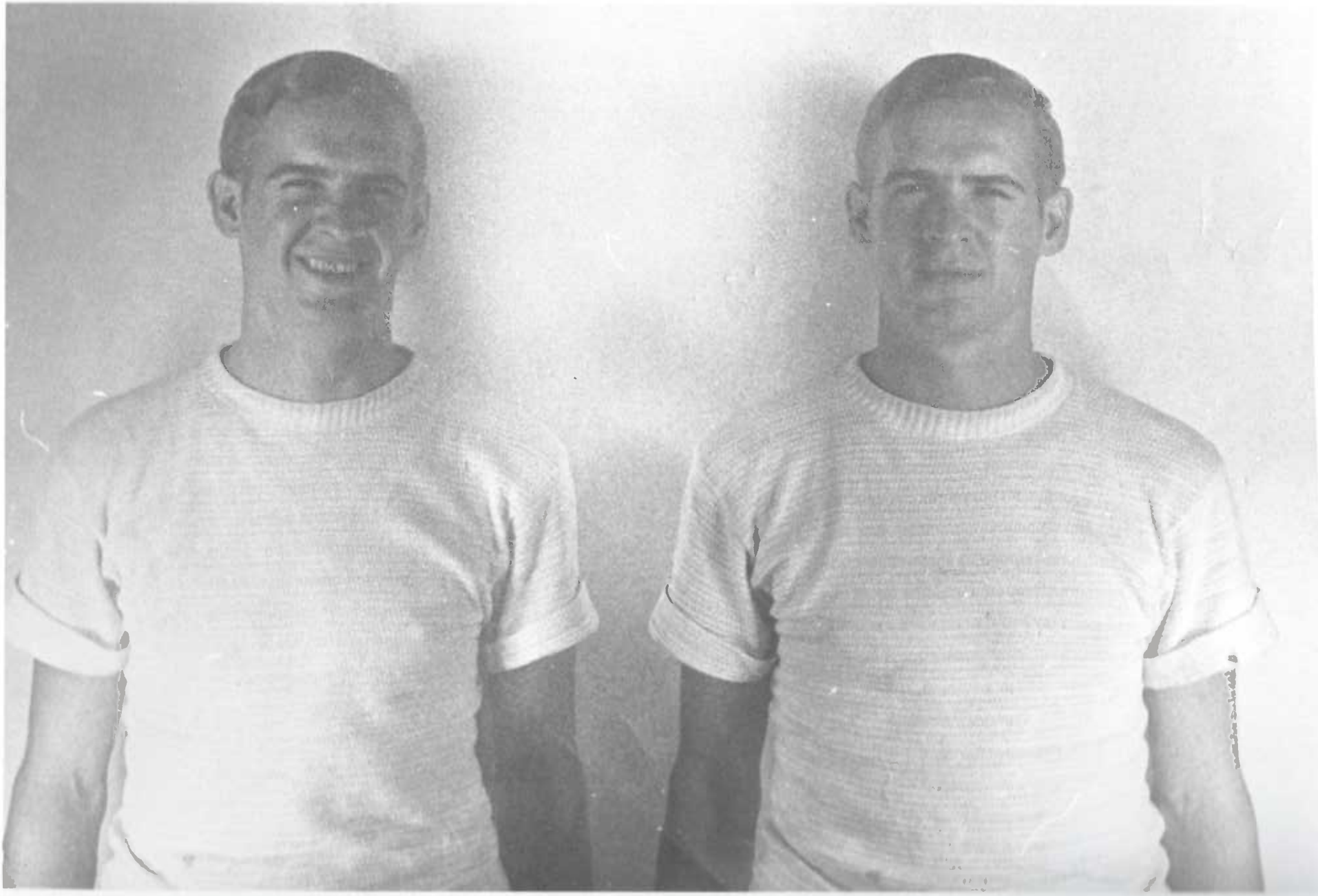
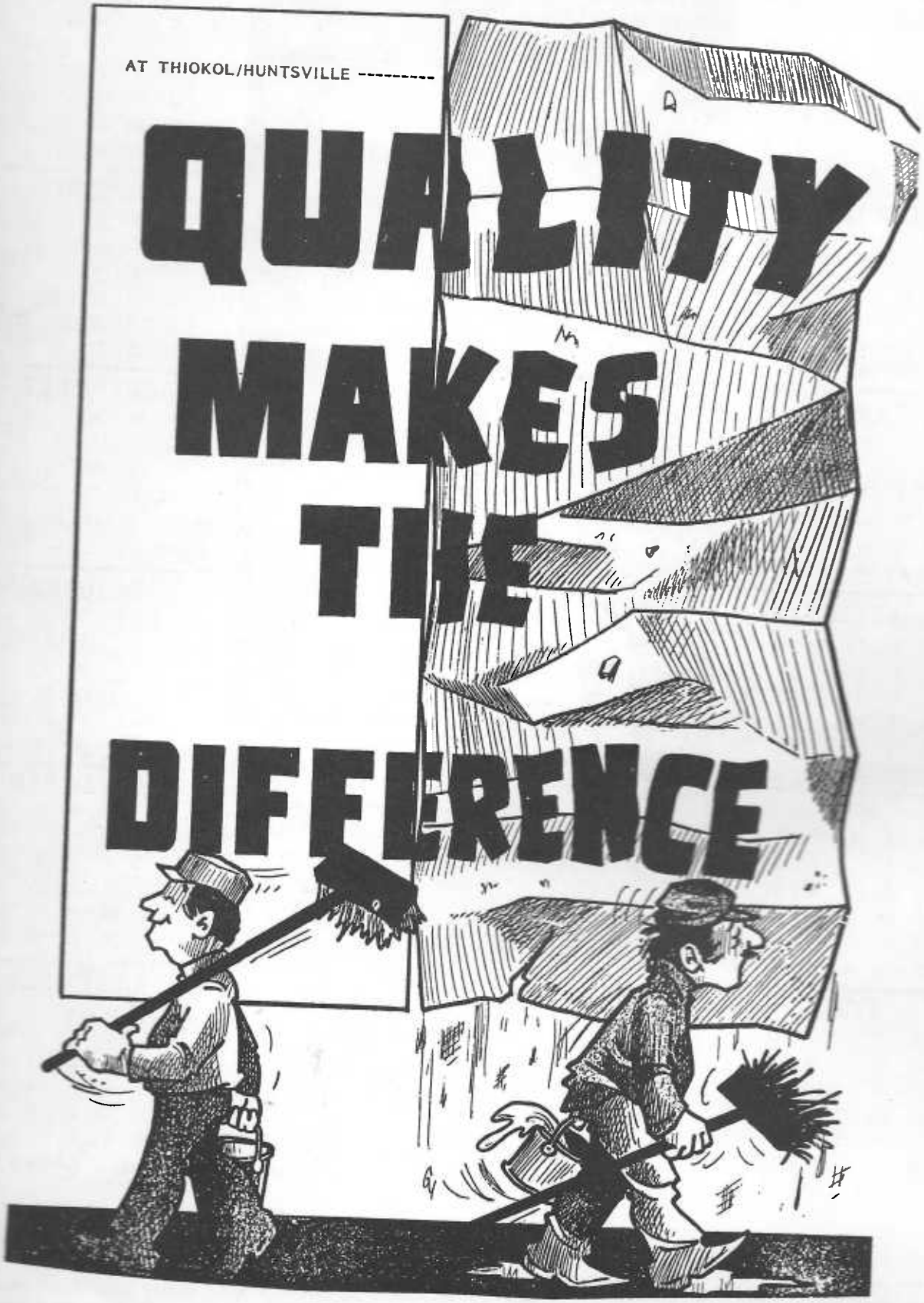
Thiokol CORPORATION

TACTICAL OPERATIONS
Huntsville Division

Billy Ray Yell

SINCE: 1951 – 1991




AT THIOKOL/HUNTSVILLE ---------
QUALITY
MAKES
THE
DIFFERENCE

WHY DID THEY NAME IT...?

by

Hannah Campbell

An entertaining history of the brand names which have become an integral part of American homes, delightfully illustrated with reproductions of old-time advertisements.

MORTON SALT COMPANY

Thousands of years ago, animals wore paths to salt licks, and men followed, seeking game and salt. Their trails became roads and beside the roads settlements grew up. The settlements became cities and nations. The ancient Britons carried their crude salt by pack train from Cheshire to southern England where they were often forced to delay their journey until the high tides of the Thames subsided. There a village known as Westminster grew up, and Westminster became London.

The first written reference to salt is found in the Book of Job, recorded about 2,250 years before Christ. There are 31 other references to salt in the Bible, the most familiar probably being the story of Lot's wife who was turned into a pillar of salt when she disobeyed the angels and looked back at Sodom.

"He is not worth his salt" originated in ancient Greece where salt was traded for slaves.

In Rome soldiers were paid "salt money," *Salarium argentum,* from which we take our English word, "salary."

Salt is vital to existence. Life can be kept in a human or animal body for some period of time when a salt solution is substituted for lost blood. A few races of men have existed without salt but these were the prehistoric creatures who ate liberally of the meat of animals which contained salt in abundance. When salt was crude, impure and hard to get, men opened trade routes and exchanged all manner of goods for a pinch of the precious stuff. It has greatly influenced the political and economic history of the world, and every civilization has its salt lore—fascinating superstitions and legends that have been handed down, sometimes reverently and sometimes with tongue-in-cheek.

In Biblical times, the Jews offered salt to Jehovah with the first fruits of the earth and harvest. Homer calls it divine and the early Greeks worshipped it no less than the sun, and had a saying that no one should trust a man without first eating a peck of salt with him (the moral being that by the time one had shared a peck of salt with a man, he would no longer be a stranger).

The widespread superstition that spilling salt brings bad luck is believed to have originated with the overturned salt cellar in front of Judas Iscariot at the Last Supper.

According to an old Norwegian superstition, a person will shed as many tears as will be necessary to dissolve the salt spilled. An old English belief has it that every grain of salt spilled represents future tears; and in the sixteenth century, a dinner guest seated near spilled salt would refuse to be comforted until the waiter poured wine in his lap. The Germans believe that whoever spills salt worries enmity, because it is thought to be the direct act of the devil, the peace disturber. Frenchmen throw a little spilled salt behind them in order to hit the devil in the eye, temporarily protecting him from doing further mischief. In America, some people use only toss a pinch of spilled salt over the left shoulder, but avoid under the table and come out on the opposite side.

On the other hand, in certain districts of Russia, no bridal couple will enter their new home without throwing salt in all corners of the house to protect them from evil and encourage happiness and good health. Trusting the powers of salt to a still greater extent, in the Far East it was once the custom to rub all newborn babies with salt to insure their well-being. In remote sections of this country, even today, it is the custom to make young children wear a small bag of salt around their necks to guard them from the "evil eye."

In England salt was considered so important that it was used to determine protocol at meals. A large vessel filled with salt was placed in the middle of the table and all those of noble birth were seated above it. One could easily tell a man's station in life by his position "above or below the salt."

Today, in primitive sections of Africa, salt money is carried in cylindrical cases made of palm leaves. Ten such containers of salt will buy a wife. In other isolated African villages, natives have refused dollars and demanded salt, saying, "We cannot eat dollars." The bars of salt money used there weigh about a pound and are black from handling. When a housewife goes to market, she usually breaks off a piece of salt to pay her bill.

The first patent issued in America—in 1641—was to Samuel Winslow of the Massachusetts Bay Colony to *"furnish the country with salt at more easy rates than otherwise can be had, & to make it by a meanes, & way, wch hiterto hath not been discovered . . . so it shall not be lawful to any other pson to make salt after the same way . . ."*

America has had her battles for salt. In 1777, Lord Howe made a successful attempt to capture General Washington's stock of salt. Many battles and treaties took place before Western salt licks were free to be used by white men. At the time of the War of 1812 it became very difficult to obtain salt from England, and because of this, commercial salt manufacture was begun at Syracuse, New York. During the Civil War, Syracuse production freed the North of all salt problems, but by 1863, Southerners couldn't buy salt at any price. If the South had been able to protect its salt factories in Virginia and its salt deposits along the Louisiana gulf coast, the Civil War might have ended differently.

The old Erie Canal, which brought Syracuse salt to Chicago at the time the future Morton Salt Company was organized in 1848, was called "the ditch that salt built." Transportation of this bulky, low-priced commodity has always been a major problem.

Actually, table and household uses for salt account for only about four per cent of the total salt produced in the United States. Few people realize that there is salt underfoot in shoe leather, and overhead in the dye of a hat. A single issue of a popular weekly magazine, for instance, requires 114 tons of salt in the production of paper for its pages. Salt used in its pure form and in the many chemicals derived from it, directly affects almost all major industries. Salt manufacturers early learned that they had to offer a low price but uniform quality if they hoped to stay in business. Only men of perseverence and ingenuity survived. Just such a man was Joy Morton.

Joy Morton's is no Horatio Alger story. His father, J. Sterling Morton, was a noted editor and statesman. As a young man, J. Sterling Morton lived in Detroit. He married his college sweetheart, the lovely Caroline Joy, and the young people immediately set out for new frontiers, eventually settling in Nebraska City where J. Sterling became editor of the *Nebraska City News.* In 1858 President Buchanan appointed him Secretary of the Territory of Nebraska, and he was later acting Governor. Persons of national prominence were often guests in the Morton home, a mansion containing 52 rooms.

Joy was one of four sons born to Caroline and Sterling Morton. He entered the salt business in 1879, investing his entire capital of $10,000 to become a partner in E. I. Wheeler & Company, an outgrowth of a company known as "Alonzo Richmond, Agents for Onondaga Salt" and established in Chicago during the boom year of 1848.

Following the death of Mr. Wheeler in 1885, Joy Morton acquired his late partner's interest and together with his brother Mark formed the small partnership of "Joy Morton & Co." that was to become one of the biggest producers of a vital commodity in the world and the only nationwide salt company.

The office in those early days of over half a century ago was at Illinois Central Pier No. 1, on the site where Chicago's Outer Drive now turns to head north over the Chicago River. There were eight office employees and the office was reached by a long wooden stairway which climbed the west side of a frame warehouse and led to an office decorated in blue and white imitation tile wallpaper.

A large drum heater in the center of the room "cooked the clerks working near the stove and left those near the windows half frozen." Lighting was furnished by individual kerosene lamps of various degrees of efficiency.

The six-day week was accepted practice until Mr. Morton agreed to close the office at one o'clock on Saturday afternoons during July and August, "but only to clerks having their work done." He considered vacations a detriment to both employer and employee because "the clerk spent more money than he could afford and came back all tired out—not much good for a week." But Joy Morton was a man who was close to everyone in his company. The first thing he did on returning from a trip was to greet everyone personally and shake hands. Anyone who wanted to talk to him, including the office boy, simply opened his door and walked in. If a promotion swelled someone's head, Mr. Morton was the first to deflate the expanded ego. He was a wholly democratic man and expected others to be the same.

The turn of the century saw many changes in the salt industry and by 1910 the partnership firm had acquired the properties of several other companies, and Joy Morton & Co. had become the Morton Salt Company.

Efforts to get the country's dealers to buy 3- or 5-pounds of salt (called "pockets") in bags instead of 300-pound barrels met with only lukewarm response. Then, when the Morton brand name, *Seal Salt*, a high-grade table salt packed in a paper-lined bag, failed to gain the popularity that had been expected of it, Joy Morton turned his attention to a new, free-running salt which he packed in a spouted, round package. This time, he insisted, the package would feature the company name rather than a dreamed-up brand name like the disappointing *Seal Salt*, and in 1912, *Morton's Table Salt* was launched in the blue and white asphalt-laminated paper canister with an aluminum pouring spout. Morton Salt pioneered the use of this carton (invented by J. R. Harbeck) that proved so perfect for the product that it was eventually adopted as the standard for the entire salt industry.

