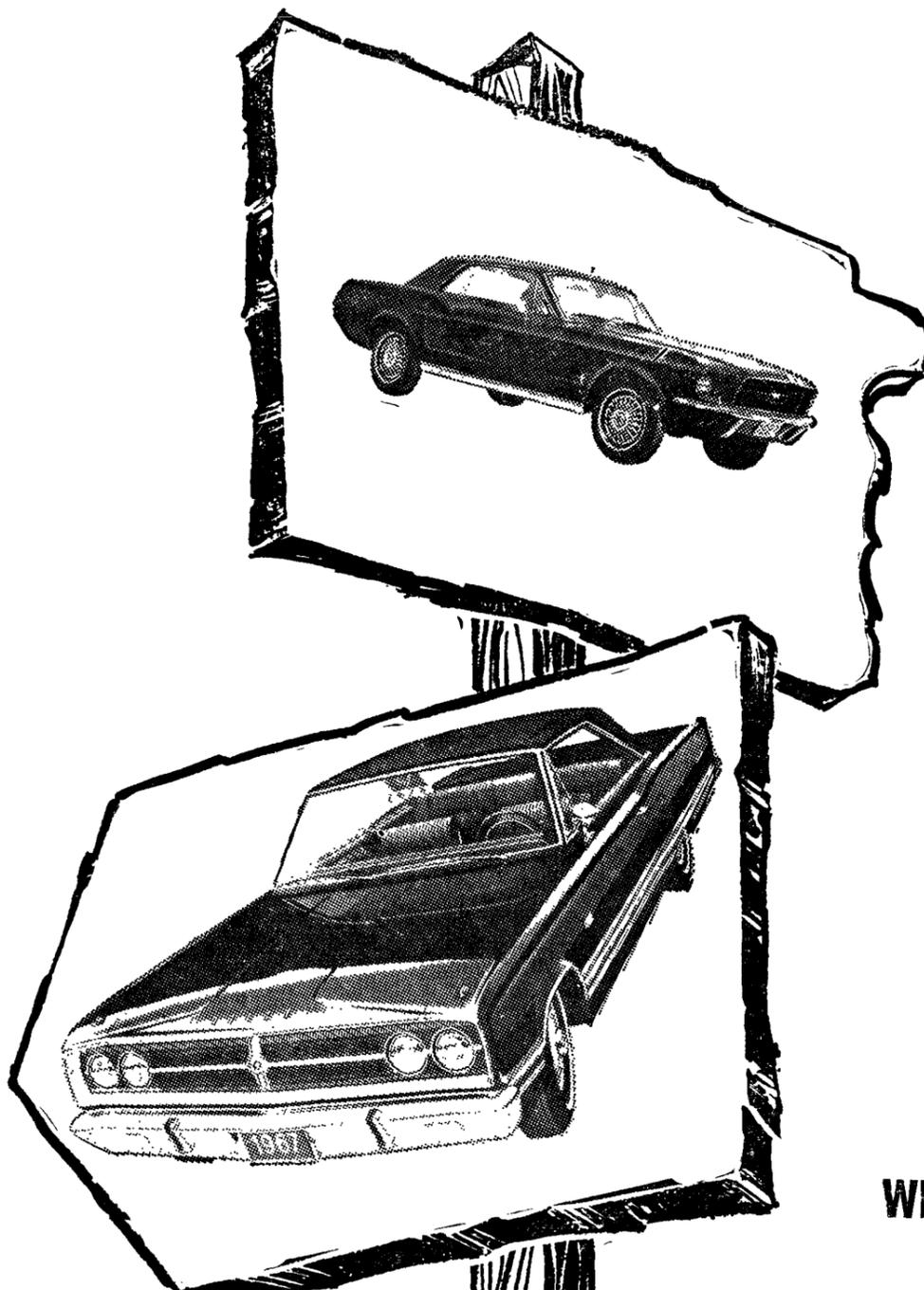
Col. James N. Lothrop was host to the visitors at the Army's rocket and missile center here yesterday, briefing them on development of a new heavy armor killer which he directs, the TOW weapon system. Later they saw a demonstration of TOW ground equipment, then watched a TOW missile fired from a HH-1B helicopter as part of the development test program now in process at Redstone Arsenal.