About 1912 an unprecedented step was taken by the company to promote *Morton's Salt*. It was decided to advertise, and on a national scale. Until that time no advertising had been done except for a few little souvenir specialties and tradepaper cards. A small number of salesmen were employed, but the bulk of the business came from either post card quotations or from follow-up of inquiries. After considerable deliberation, and after having won the *Good Housekeeping* Seal of Approval, the company contracted to take a series of twelve monthly ads in that magazine. A well-known advertising agency was called in and in due course submitted copy that had been selected by the agency's experts. In addition to the copy for the twelve ads, there were three drawings "on the bench" as possible substitutes, if one of the twelve failed to meet approval.

The birth of the famous "umbrella" girl trademark, and slogan, *When It Rains It Pours* is best told in the words of Joy Morton's son, Sterling II, then president of the company, for it was he who chose the trademark:

"One of the agency men suggested we might look at the three substitutes to see if we liked any of them better than the twelve which the agency considered best. I was immediately struck with one of the three. It showed a little girl standing in the rain with an umbrella over her head; under one arm she had a package of salt tilted backward with the spout open, and the salt running out. Perhaps the fact that my young daughter Suzette was occupying a great deal of my attention at that time had something to do with my interest.

"But, anyway, it struck me that here was the whole story in one picture. The message we wanted to put across—that the salt would run in damp weather—was made beautifully evident. I knew immediately that we could find no better trademark.

"Under the drawing of the little girl was the legend, 'Even in rainy weather it flows freely.' This struck me as being pretty good but rather on the long side. I remember distinctly saying that what we needed was something short and snappy like *Ivory Soap—It Floats.* We worked around with 'Flows freely, runs freely,' but none seemed quite right. Finally, the word 'pours' was suggested. That filled the bill, so 'It Pours' as well as the words 'Free Running' were approved for the new label.

"Then history was made. Someone (and I wish I knew who!) said, 'There is an old proverb, *It never rains but it pours . . .*'" I think everyone in the room realized that we had something there. After a little discussion, I suggested that 'never' and 'but' struck me as poor words to use, that negative connotations should be avoided in a slogan, so we then turned the old proverb around and made it positive instead of negative—*When It Rains It Pours.* We knew that was *it* and our famous trademark and slogan were launched on their triumphant career."

The little "umbrella girl" has undergone several modernizations since its selection in 1911 and is today a sprightly little blonde in modern dress and jaunty pigtails, recognized by young and old alike, and the Morton Salt Company slogan, *When it Rains It Pours* has become a familiar saying.

(CONTRIBUTED BY JOHN NORTON AND ED SAHAG)

REMINDER ABOUT OUR CURRENT NAME

OUR NAME IS MORTON THIOKOL, INC. NOT MTI.

Even though it may be easier to use, MTI is not approved as an abbreviation for Morton Thiokol, Inc. Instructions from Corporate Office states that MTI is incorrect for internal or external distribution. When absolutely required in tabulation situations where space is a problem, the prudent use of MTI is acceptable. The Corporate Identity Manual clearly states that MTI is incorrect usage.

The Employee News Bulletin

MORTON THIOKOL, INC.

Huntsville Division

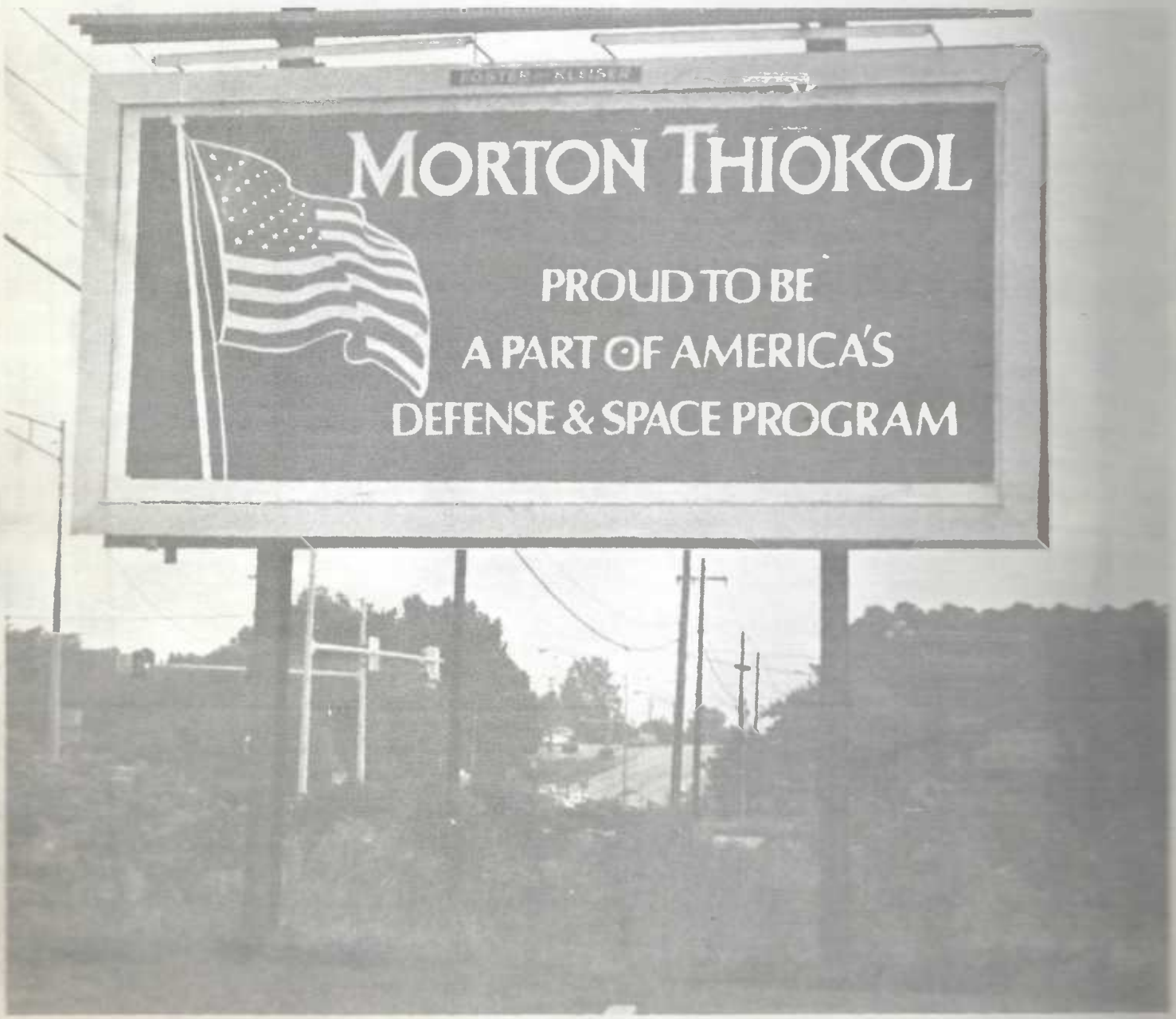
September 6, 1985

Publication for Employees of Morton Thiokol (Not cleared for public release)

EDITOR: Jo [illegible] 882-8178

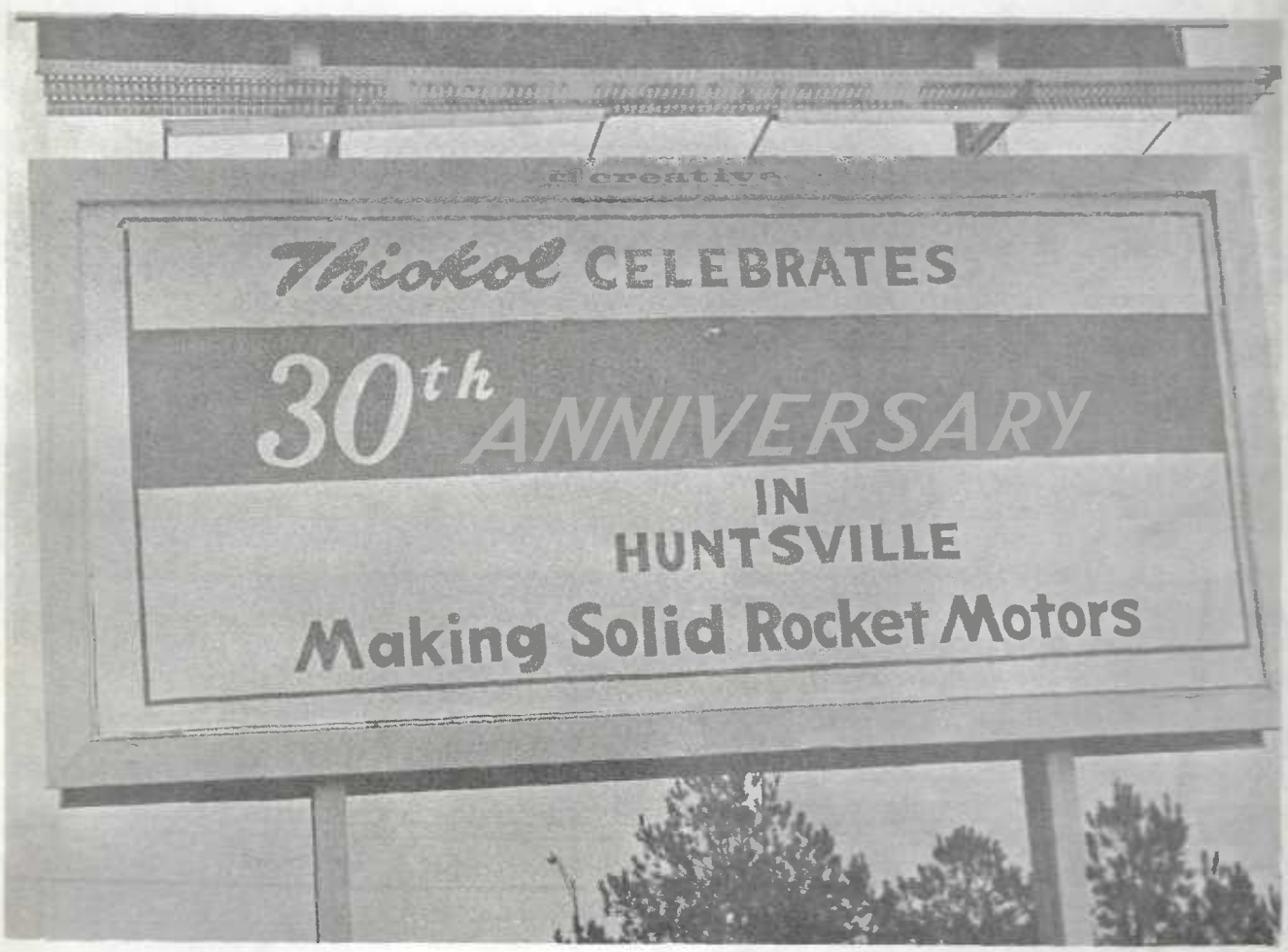
MORTON THIOKOL IS PATRIOTIC AND PROUD

Since Morton Thiokol has been in the defense and space business for over fifty years, it just comes natural for us to be patriotic. That's why a Huntsville Division employee suggested the patriotic billboard below with the traditional red, white, and blue. The billboards were located on Highway 20, Martin Road, and Jordan Lane during August.



THIOKOL BILLBOARDS

Thiokol - Huntsville has three billboards that are primarily used as a public service for the Huntsville community. These are normally used for the Boy Scouts, Exchange Club, Huntsville Museum of Art, AUSA, United Way, Heart Association, and many other worthwhile organizations. Since this is a special year for us, our 30th year in Huntsville, Management approved our using the Boards this month. Below is a picture of one of the boards. Our own Tom Kelley did the art work for this billboard, and Clayton Kay took the picture of this one located on Highway 20 (next to new Shoney's). Another billboard is located on Martin Road and one on Patton Road - thought you might want to see them.