Members of the tour include

The Redstone Rocket — November 30, 1966 Page 11

LG Carlo Maresca, Chief of the Italian Army Motorization Tech Service; BG Giovanni Bonzani, attached to Italian Army Inspector of Artillery for special duties. BG Mario Pettitti De Roreto, CG Artillery Brigade Centauro Armored Division; BG Alfredo Goossi, CG Armored Brigadiere Armored Division; LTC Ludovico Luppis, Staff Officer, Italian General Army Staff.

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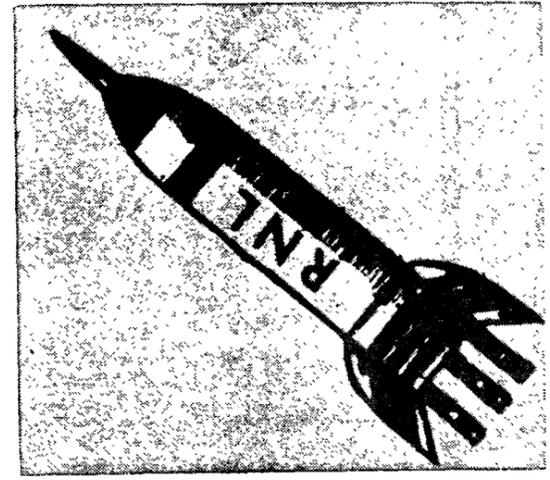
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Redeye Gives Soldiers A Shot At Planes

Redeye Guided Missile

EDITOR'S NOTE: This is one of a series of updated facts about the Army's missile arsenal and the missiles still in the research stage of development that promise to strengthen the Nation's defense capabilities. Improvements, modifications and even silhouettes change the capabilities and increase the accuracy of this arsenal as technology advances. Department of Defense has approved each of these facts for public release.

TORS: Atlantic Research, Alexandria, Va. Rocket Motors Miniature Precision Bearing, Keene, N. H., Seeker Optics

The Redeye missile is a man-portable, shoulder-fired weapon to provide combat troops in the forward battle area the capability of destroying low flying aircraft. The weapon is effective at ranges and altitudes commensurate with a close-in defense against attacking aircraft.

Development of the missile has been jointly funded by the U. S. Army and U. S. Marine Corps. Both services will share in the output of production missiles.

In flight tests at the Naval Ordnance Test Station, China Lake, Calif., Redeye missiles scored direct hits on a variety of drone aircraft.

Although the missile is electronically complex, it has been designed for simple, reliable operation in the field. It can be carried anywhere a soldier can take a rifle. It can be made ready to fire within seconds. Soldiers have fired it in tests and scored hits after receiving only minimal instruction.

The missile, ready for issue in the battle area, comes encased

TYPE: Surface to air (shoulder fired);

SPEED: Supersonic;

RANGE: Classified;

PROPULSION: Two stage, solid fuel;

GUIDANCE: Infrared homing;

WARHEAD: Conventional;

WEIGHT: Single man transportable and operable;

LENGTH: Approximately 4 feet;

DIAMETER: Approximately 3 inches;

WEAPON SYSTEM MANAGER: Col. A. W. Reed, Project Manager U. S. Army Missile Command;

PRIME CONTRACTOR: General Dynamics/Pomona, Pomona, Calif.;
PRINCIPAL SUBCONTRACTOR:



in a fiberglass launcher, equipped with carrying strap and sight, that also serves as a carrying case. In combat, the launcher is discarded as soon as a missile is fired.

Initial target detection and tracking are accomplished visually by the gunner. When the aircraft is within range of the missile and its infrared homing device has "locked on" the target, the gunner squeezes a trigger to fire the missile.