The Employee News

MORTON THIOKOL, INC.
Huntsville Division

The Employee News Bulletin

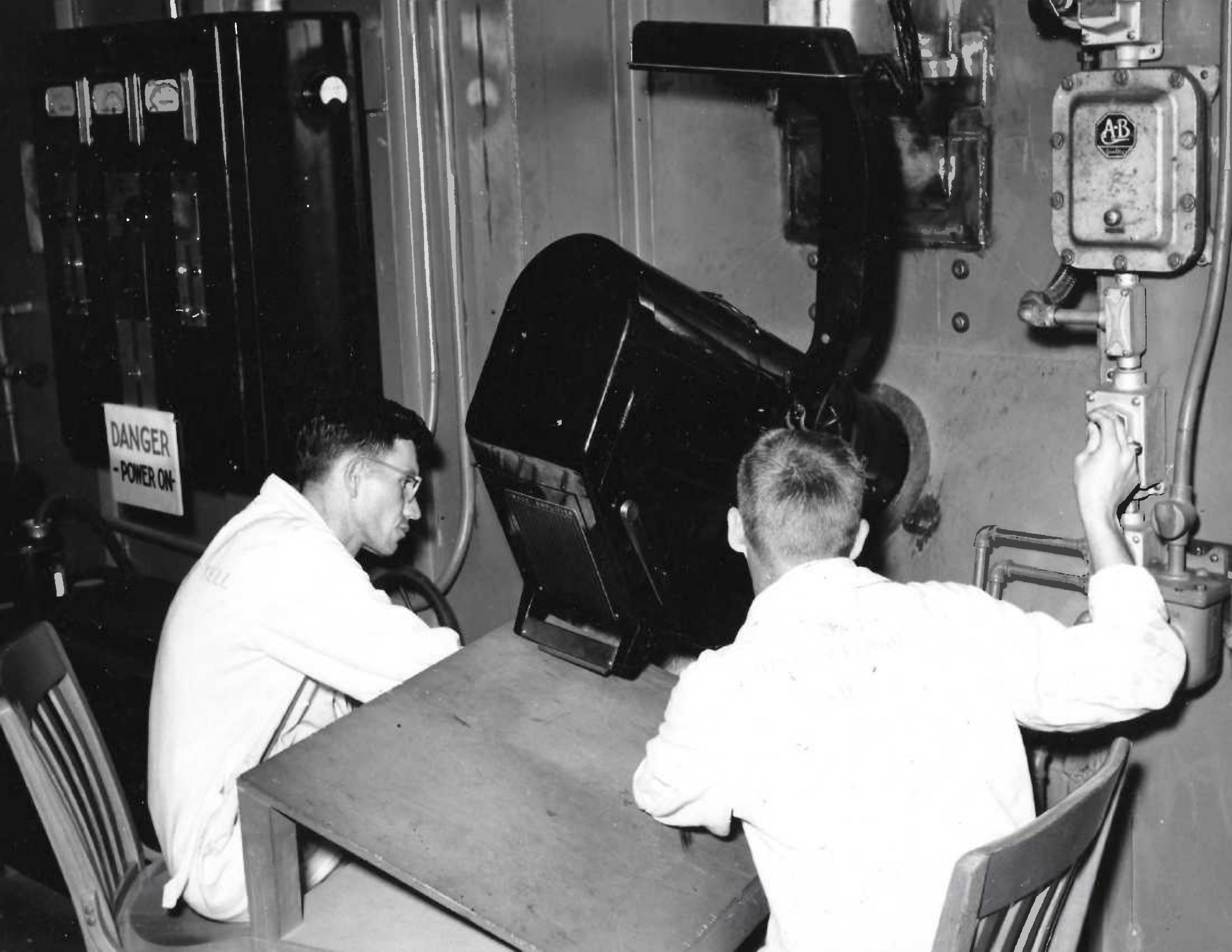
Thiokol / HUNTSVILLE DIVISION

The Employee News Bulletin

MORTON THIOKOL, INC.
Huntsville Division

Rocket Review

THIOKOL CORPORATION TACTICAL OPERATIONS HUNTSVILLE DIVISION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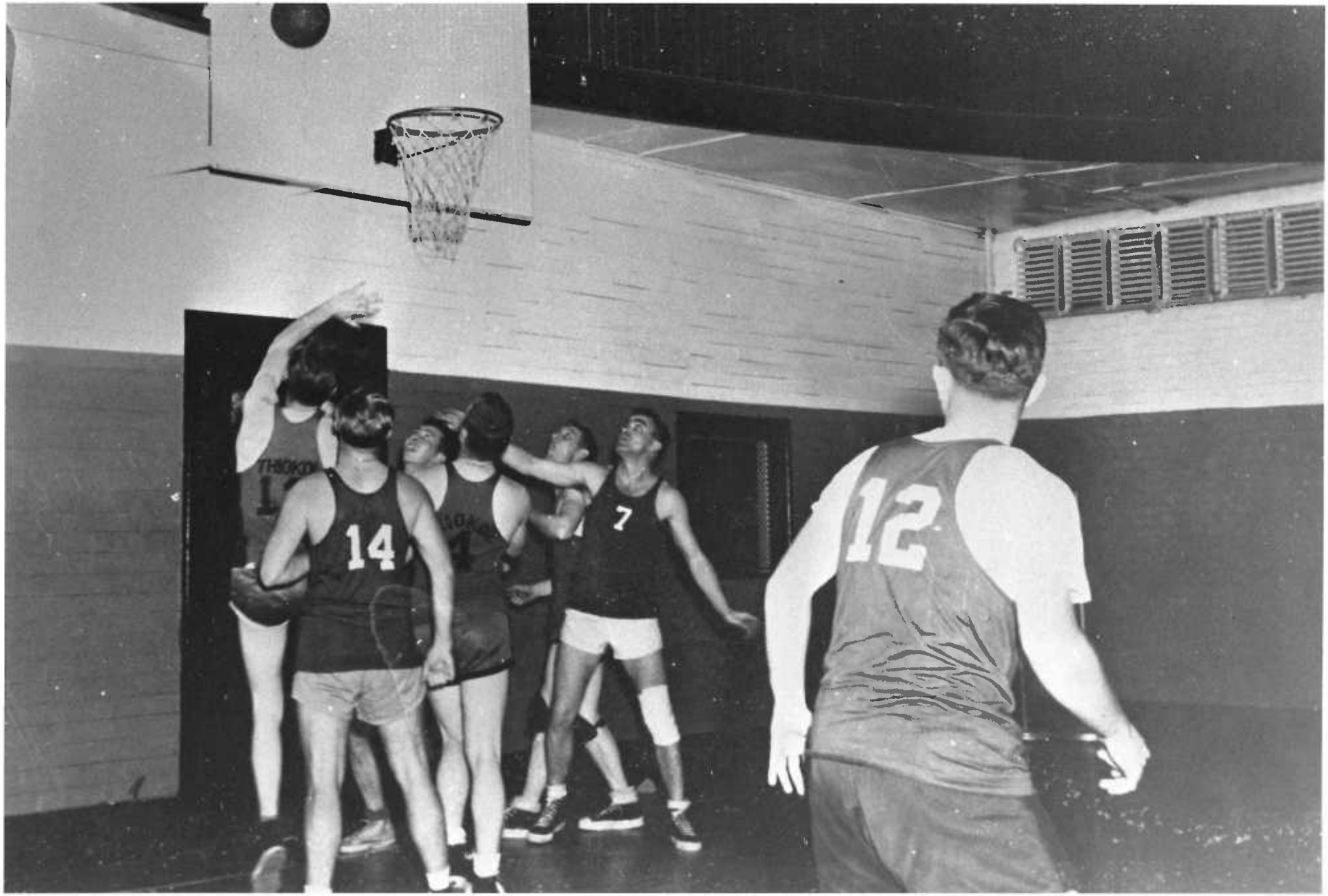
THIOKOL TEST SECTION SOFTBALL TEAM
1953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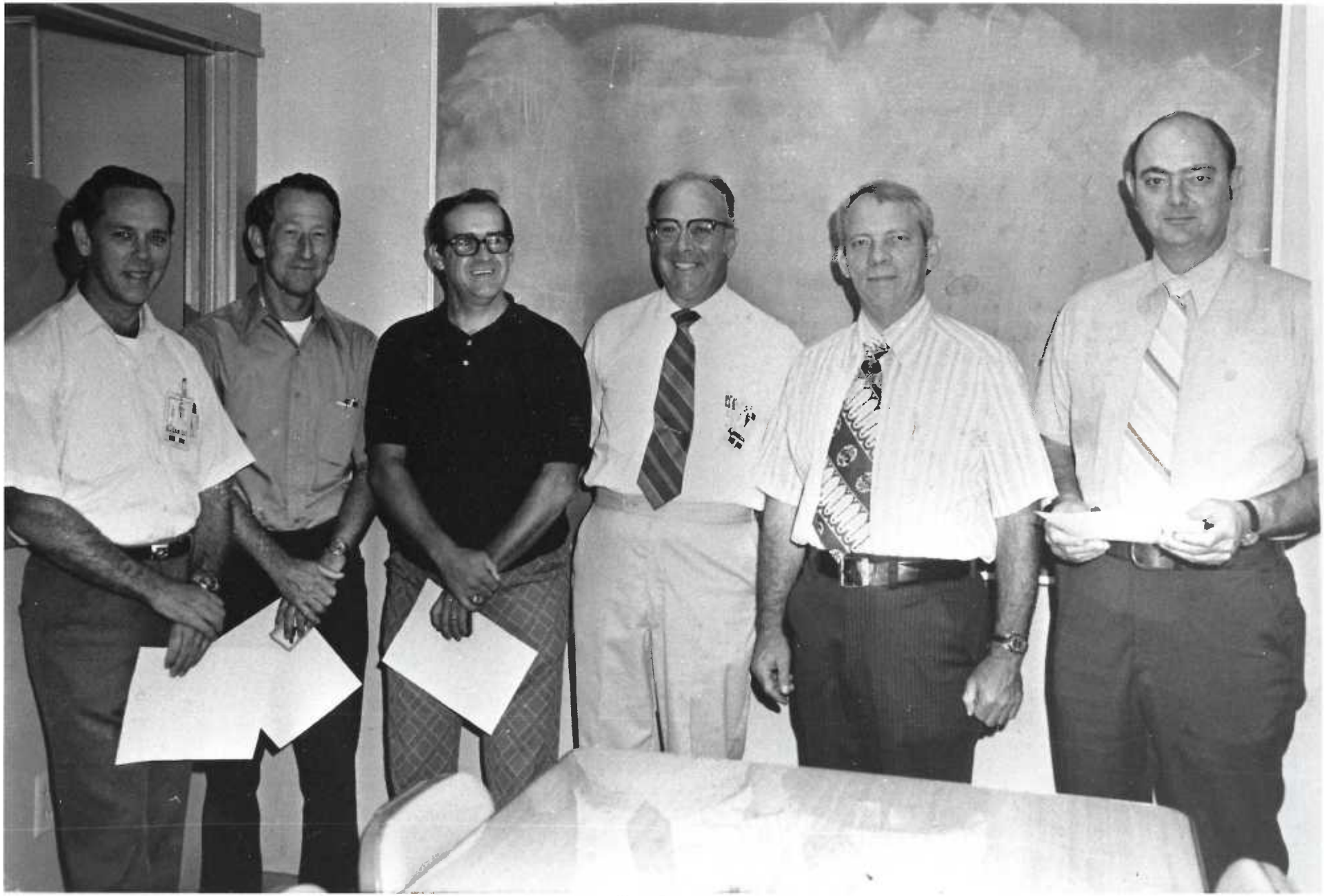
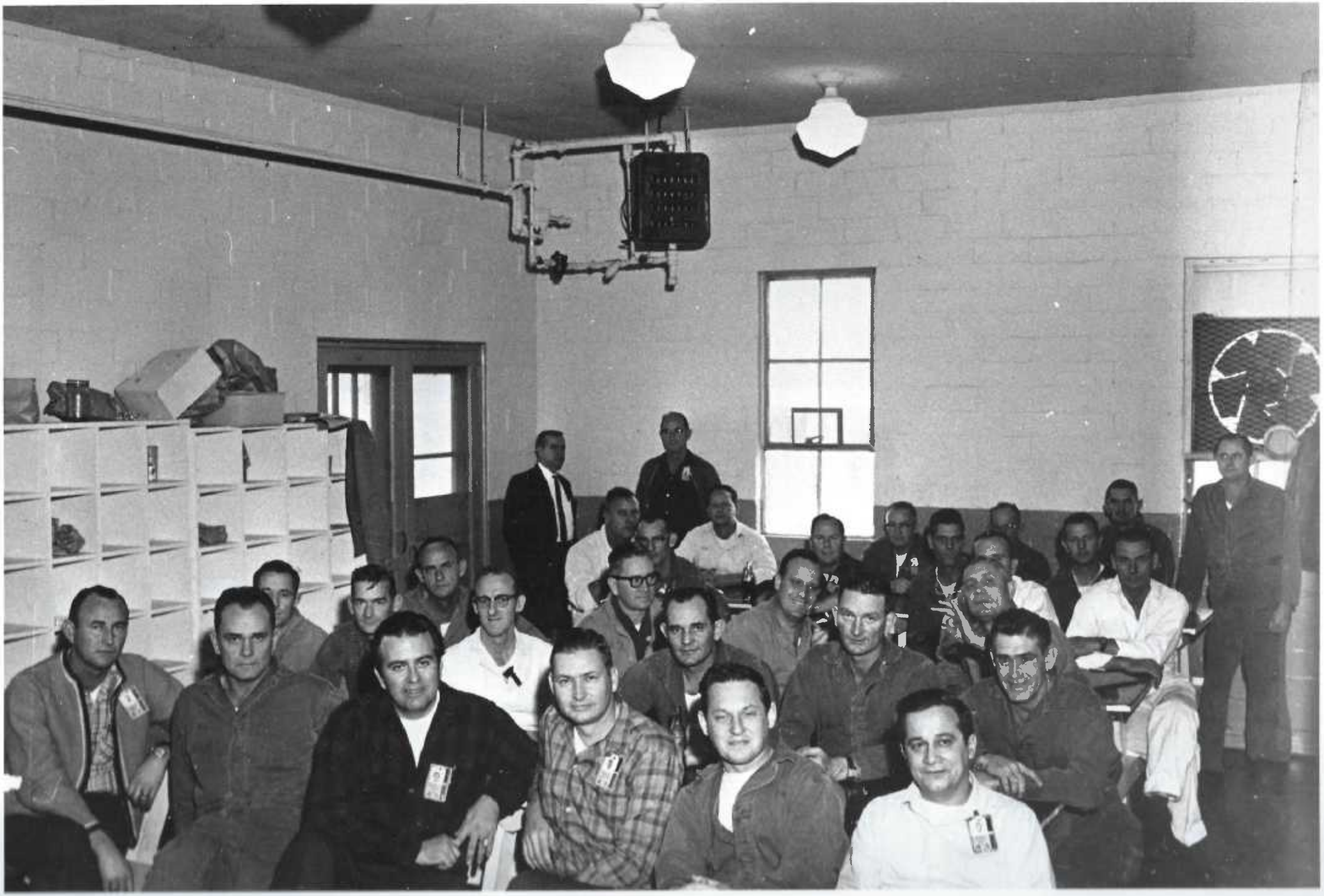
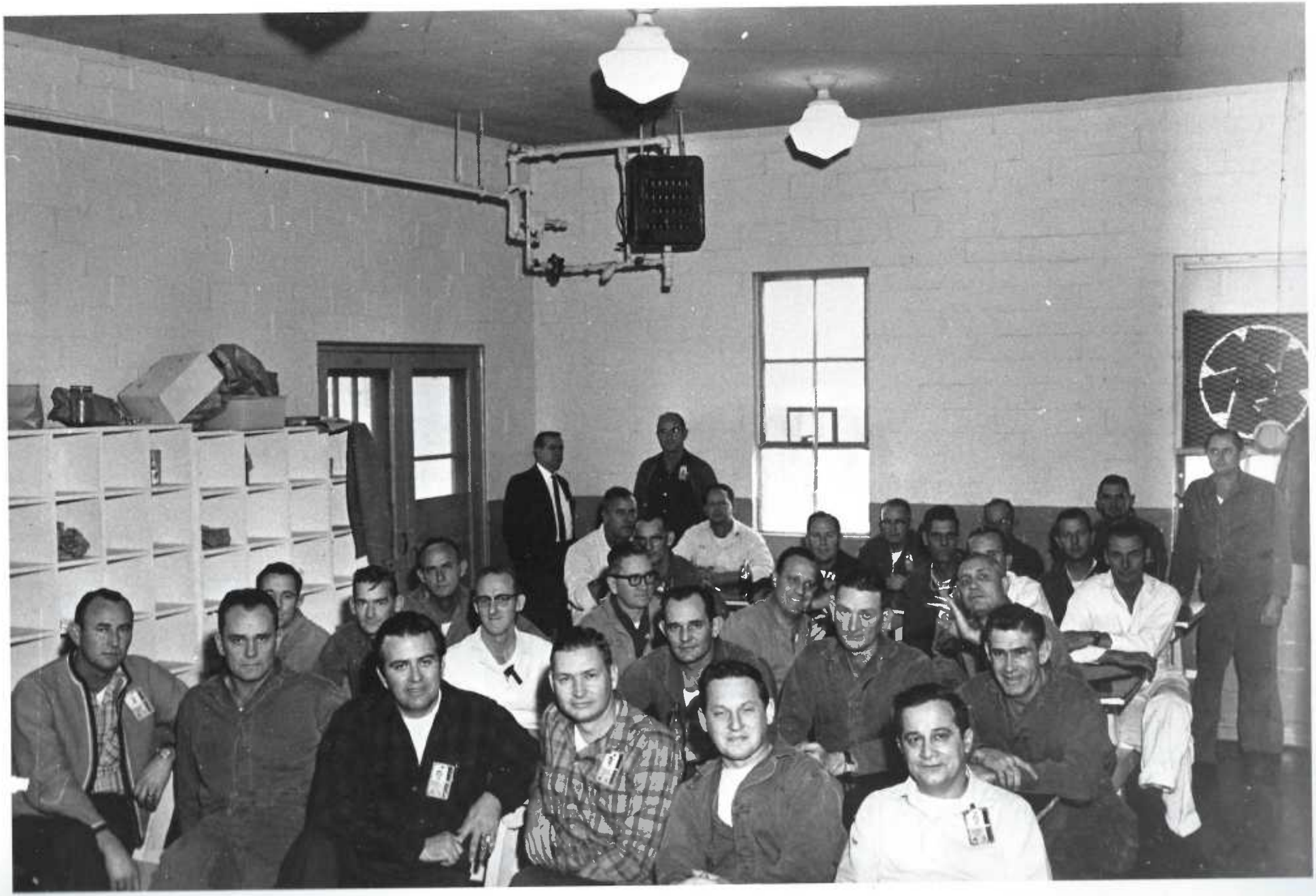
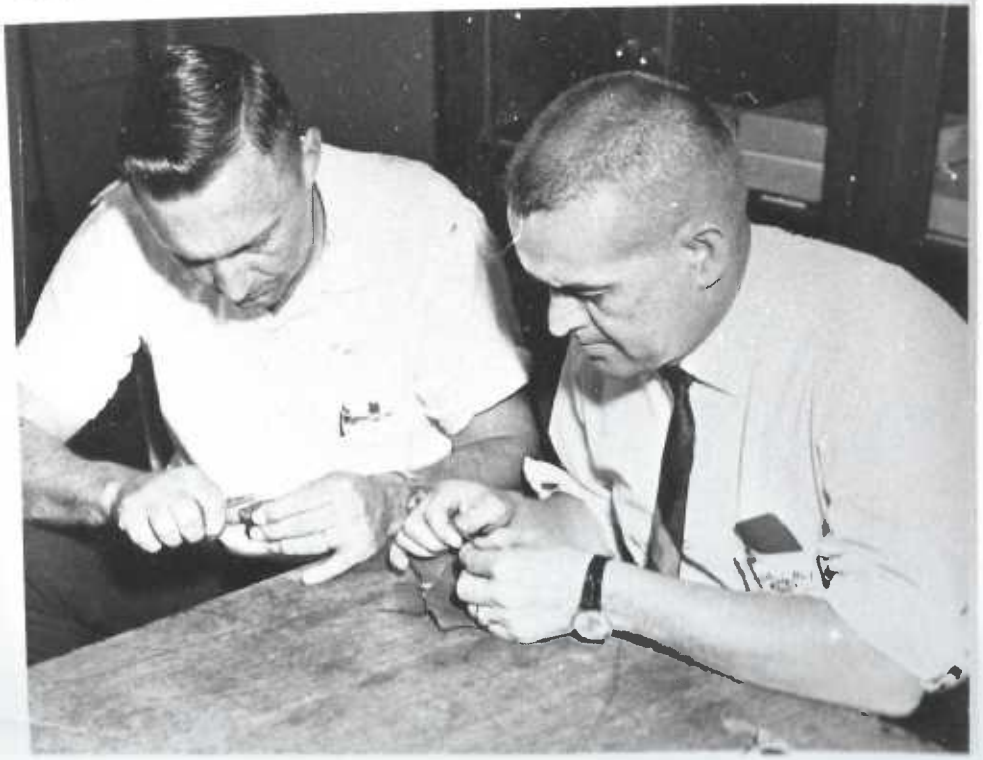


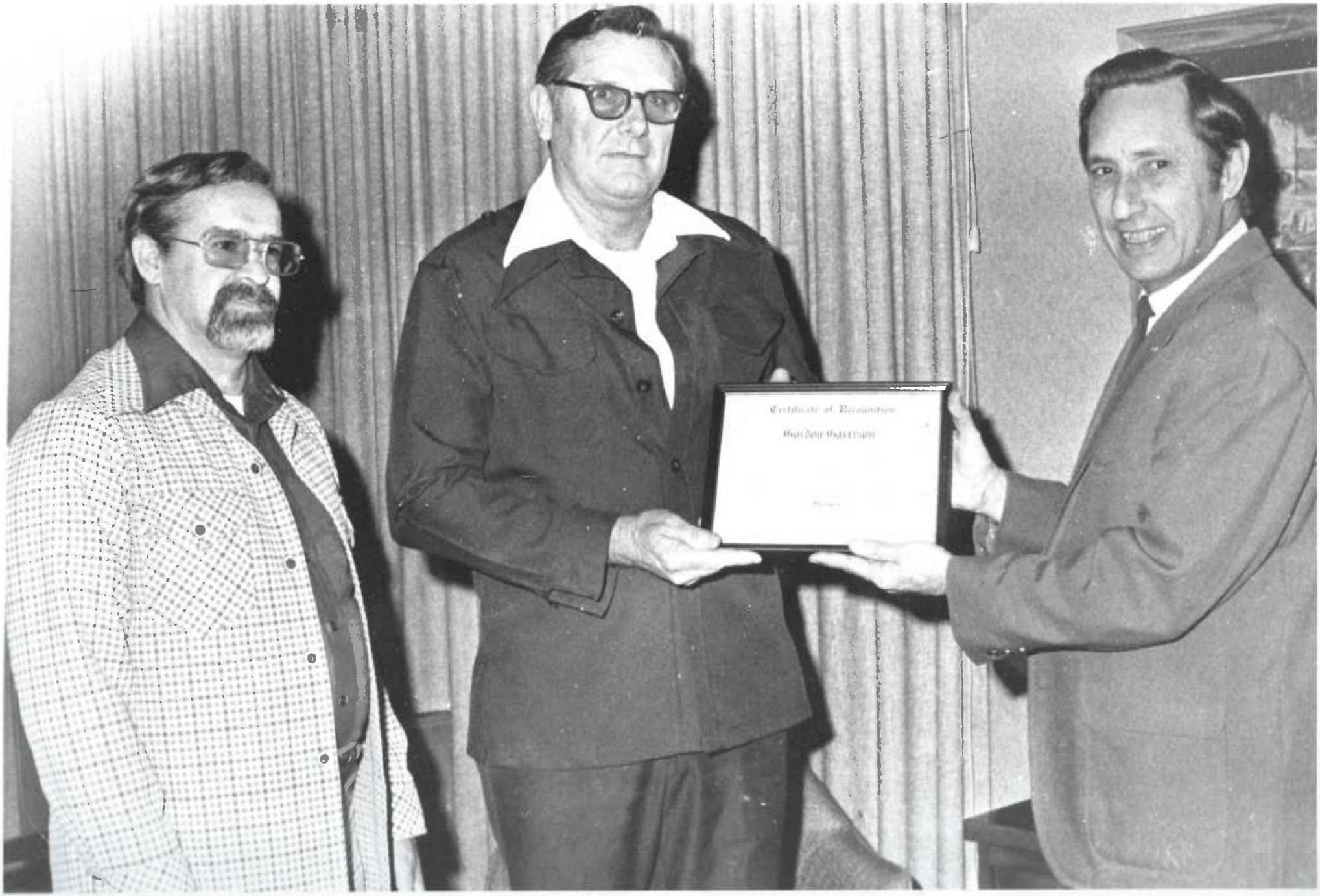

IMAGE AMPLIFIER





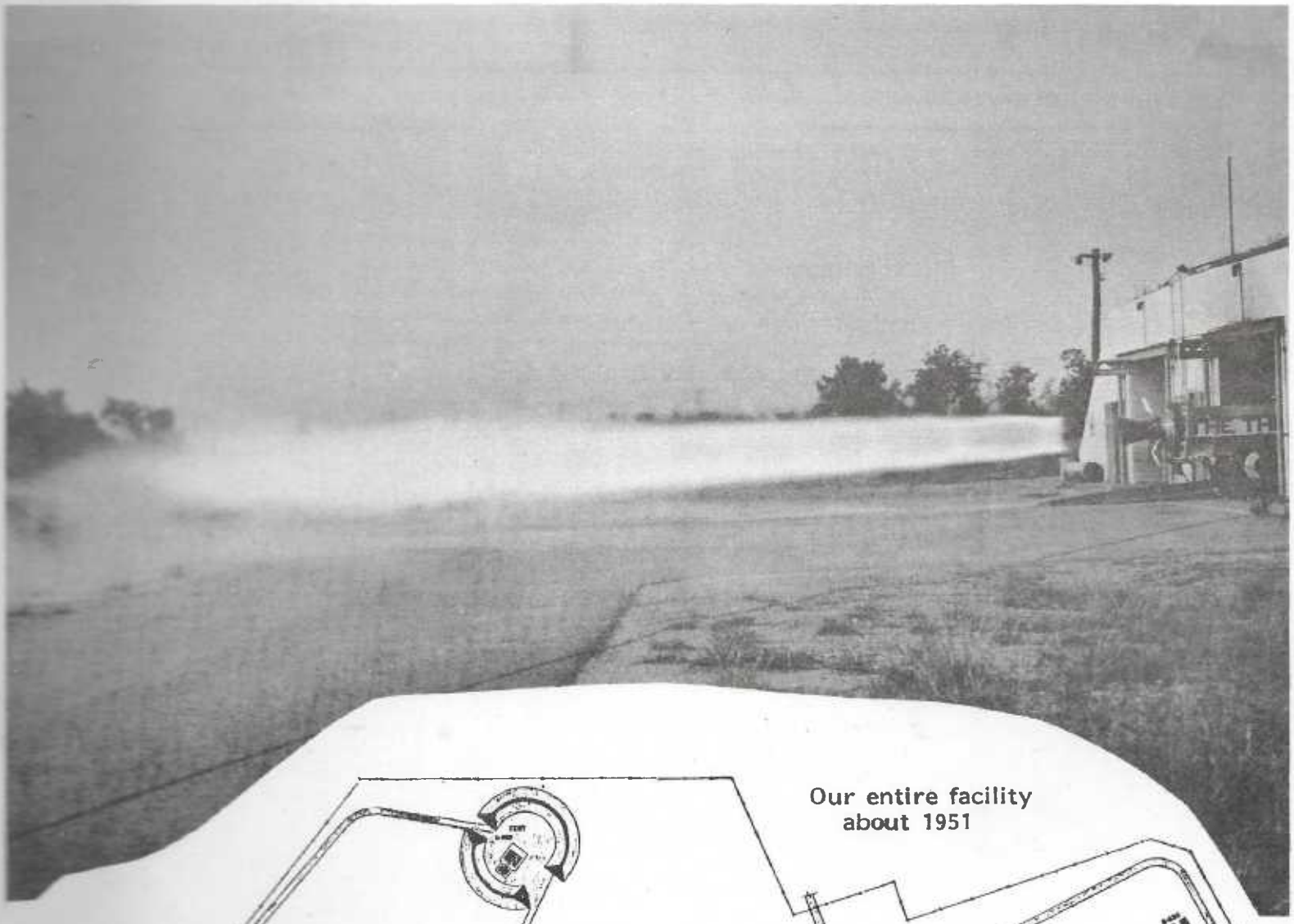
Thiokol
CHEMICAL CORPORATION
HUNTSVILLE DIVISION HUNTSVILLE, ALABAMA




Certificate of Recognition

HISTORY PHOTOGRAPHS DONATED BY Bill Fiser prior to his retirement.

HERMES motor, known as "The Thing," during static test - probably about 1951.

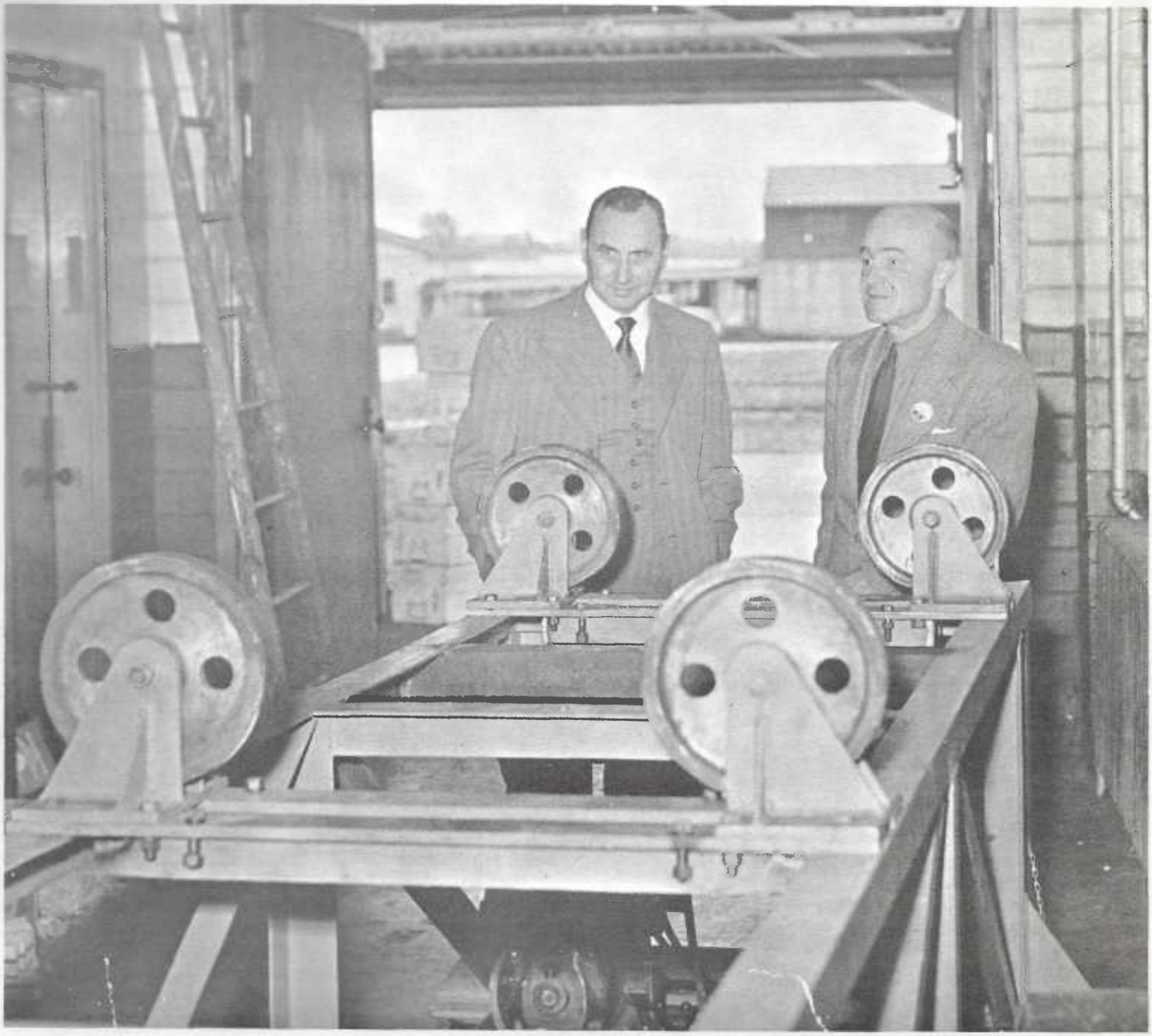


Our entire facility
about 1951

GENERAL AREA MAP
THIOKOL CHEMICAL CORPORATION
REDSTONE DIVISION

HISTORY PHOTOS of our first "Big" motor (Tony Guzzo)

HISTORY PHOTOS OF TONY GUZZO This is Mr. Joe Crosby, President of Thiokol for many years; and Dr. W. M. Mebane, the first General Manager of the Huntsville Division.



WANTED

SUGGESTIONS TO:

- PREVENT ACCIDENTS
- IMPROVE QUALITY
- IMPROVE PRODUCTIVITY
- REDUCE COSTS

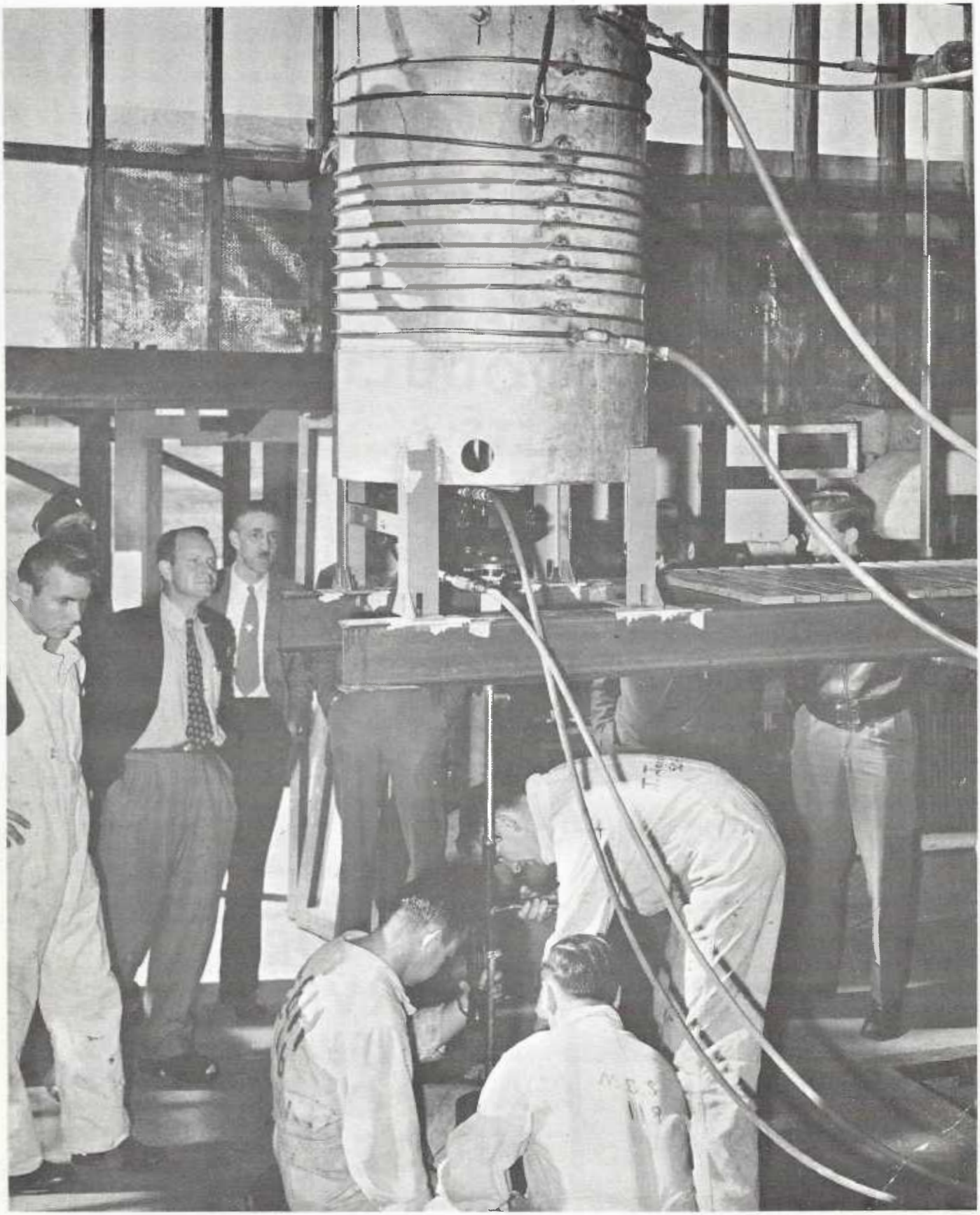
REWARD

Persons who submit approved suggestions may choose a gift from the Awards Catalog.