The missile mounts an infrared sensing device in its nose which resulted in the name "Redeye." The sensing device is used by the guidance system of the missile as a means of homing on the heat of an aircraft engine.



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75	13.84	7.53	\$ 5.45	
100	18.46	10.05	7.27	\$ 5.90
200	36.92	20.09	14.54	11.81
300	55.09	29.87	21.54	17.42

Cash You Get	MONTHLY PAYMENT PLANS		
	12 payments	24 payments	30 payments
\$500	\$46.81	\$24.73	
700	64.92	34.30	
1000	92.30	48.76	\$40.05
1500	137.80	72.80	59.80
2000	181.96	96.13	78.96

Above payments include principal and interest. Life Insurance is available at group rate on loans above \$100. Loans up to \$300 under state supervision.

Payments above include principal and loan charges if repaid according to schedule, but do not include life and disability insurance, available at group rates.

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1. For Rent

FOR RENT—3 bedroom house in excellent condition, electric heat, in Madison. Phone 539-4343. ttc

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FOR SALE—1966 Chevrolet Impala, fully equipped, less than 4,000 miles, air conditioning. Phone Universal Motors, 539-7454. ttc

3. Miscellaneous

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5. Houses, Lots - Sale

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FOR SALE—N.W. Section, 3 bedroom brick, carport, living and separate dining room, 2 baths, kitchen, family room combination, central heat and air conditioning, patio, nice yard, built-in G.E. range. Move in first of December. Equity \$950. Payment \$122. Phone 852-2063 or 852-5822. ttc

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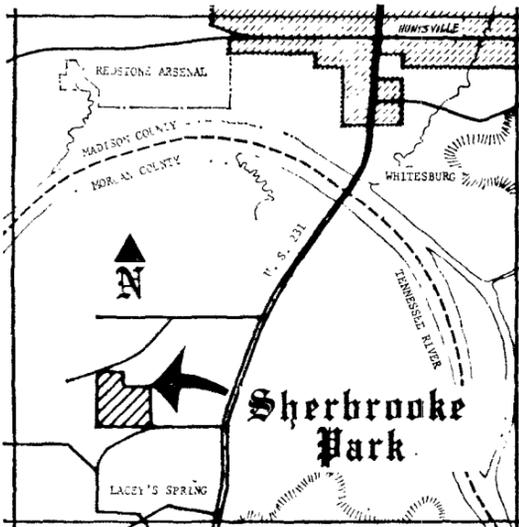
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Traffic Studies Are Abstract Works Of Art

Colored pinheads of basic yellows, reds, black, white and blue dot a map in the office of Redstone Arsenal's Provost Marshal, turning the black line drawings into a work of abstract art.

The pinheads are there for a reason, and the predominant color is red. Each pinhead represents an accident. For the past three years, the location of the largest clusters have remained more or less static.

Parking lots, Gate 9, the housing area, intersections are all pinned where an accident occurred.

A traffic study of the Redstone Arsenal reservation would prove the engineering of a traffic pattern is a factor, but the determining one is human. Rideout Road, the widest, best engineered stretch of highway onto the military reservation is clustered with pins at bottleneck points. Gate 9 intersection with highway 20 probably sports the liveliest display of colored pins on the Provost Marshal's traffic incidence map.

The worst offenders are the individuals who don't look ahead but tailgate the car ahead and keep coming when traffic stops. Sometimes the chain reaction can involve five to fourteen cars in a bumper-grinding halt that dollar-wise doesn't amount to a hill of beans in a single hit, but mounts and mounts as more

cars are involved.

The Provost Marshal map is unique in one respect. In a metropolitan area, only the accidents that amount to fifty dollars or more are recorded. On the Arsenal even scraped fenders and bent tail pipes may be recorded, especially if the accident happens in a government vehicle.

Another gaily colored road festooned with pinheads clustering it is the north-south main artery of the Arsenal, Patton Road.

The worst point on Patton Road is near the Army Display and Civilian Personnel Office areas. On the east side of the road is a shopping center and restaurant. Here, the bump and jars are caused by traffic turning across the flooding tide of bumper-to-bumper vehicles on the way home at night.

Statistics show that more accidents occur between 3 and 5 p.m. than at any other time of the day. The same tally proves the TGIF (thank god it's Friday) type of worker uses his own instead of his carpool vehicle and is prone to hurry too much on his way home. The ultimate result, the authorities say, is that this driver is longer delayed by an accident than if he stayed in the flow of traffic instead of weaving from break to break.

Two And Four Year Awards . . .

Army Doubles ROTC Scholarships

FORT MONROE, VA.—The Department of the Army will double the number of four-year Army ROTC scholarships to be awarded during 1967 and will increase its two-year scholarship awards by at least 256 according to Headquarters, U. S. Continental Army Command.

Beginning with the 1967-68 school year, 800 four-year scholarships will be awarded outstanding high school graduates and at least 856 two-year awards will be made to selected college students who have completed two years of Army ROTC training.

During 1965-66, 400 four-year and 600 two-year scholarships were awarded each year under the Army ROTC scholarship program.

The Army previously has announced that applications for four-year scholarships to be awarded during 1967 can be made beginning Dec. 1, 1966 and application packets must be completed and returned with a postmark not later than Jan. 15, 1967.

The scholarships were authorized by the ROTC Vitalization Act of 1964 to provide financial assistance to students interested in obtaining a regular officers commission through the Army ROTC program. Each scholarship pays the student's tuition, textbooks and laboratory fees and provides \$50 per month subsistence allowance for the duration of the scholarship, except for a six-week summer camp when the student is paid at the rate of \$151.95 per

month.

The ROTC Vitalization Act authorizes additional Army ROTC scholarships each year until a maximum of 5,500 are in effect by the school year 1970-71.

Application forms and detailed information on the four-year scholarship program may be obtained from the Commanding General of any of the five Armies in the United States or major United States Army overseas commands in which the applicant lives. Students applying for the two-year awards will do so with the Professor of Military Science at their present college or university.

The student winning an Army ROTC scholarship may attend any one of the 247 colleges and universities offering the four-year Army ROTC program.

Upon graduating from college and successful completion of his Army ROTC studies, the scholarship student is required to accept a Regular Army or Reserve commission, whichever is offered, as a second lieutenant and to serve at least four years on active duty with the Army.

To be eligible for a scholarship an applicant must be a male United States citizen who meets the prescribed physical standards. Applicants for the four-year awards must not have reached their 21st birthday by June 30, 1967, and must be 17 by October

1, 1967.

Two-year award applicants must be under 23 years of age June 30, 1967 and must be a cadet in good standing in the second year of his ROTC training.

The high caliber of young men who receive these four-year scholarships is indicated by the high school records of those who entered college on Army ROTC awards this fall. Over 95% of the award winners ranked in the upper 20% of their graduating class.

Some 45% were presidents of their student body or were class officers and more than 74% were varsity letter winners.



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Twenty-nine Employees Going Off To Schools

Twenty-nine Arsenal civilians will leave their regular duty assignments starting Monday to enroll for off-post training courses being offered at military schools, contractor plants and leading universities in seven states and the District of Columbia.

The graduate level training is made available for the local personnel through the Command's career development program administered by the Training and Development Division of Civilian Personnel.

The largest number going to one location are the nine who will be enrolled for classes in their career fields at the U. S. Army Management Engineering Training Agency at Rock Island, Ill. All will be there for two weeks.

John Forehand (Insp Gen), Bobbie Storm (Sergeant), Lyn Layton (Hawk), Robert Mifflin (S & M) and Howard Andrews (P & P) will attend the Top Management Seminar.

Ralph Osborne (AMMCS) is in the Introduction to ADP Systems class, Charles Achatz (F & A) will attend the Middle Management Seminar, Hoyte Johnson (P & P) is enrolled for Principles and Applications of Value Engineering, and Harold Sprinkle (P & P) will take Statistically Quality Control.