SEE YOUR SUPERVISOR TO VIEW CATALOG AND OBTAIN PRO* SUGGESTION FORMS

*Positive Results Oriented Program

HISTORY PHOTO OF early casting operation - those Editor can identify are Dr. Ritchey, Matt Weber, Clint Ratliff, Jimmy Jordan.



The Employee News Bulletin

May 18, 1979

Thiokol / HUNTSVILLE DIVISION

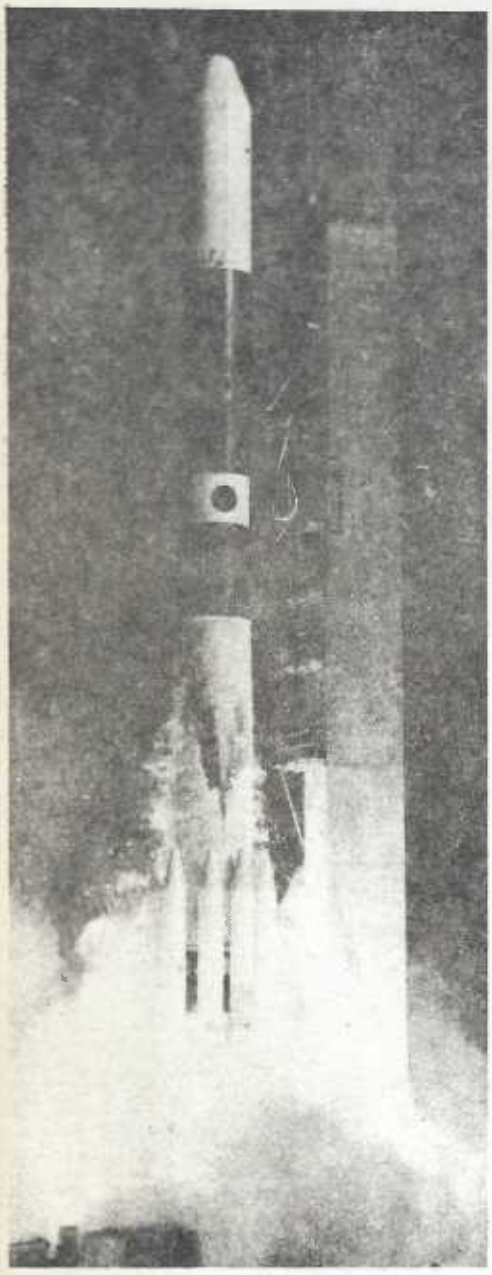
Publication for Thiokol Employees
(Not cleared for Public Release)
EDITOR: Jo Killian 876-5305

THIOKOL / HUNTSVILLE IS 30 YEARS OLD

The Huntsville Times

SUNDAY, APRIL 22, 1979 PAGE 13

VIEWPOINTS



Delta Rocket Utilizes Thiokol-Built Motors

Thiokol

Firm Celebrates 30 Years of Space Technology

By DAVE DOOLING
Times Science Editor

Three decades ago, this month, Huntsville started becoming rocket city.

The start was inauspicious, marked by the arrival of 33 more folks from up North.

With a modest shop set up in the emptiness of Redstone and Huntsville Arsenals, they started making rockets. The product was only five inches wide, and its ingredients had been mixed in a Kitchen Aide Mixmaster and a Pyrex bowl.

But it was the start of the Huntsville division of Thiokol Corp. and motors that have been used in hundreds of thousands of military rockets and space boosters. And the propellants are still made in giant mixers drawn from the bread industry.

"We were the first rocket people to move into the arsenal," said Robert Brooks, a testing operations foreman. He and Tony Guzzo, a process engineer, are the only members of the original team that preceded Dr. Wernher von Braun and his crew by a year.

Thiokol Corp. started in the 1920s as the first maufacturer of synthetic rubber. The name is from the Greek words for "sulfur glue," the accidental result of attempts by Dr. Joseph Patrick to develop a new automobile anti-freeze.

THE RESULT WAS a black, rotten-egg-smelling goo. Although the potential for tires seemed to be there, the company floundered — it was run out of one town because bootleggers said it ruined their product — until World War 2 when it was used in self-sealing gas tanks.

In 1943, Patrick refined the production and turned his goo into a polymer that poured freely and solidified at room temperature.

It was quickly applied to sealing gas tanks, gun turrets and aircraft carrier decks.

It also turned out that the polymer had the ability to bond a variety of different chemicals. In 1946, a company official followed up on a five-gallon purchase by the Jet Propulsion Laboratory, an outfit that later played a major role in putting the first U.S. satellite in orbit.

JPL wanted the polymer to bind solid rocket oxidizer and fuel. Rockets, despite their promise as a weapon, continued to frustrate those who wanted to use them.

"As an airplane jockey who sometimes had to fire those things," said John Goodloe, manager of the Hutsville division for 25 years, "you never knew what would happen when you fired."

Sometimes they worked, sometimes they refused, ocassionally they exploded.

THE PROBLEM WAS that solid propellants were hard to mix and hold together. Many were nothing more than variations on the gunpowder rocket invented by the Chinese.

JPL and Thiokol experiments showed that Thiokol's polymer would hold the propellants together and help them burn better. In particular, they found they could bond the propellant to the casing.

While that might not sound like much, it radically altered solid rocktry.

Like a piece of wood, a solid motor burns only on the exposed surface, along the flame front. Hence, older rockets were end-burning, from back to front, like a candle.

With the outside bonded to the case, though, engineers found they could cast the motor with a hole down the middle — like an anglefood cake — and burn from the inside out.

This increased the pressure and thrust and sent the exhaust gases out at supersonic speeds.

"Ever since that day, the reliability of rockets has been outstanding," Goodloe said. "You can almost count on your two hands the number of flight failures in the last 30 years."

The most spectacular recent one was in late 1977 when a Delta rocket carrying a European satellite blew up. The investigating board said a Thiokol-built Castor was to blame, but Goodloe said he doubts that was the cause.

UNDER A $250,000 Army contract, Thiokol set up shop in an old Navy munitions plant in Elkton, Md. There it produced sixty 75-pound infantry support rockets, all of which passed their tests.

Thiokol quickly outgrew the Elkton plant.

"When the Army realized there really was some potential for this new propellant," Goodloe said, "it was at their insistence that we moved down here."

Two months later, the first motor was fired.

From there, Thiokol built up to the Hermes rocket with a 31-inch wide, 5,000-pound motor.

Test-fired in 1951, Hermes' motor broke the psychological barrier among engineers who felt there was an upper limit to the size of solid motors.

The field still had much growing to do, though.

"Initially it was almost a black art," Goodloe said, "a little of this, a little of that ... you fired the rocket and if it blew up, you tried something else."

Today, though, the chemical reactions that go on are intimately known, and with tight quality control data, the results usually agree closely with the predictions.

THIOKOL GREW QUICKLY. By 1954 employment was up to 500, already exceeding the goal of 400. In 1958 it peaked at 2,000. Today it is level at 600.

Much of that decrease came from Thiokol's seeding other divisions: Longhorn in Texas, Wasatch in Utah, Elkton again, and in Atlanta.

"The division has not grown all that much," Brooks said, "but it's largely because we keep establishing other divisions."

Despite the ease with which accidents can occur, Thiokol claims an enviable safety record.

"The chemical industry is supposed to be one of the most dangerous," Guzzo said. "We are working with propellants, and we know what they will do. We have lost very little in the way of injuries and fatalaties."

Next week the division will hit the mark of one million man-hours without a propellant-related accident. It once held a record of 8½ million man-hours.

The first serious accident was in 1958 when three men were killed while pasting the nozzle on a motor. There was little evidence left, but Goodloe said it is believed that some propellant was on the threads and ignited under pressure.

The only other fatality came when a dust collector blew up.

As a result, procedures have been tightened. Goodloe said the 1954 accident could have been prevented if procedures then in effect were followed.

"Every operation in this plant has to be covered by a written procedure before it goes into effect," he said.

A TURNING POINT for the division came in 1957 when the Army told Thiokol it would no longer operate as a government-owned, company-operated facility. Instead, it would have to compete for its business as other firms did.

Rohm & Haas, a research and development firm operating the same way, simply quit the arsenal.

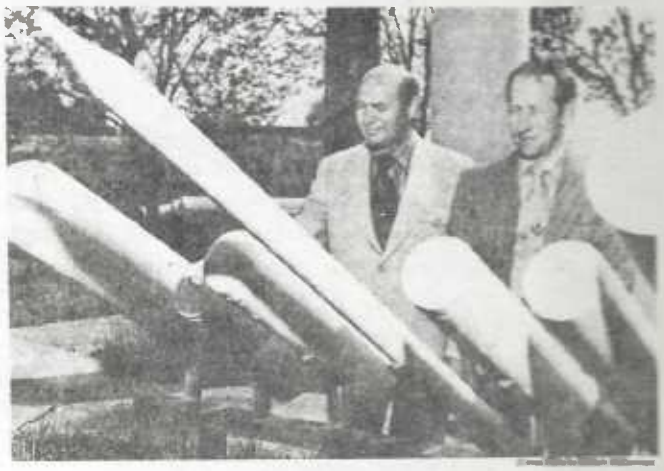
"It didn't take us but a day to decide to (stay)," Goodloe said. "Since then, it's been uphill."

The contracts were never lacking. In its three decades here, Thiokol has put more than a quarter billion dollars into the local economy, most of it in payroll, some in purchases.

Among the better known missiles it produced are the Sergeant battlefield missile, the Little Joe booster for Project Mercury tests, the Mike Hercules antiaircraft missile, the Spartan anti-missile missile, the Falcon, air-to-air missile, the Maverick air-to-ground missile, and the TOW antitank missile.

Applications of solids have been varied, too. The Falcon motor, for example, helped send men to the moon. With a longer nozzle, its thrust pushed liquid propellants to the bottom of the tanks in the third stage of the Saturn 5 moon rocket before it was ignited to launch out of earth orbit.

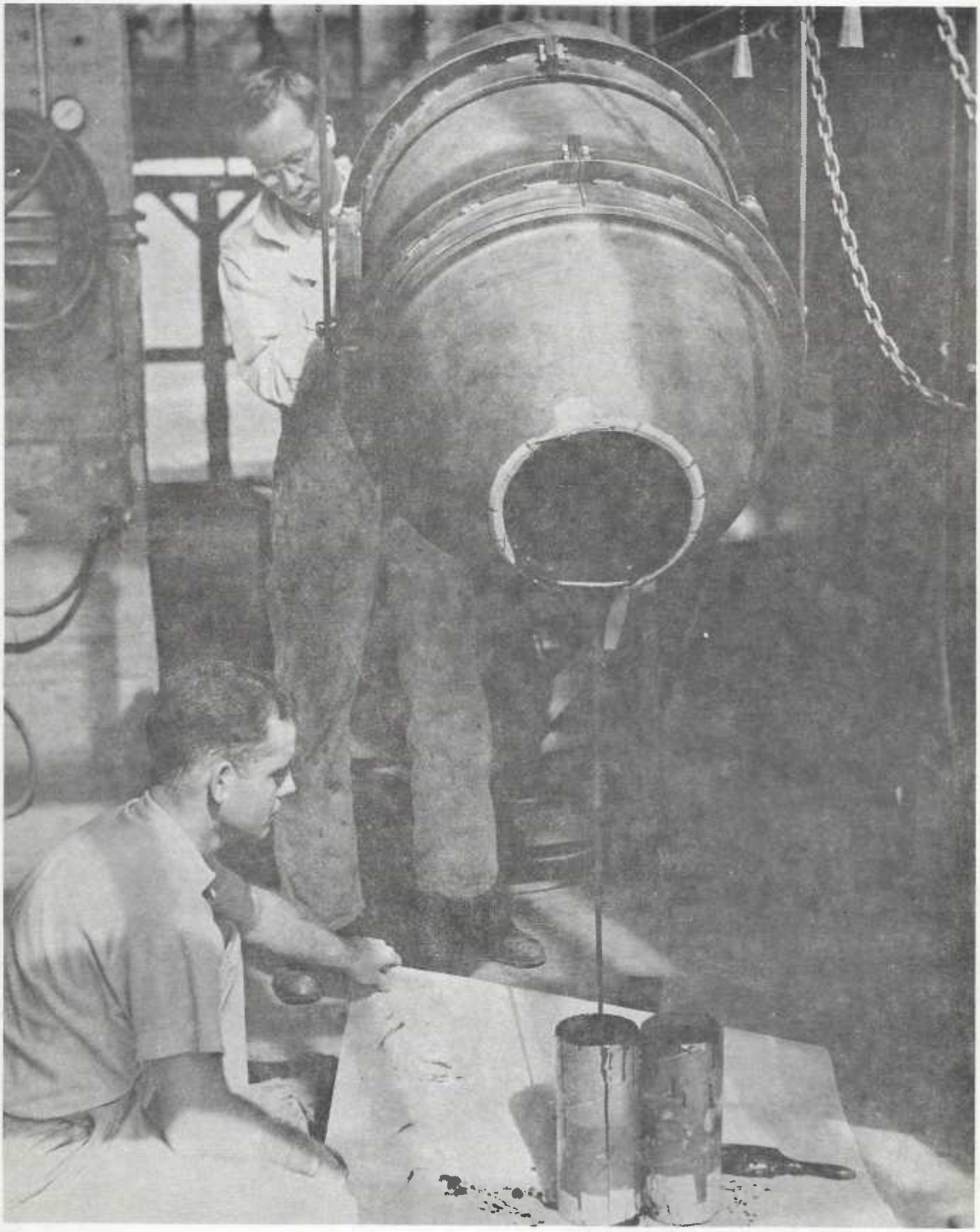
Another version was used in early tests of Hellfire, a laser-guided antitank missile. Thiokol is building the production motors, too.



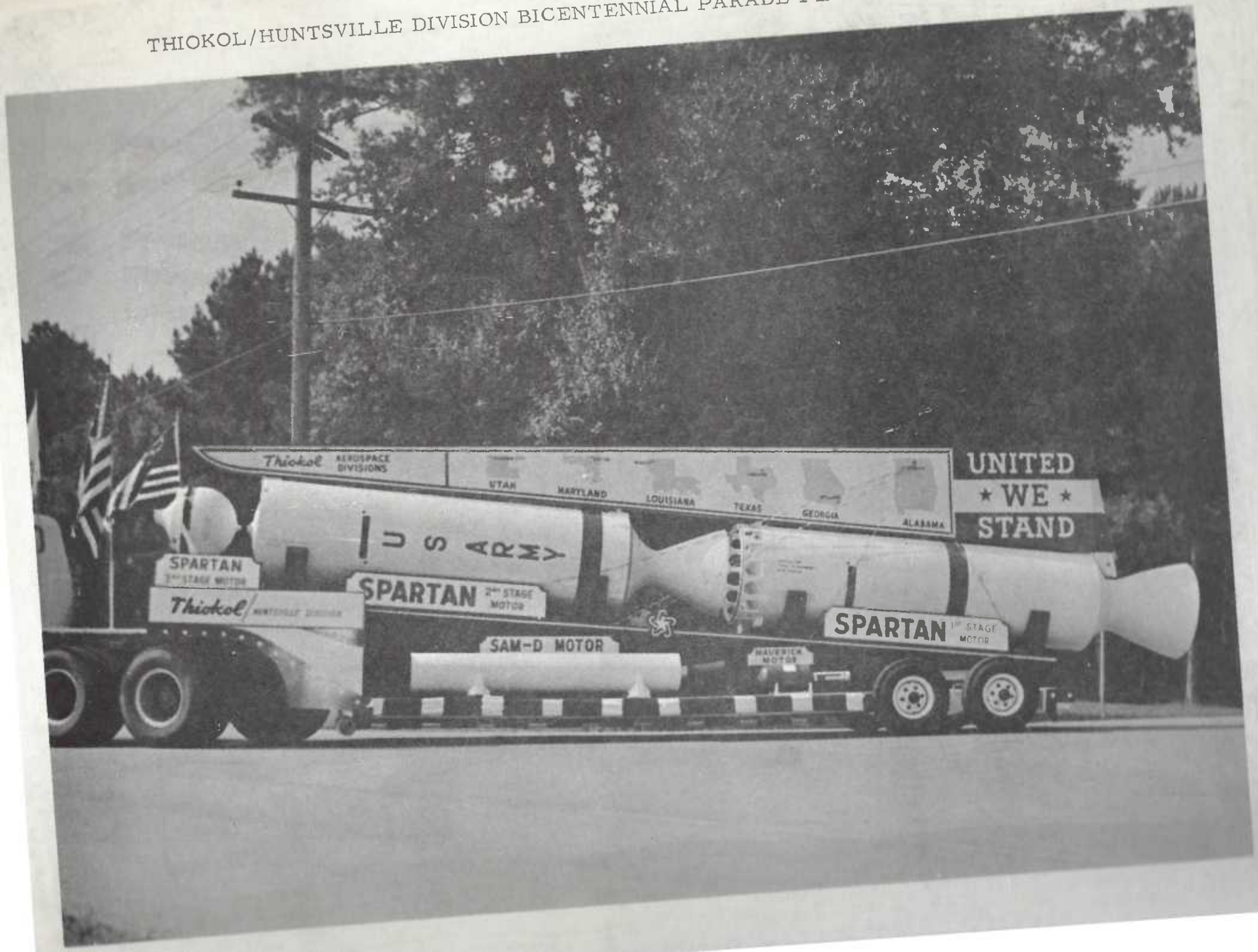
Originals From Thiokol Team, Guzzo, Left, And Brooks

First Thiokol Rocket Motor Measures Only Five Inches in Diameter

HISTORY PHOTOGRAPH - Frank Gardiner standing with Bobby Whitt assisting in the "modern lining of a motor?"



THIOKOL/HUNTSVILLE DIVISION BICENTENNIAL PARADE FLOAT - AUGUST 1975



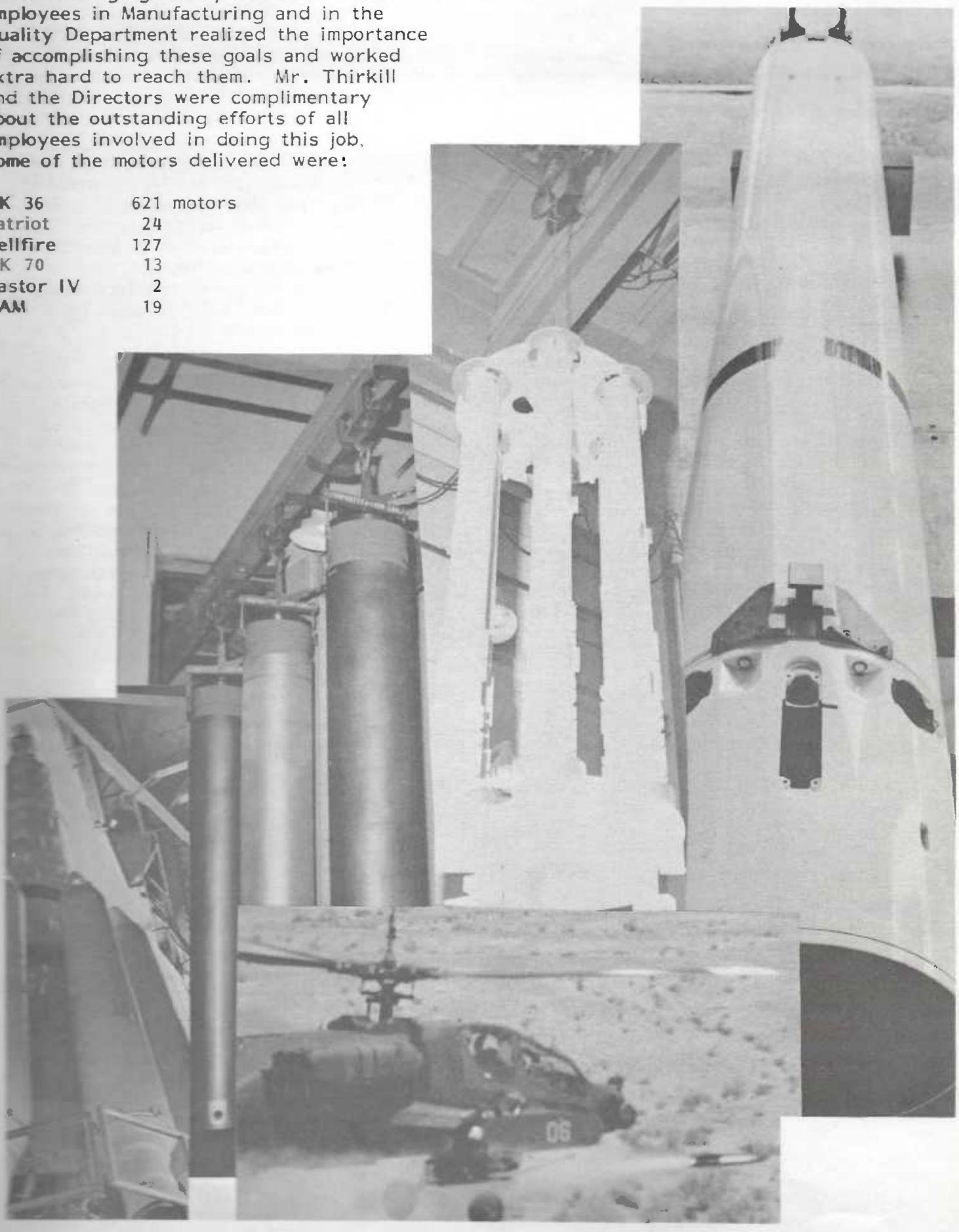
HUNTSVILLE DIVISION BICENTENNIAL FLOAT

This beautiful float was in the Huntsville Bicentennial Parade on August 16. It was designed and built by Huntsville Division Employees. THIOKOL was well represented, as well as our Red, White, and Blue. Congratulations to all who worked on this outstanding float. The members of the Float Committee were: Steve Alexander, Chairman, Buck Brewer, Tom Kelly, Oscar Hawkins and Don Rhodes - great job!

DECEMBER MOTOR DELIVERIES MADE THANKS TO MANUFACTURING AND QUALITY

The delivery goals for December 1984 were most challenging to say the least. The employees in Manufacturing and in the Quality Department realized the importance of accomplishing these goals and worked extra hard to reach them. Mr. Thirkill and the Directors were complimentary about the outstanding efforts of all employees involved in doing this job. Some of the motors delivered were:

MK 36	621 motors
Patriot	24
Hellfire	127
MK 70	13
Castor IV	2
RAM	19



PATRIOT SYSTEM SUCCESSFULLY COMPLETES FIELD TESTING

Patriot missiles launched by Army troops scored four intercepts against four remotely piloted jet aircraft during field readiness tests during the week of September 10, 1984 at White Sands Missile Range, NM. The 12-week tests were conducted by the U. S. Army to demonstrate troop adequacy and prove the readiness of the production Patriot missile system in a realistic battlefield environment.

The exercises included trial air defense engagements using actual aircraft and flight mission simulation, cross-country road marches, system emplacement into both prepared and unprepared remote desert sites, and missile launcher reloading. The tests ended with actual live-missile flights in two separate missions.

The first missile was fired at a single high-speed drone simulating a mid-range jet using electronic countermeasures. The Patriot missile scored a direct hit. The second mission involved three missiles against three simultaneous jet targets. One drone at long range and two at low-altitude formation, each using electronic countermeasure devices.

This successful activity (FOE III) completed the third in a series of three follow-on and evaluation tests required for approval of field deployment of the PATRIOT System.

As a result, Morton Thiokol received the following message from Raytheon, Mr. L. L. Rosen, Acting Patriot Program Manager, on September 21, 1984.

> "On behalf of Raytheon Company, I want to express our sincere gratitude for the magnificent support extended by you and the men and women of your organization for the very successful Patriot FOE III Operational Test.
>
> Last Friday's successful three target engagement in White Sands Missile Range, NM, was a spectacular finale to the test program. We can now work toward a timely deployment of the system to Europe with U.S. troops in early 1985 and a bright future for additional Patriot program sales."

All employees who have contributed so successfully in the manufacture of the PATRIOT rocket motor can be extremely proud of this accomplishment. The flawless rocket motor performance was the direct result of the dedicated efforts of a large number of Huntsville Division employees over a long period of time. Division and Program Management extend appreciation and a thank you for your continued and excellent support of the Patriot Program.

The Employee News Bulletin

September 8, 1978

Thiokol / HUNTSVILLE DIVISION

Publication for Thiokol Employees
(Not cleared for Public Release)
EDITOR: Jo Killian 876-5805

PATRIOT QUAL TESTS SUCCESSFULLY COMPLETED

Another significant milepost was reached on September 1, 1978, with the successful static test of PATRIOT Motor No. 413977. The test of this motor completed a series of ten qualification tests begun in May.

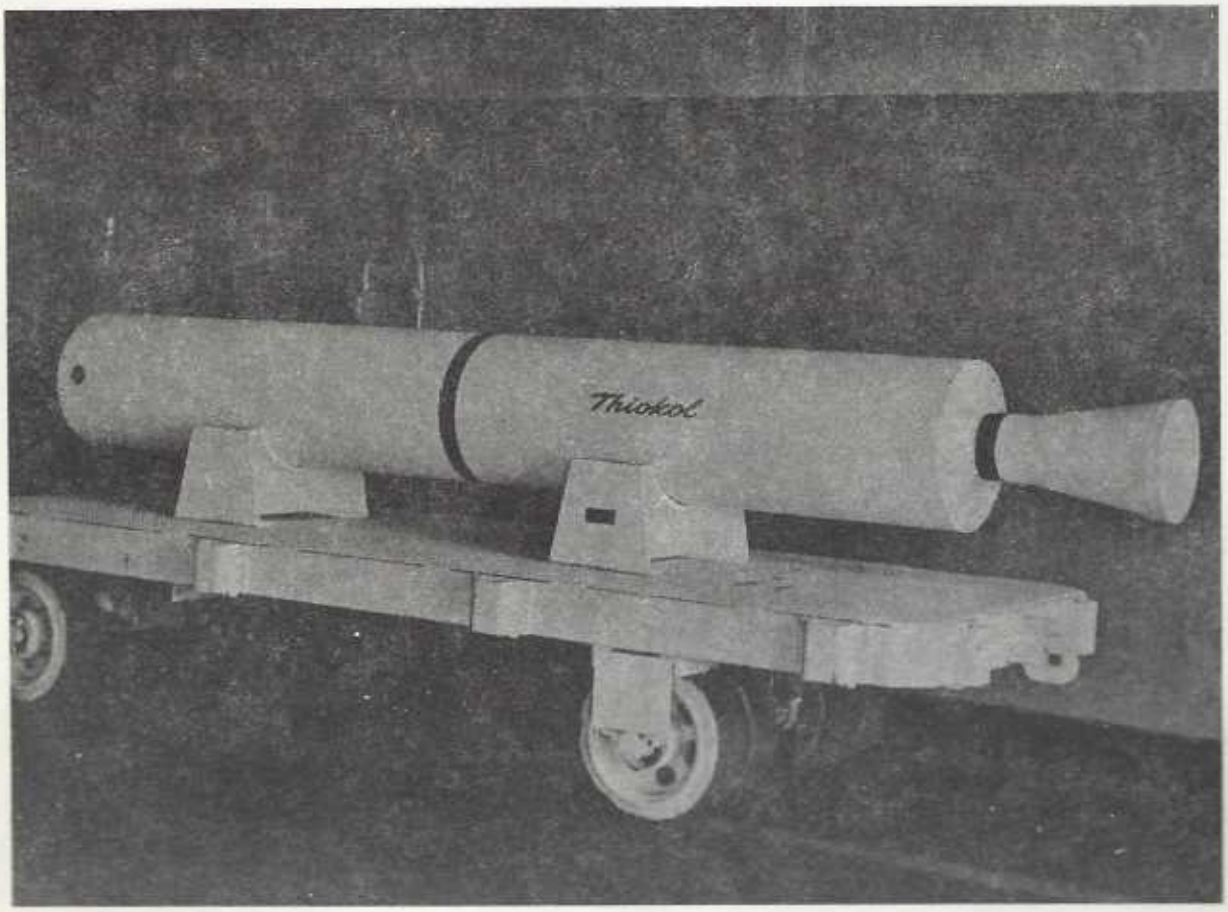
Qualification testing of PATRIOT followed rigorous pre-test conditioning at temperatures of -50°F, 70°F, and 130°F. Motors were subjected to shock, drop, vibration, rail hump and temperature cycling.

Delivery of first flight test units will follow. With the delivery of the last units in early November, the Engineering Development (ED) program will be completed.

According to Jack Hagler, Program Manager, momentum is rapidly building for production. Thiokol/Huntsville is already under contract for Producibility Engineering and Planning (PEP) for production. Effort has also begun on facilities design. Tooling design/fabrication is scheduled to begin in early 1979 with check-out of production tooling and facilities scheduled for late 1980. Earnest production will begin early in 1981.

Thiokol/Huntsville is under contract to Martin Marietta/Orlando for the ED and PEP phases of the PATRIOT and under contract to MIRCOM for facilities design.

Here's one of our PATRIOT motors:



Hawk, Patriot systems have successful test together

The Redstone Rocket—April 13, 1988-

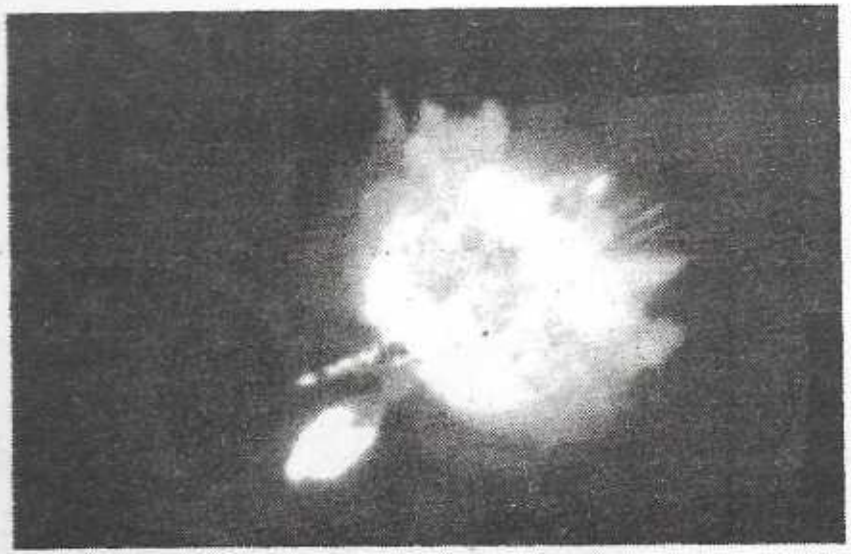
BY BOB HUBBARD

Hawk and Patriot, by themselves, are good. Together, they're even more formidable.

MICOM's medium and high altitude air defense systems showed just how good they are as a team by successfully intercepting a surrogate tactical ballistic missile April 5 during a joint test at White Sands Missile Range, N.M.

During the test, Patriot's phased array radar detected and tracked the target missile— another Patriot missile —then passed the data to the Hawk system. Hawk acquired the target with its tracking radar, launched a Hawk missile, and scored a successful intercept.