Joe Carpenter (ADCCS) is going to the U. S. Army Logistics Management Center at Ft. Lee, Va., along with John French and Robert Sitton (Both of R & D). They are included in the Research and Development Management Orientation session.

Seven more locals will remain in Huntsville for their training, two of them at the Missile and Munitions Center and School and the others at the University of Alabama, Huntsville.

Max Robinson (S & M) will go to MMCS for Ballistic Missile Propulsion and Structures Repair and David Nielson (S & M) will be at the same place for Radar Sim-

ulation Repair. The former will attend classes until March 10 and the latter will continue until June 23.

Those attending the University are Billie Storey, James Danici, Thomas Dilworth and Jackie Bisinger (all of R & D), and David Sherk (Metrology Ctr). They will study Design of Experiments.

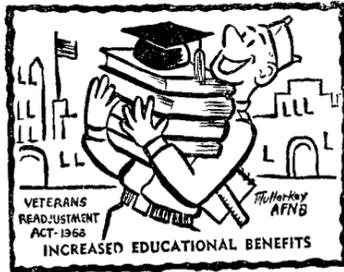
Two others, both from the Office of the Chief Counsel will attend American University in the nation's capitol for the 30th Institute on Records Management. They are Leta Haskins and Doris Ray.

James Weyandt (S & M) is going to Ft. Benjamin Harrison, Ind., for Auditing of ADP Systems at the U. S. Army Finance School, and Reafor Williams (P & P) will take the Defense Procurement Executive Refresher Course at

U.S. Naval Material in Washington.

Henry Ramos (Post Surgeon) will take Radiological Health and Protection at the U. S. Army Environmental Hygiene Agency at Edgewood Arsenal, Md., and Kenneth Todd and James Ballinger (both of AMMCS) are enrolled for the Application of Measuring Techniques course at Frankford Arsenal, Pa.

Completing the group are Bobby Sheppard, Franklin Young and Charles Sparks (all of Maint Spl Div.). They will go to Atlanta for the Fourth Regional School of Electronic Instrumentation being offered by Hewlett Packard.



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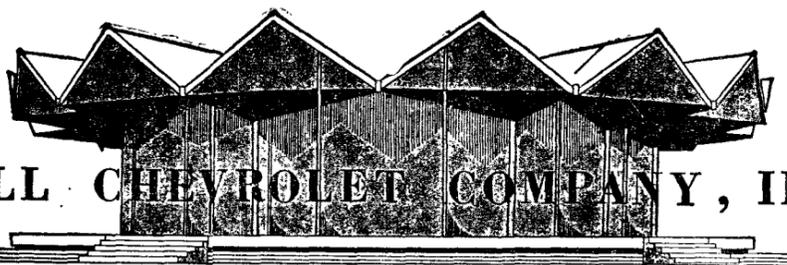
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<p>1963 VW No. 885-P. Station Wagon. WAS \$1095. NOW \$895</p>	<p>HOT ROD SPECIAL 1965 TRIUMPH No. 798-P. Spitfire, 4 speed transmission, WAS \$1595. NOW \$1330</p>	<p>BARGAIN 1965 CADILLAC No. 900-P. Coupe DeVille. All power and air conditioning. One owner. WAS \$4895. NOW \$4395</p>	<p>1964 FORD GALAXIE XL No. 499-P V8. 4 speed, radio, heater., power steering. WAS \$1695. NOW \$1545</p>
<p>1964 CHEVROLET No. 831-P. IMPALA CONVERTIBLE. V-8, automatic, and power steering. WAS \$1895. 2 to choose from. NOW \$1620</p>	<p>1963 CHEVROLET No. 757-P IMPALA 2 door hard-top. V-8, automatic, power steering, power brakes and air conditioning. WAS \$1695. NOW \$1420</p>	<p>1963 CADILLAC No. 842-P. 4 door Sedan DeVille, All power and air conditioning. WAS \$2495. NOW \$2100</p>	<p>1959 CORVETTE No. 891-AP. Two to choose from \$1395</p>

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