With Patriot and Hawk interoperable, the Army greatly strengthens air defense against both aircraft and short range, tactical ballistic missiles.



IMPACT— Hawk, working with Patriot, successfully intercepts the target missile.

Software that gives Patriot this ATM capability and will be fielded this summer, was used in the test. The Hawk Phase III system, now in production for the Army and Marine Corps, features several improvements that greatly increase Hawk firepower, radar reliability, maintainability and performance, and system training.

The Patriot missile used as the target was programmed to fly a trajectory characteristic of short range, tactical ballistic missiles similar to those facing U.S. soldiers and other NATO forces in Europe.

Brig. Gen. Larry Capps is the program executive officer for High/ Medium Air Defense. Col. Bruce Garnett is Patriot project manager, and Col. George Reed Jr. is Hawk project manager.

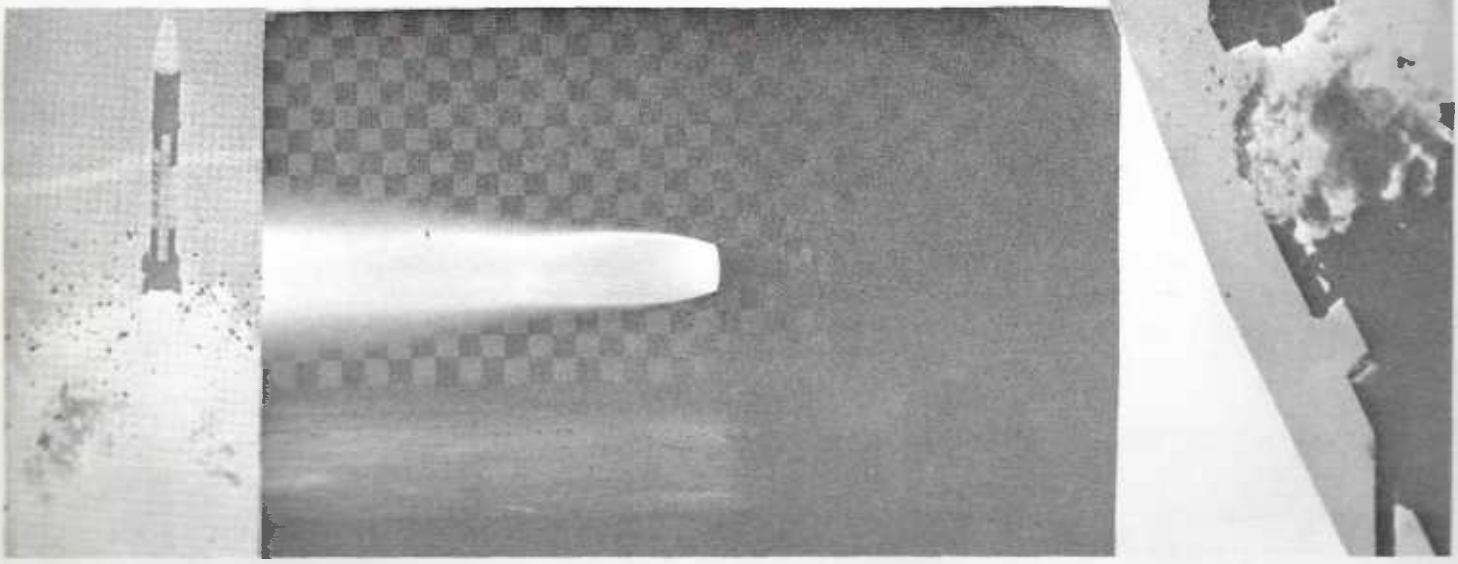
Raytheon Company is prime contractor for both systems.

MORTON THIOKOL'S HUNTSVILLE DIVISION EMPLOYEES MANUFACTURE THE PROPULSION SYSTEM FOR THE PATRIOT MISSILE.

PATRIOT EMPLOYEES ON HAND FOR CELEBRATION. They like making the motors for our customers, Martin Marietta, Raytheon, U.S. Army.

Shown above L to R: Neil Howard, EARL DRISKILL OF MARTIN MARIETTA, Dianne Walter, Billy Moon, John Williams, Larry Gobble, Ernest Battle, Bobby Smith, James Townsend, Steve Glassco, Lester Howard, and Tom Newby.

There are many other employees responsible for the success of the Patriot program. Neil Howard, Program Manager, offers his appreciation to all for a fine job.

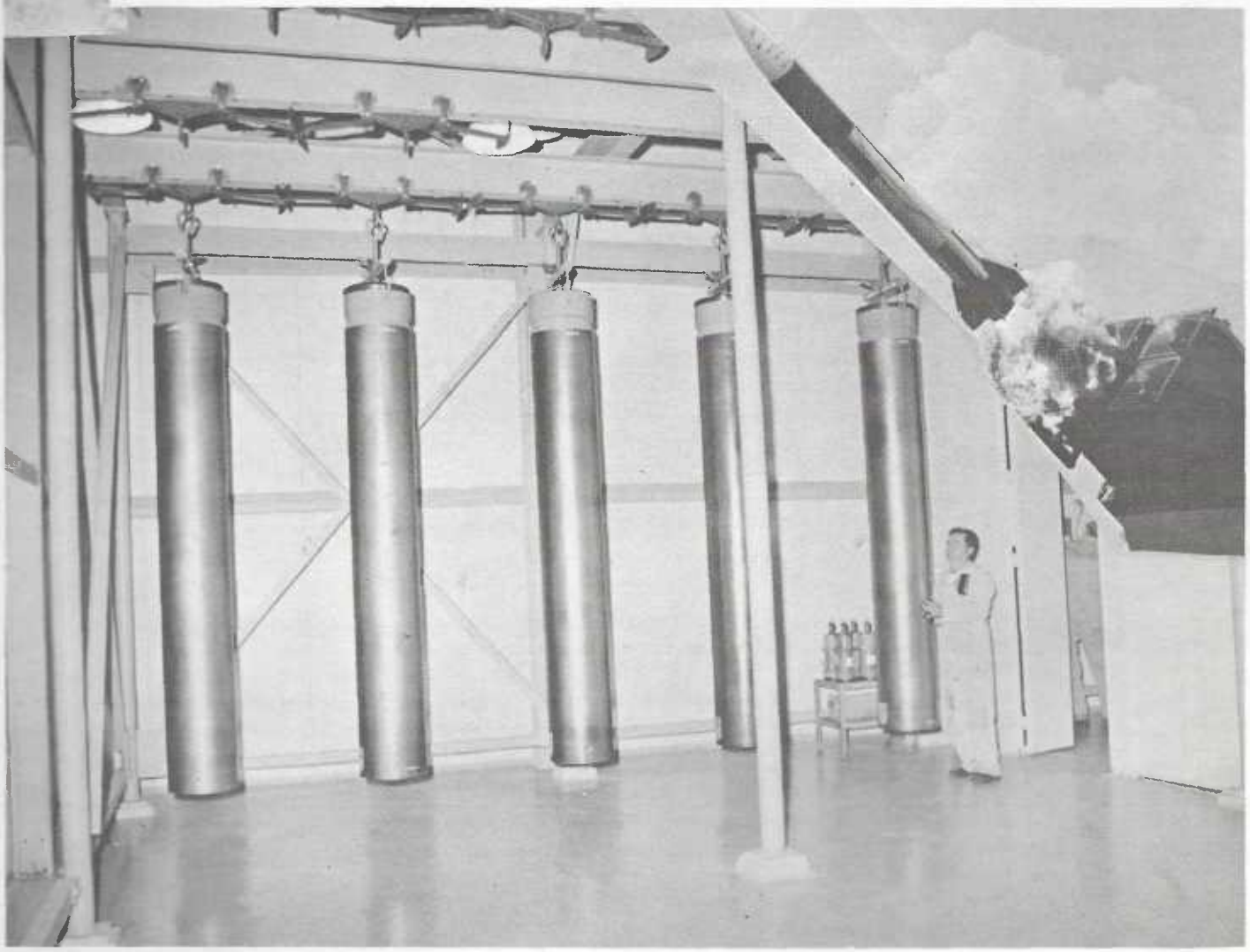


THANKS!

PATRIOT EMPLOYEES

Thanks to Division Employees, a first was accomplished on the Patriot Program. Fifty (50) Patriot motors were manufactured from August 16 thru September 12. Making that many motors in 28 days demonstrated the great support by employees and also demonstrated the maximum tooling capability on this program.

The adjoining page indicates the Customer's pleasure with our Patriot accomplishments.



The Employee News Bulletin

MORTON THIOKOL, INC.

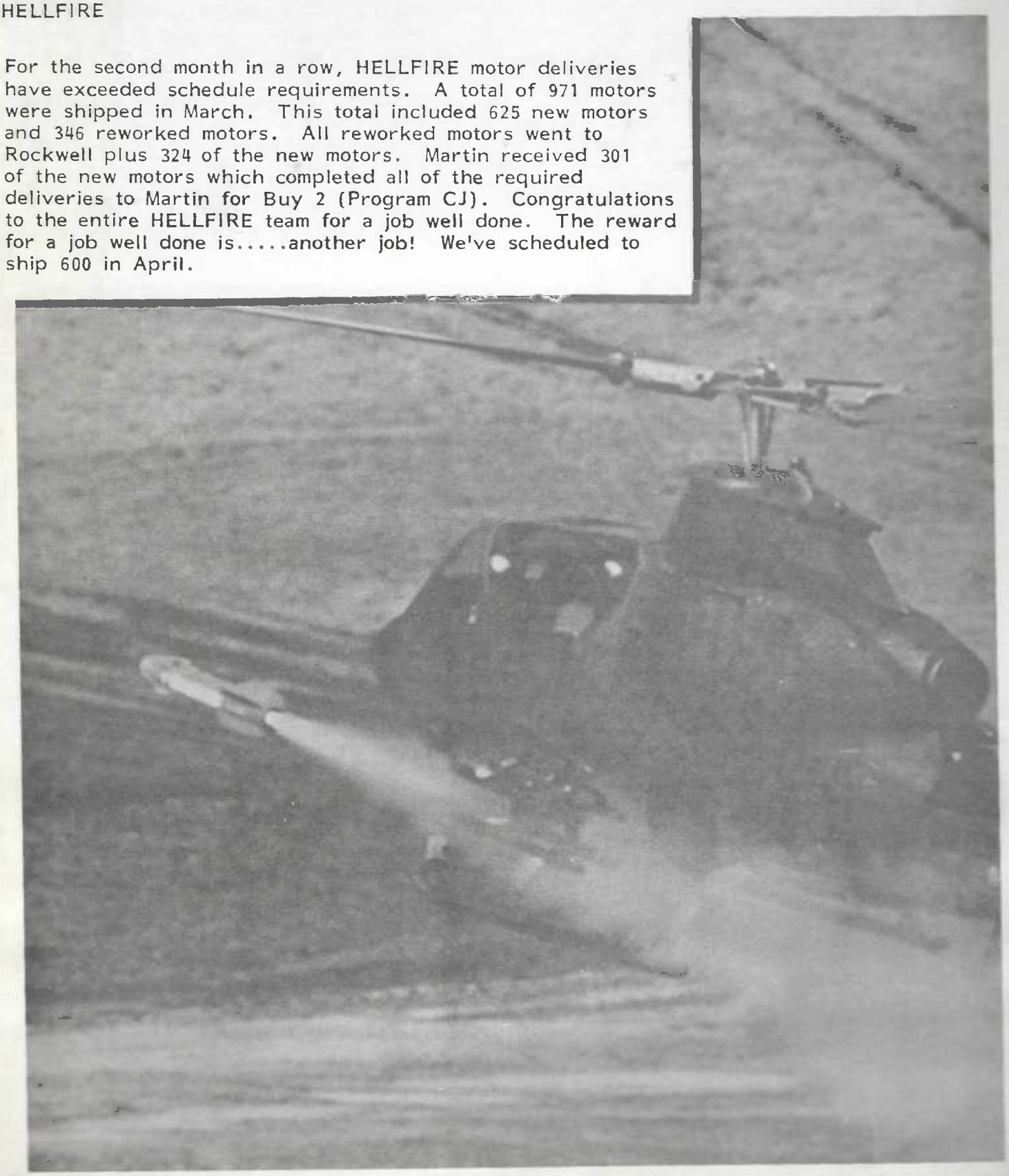
Huntsville Division

April 12, 1985

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

HELLFIRE

For the second month in a row, HELLFIRE motor deliveries have exceeded schedule requirements. A total of 971 motors were shipped in March. This total included 625 new motors and 346 reworked motors. All reworked motors went to Rockwell plus 324 of the new motors. Martin received 301 of the new motors which completed all of the required deliveries to Martin for Buy 2 (Program CJ). Congratulations to the entire HELLFIRE team for a job well done. The reward for a job well done is.....another job! We've scheduled to ship 600 in April.



THESE ARE HELLFIRE PROGRAM MEN

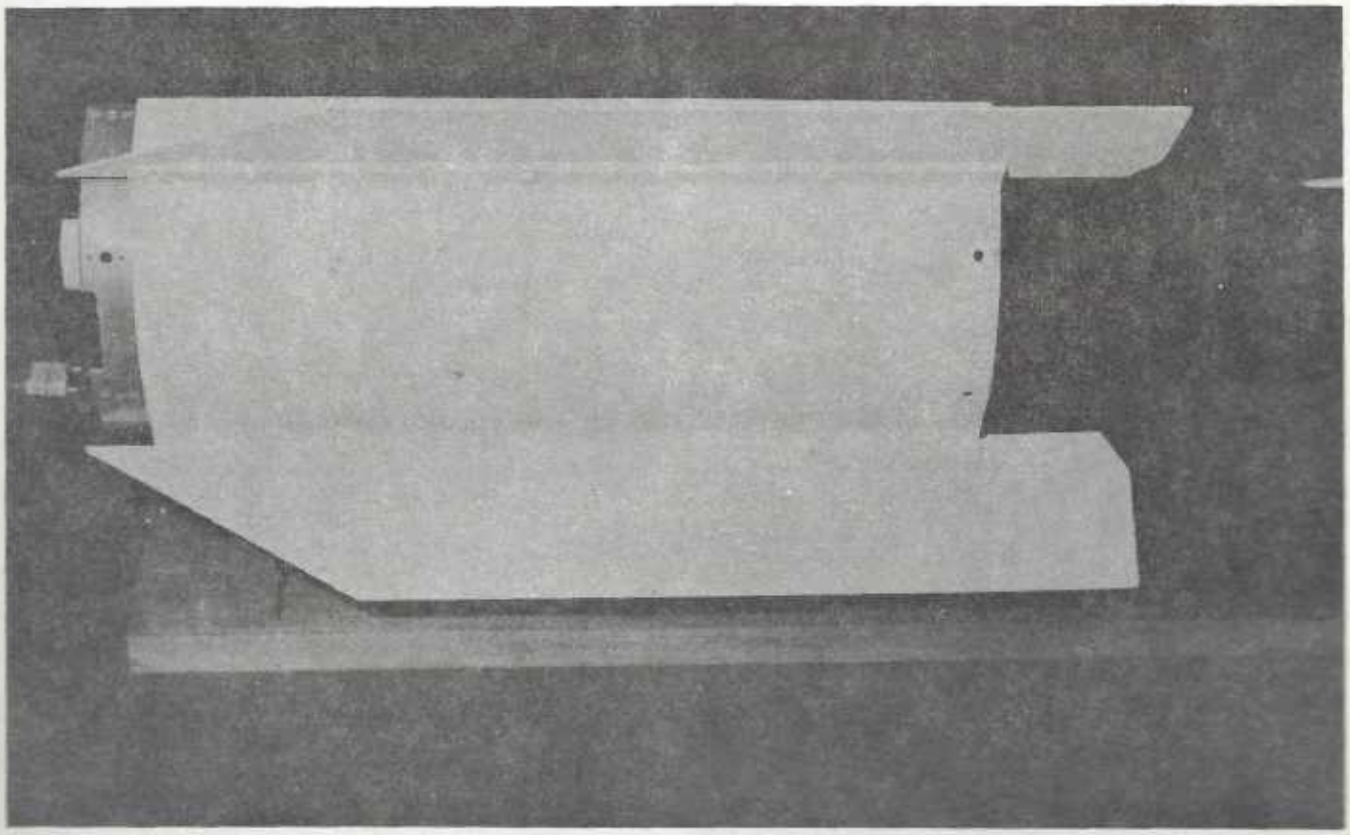
Bert Mangum

Rod Summers

Dave Wallace

AND HERE IS THE HELLFIRE MOTOR

Hellfire motor currently being developed at Thiokol/Huntsville for improved performance and low cost for the U. S. Army Missile Research and Development Command's Laser-Guided Hellfire Missile. The Hellfire Missile is a helicopter-launched missile against tanks and hardpoint targets that are pin-pointed by a laser. Rockwell International of Columbus, Ohio, is the Hellfire prime contractor.



The Employee News Bulletin

October 25, 1985

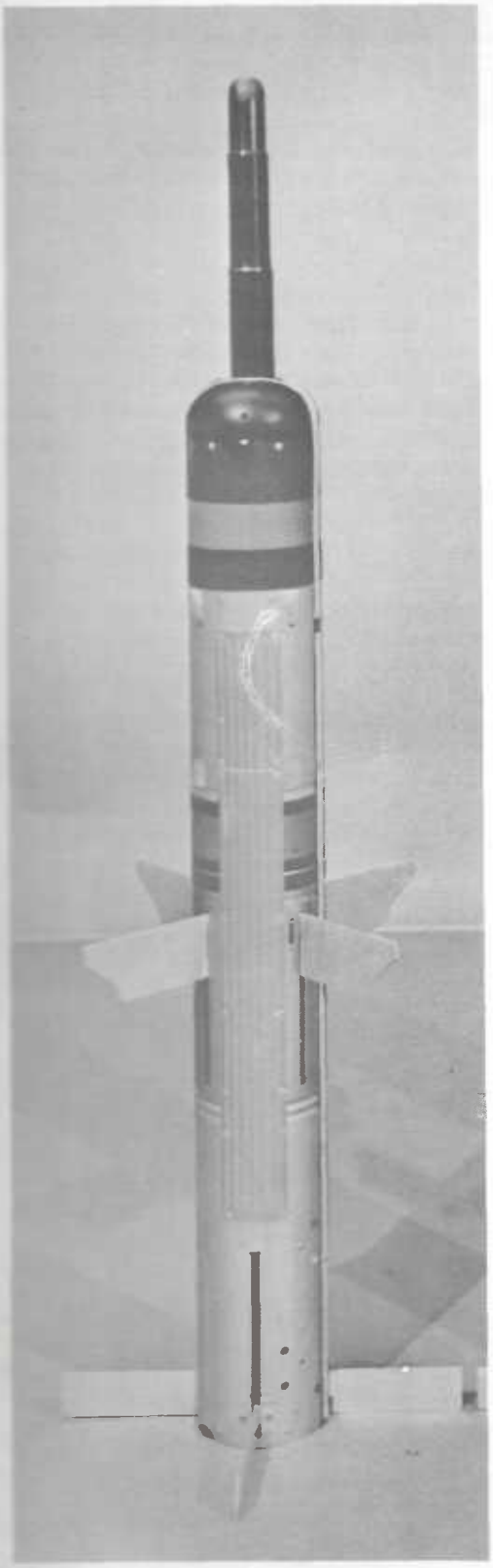
MORTON THIOKOL, INC.
Huntsville Division

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

CHAPARRAL MOTORS SHIPPED ON EXPEDITED SCHEDULE "THANKS TO EMPLOYEES IN ALMOST EVERY SECTION OF THE PLANT"

The Chaparral Qualification Program passed a significant milestone this week with the delivery of twenty-four motors. The motors will be tested by the Army as part of a program to qualify Morton Thiokol as a supplier of the next generation of Chaparral Minimum Smoke Motors. These delivery motors have been manufactured, assembled, painted, and delivered on an expedited schedule with virtually every section in the Plant working hard and cooperating to meet this critical schedule. Shown here are Charlie Turner and his crew (from left to right), David Boyd, David Lawrence, Dusty Rowland and Tim Brown, who were responsible for motor finishing, hanger installation and motor assembly.

HUNTSVILLE DIVISION'S TOW 2 FLIGHT MOTOR APPROVED By ARMY AS ALTERNATE



Hughes Aircraft Company of Tucson, Arizona notified us last week that the U. S. Army Missile Command TOW Project Office had approved our TX771 motor as an alternate flight motor for the TOW 2 antitank missile. Flight motors are currently being supplied to Hughes by Hercules.

Our motor successfully completed Qualification Testing last August; and in November, Hughes submitted an Engineering Change Proposal requesting Army approval of the Huntsville Division as a second source. A contract for production of our first 6,000 motors in 1985 is expected within the next few weeks. Subsequent yearly buys are anticipated.

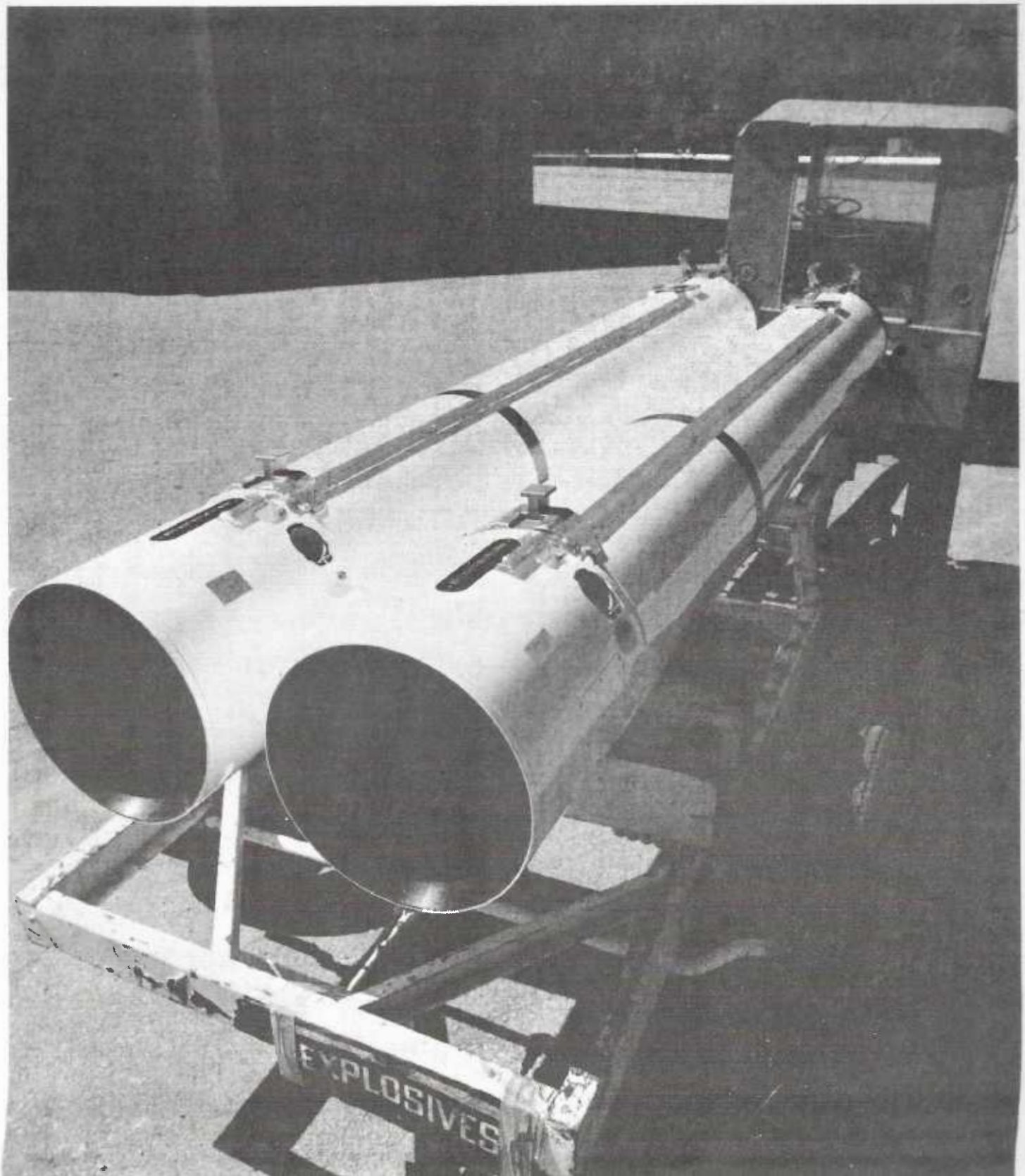
TOW 2 is a tube-launched, optically tracked, wire-guided antitank missile system which can be launched from ground tripods, armored and unarmored vehicles, and helicopters. Our minimum smoke motor provides thrust to the missile during flight.

This is another example of the employees of the Huntsville Division's continued excellence in developing high technology rocket motors for our national defense. Now, we must concentrate on maintaining our competitive position through efficient production. TOW 2 will be the first motor manufactured in the new South Plant Facility.

MK 70 TEAM DELIVERS - AS USUAL

STANDARD MISSILE

Shipment of 22 MK 70 motors in January continued an unbroken record of meeting contract delivery requirements on or ahead of schedule. This was accomplished in spite of hardware shortages and lost snow days. Thanks to the extra efforts and dedication of all MK 70 team members.



The Employee News Bulletin

MORTON THIOKOL, INC.

Huntsville Division

July 27, 1984

Publication for Employees of Morton Thiokol (Not cleared for public release)

EDITOR: Jo Killian 882-8178

MK 70 - PERFECTION STRIKES AGAIN!

The MK 70 team scored their fifth 100% award fee rating in a row when the General Dynamics Award Fee Board authorized another "Outstanding" rating and a 100% award for the Division's efforts during the period of February 1 through May 31. The major factor in the award was the work necessary to deliver the motors in July for the USS Mahan loadout on July 12.

In discussing the award, L. R. Dutcher, Vice President and SM-2 Program Manager at General Dynamics, noted that loadouts are the most important reason for the program - the most important thing we do. Ship schedules are set sometimes 1-2 years in advance and are very limited in flexibility to change.

Dutcher said: "The efforts of the people at Huntsville Div. was more than outstanding - greater than 100%. We were challenged with a tight schedule, and we accomplished it through the dedicated efforts of many people in the division."

All employees that worked to make the ship loadout possible can be proud of this accomplishment. It would have taken only a few that didn't care to have caused us to fail; that did not happen because we are a success-oriented Division with PEOPLE TO MAKE IT happen. MANAGEMENT SAYS THANKS FOR A DIFFICULT JOB WELL DONE.

DELTA 180

In the midst of a crisis
the rocket was launched.
As it ascended and pulsed
and passed out of view
the hope of the space program
was rekindled anew.

Out of the ashes of its
most recent disaster,
riding the shock waves
on the wings of a Phoenix;
Under the guidance of
preferential players
it peeled off its boosters
and stages in layers.

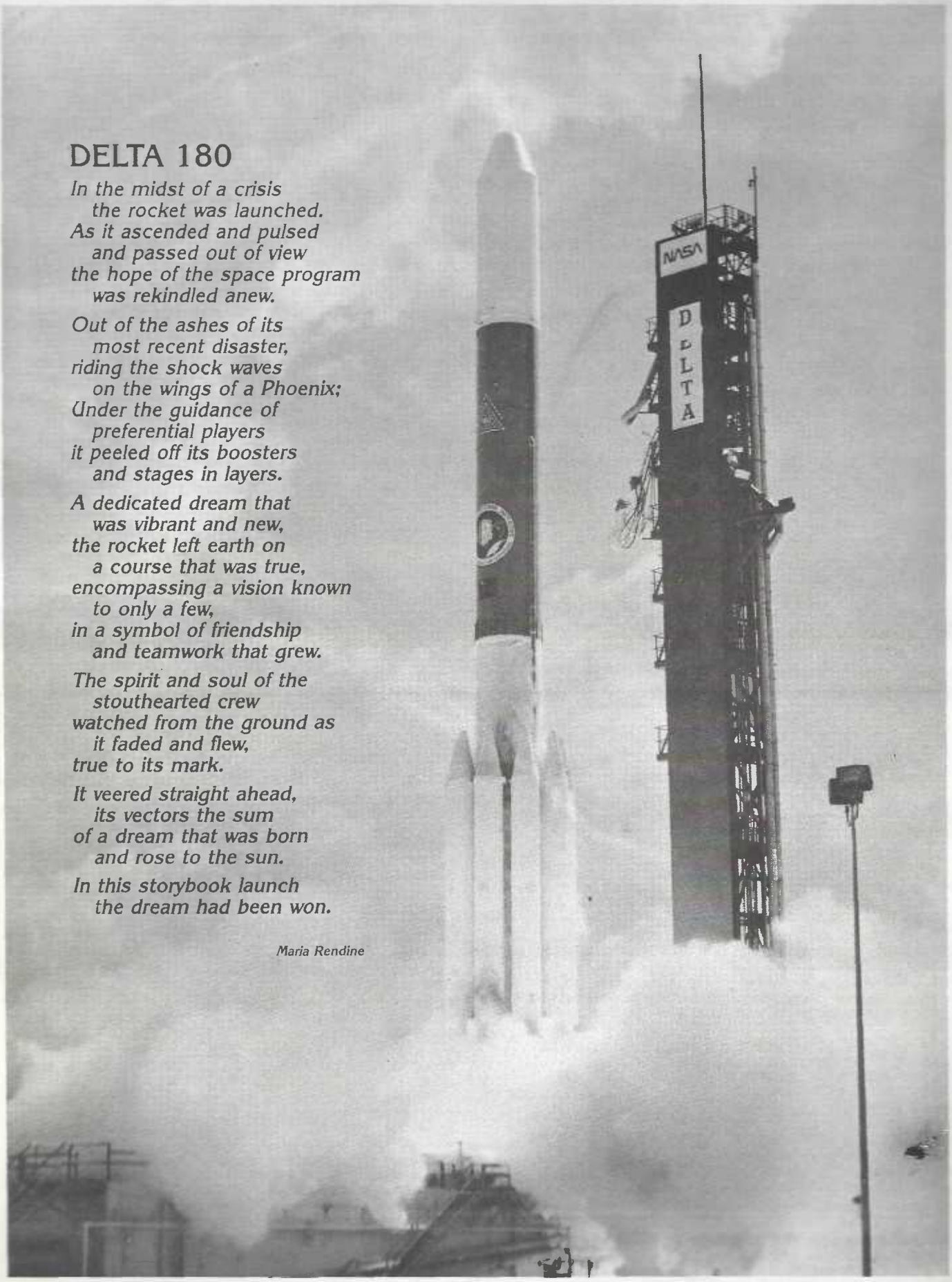
A dedicated dream that
was vibrant and new,
the rocket left earth on
a course that was true,
encompassing a vision known
to only a few,
in a symbol of friendship
and teamwork that grew.

The spirit and soul of the
stouthearted crew
watched from the ground as
it faded and flew,
true to its mark.

It veered straight ahead,
its vectors the sum
of a dream that was born
and rose to the sun.

In this storybook launch
the dream had been won.

Maria Rendine



VT-1 MADE BY MORTON THIOKOL/HUNTSVILLE EMPLOYEES

The VT-1 motor (TX833) currently in development, recently made the front cover of the LTV Missiles and Electronics Group newsletter. Flight tests are planned through the middle of this year. The front cover is shown here:

Missileer

LTV Missiles and Electronics Group | Published for the Missiles Division | Vol. 2, No. 1 | January 14, 1988

READYING VT-1 — *Missiles Division mechanics are preparing the VT-1 antiaircraft missile for test-firing in France during the last week in January. The Mach 3.5, 10-kilometer range missile is being developed by the division under a contract signed recently with Thomson-CSF. From left to right are Tommy Cartwright, Jimmy Sims and Brent Branum, all from missile fabrication and assembly.*

Castor IVB To Boost MAXUS

In early July, Thiokol signed a contract with MBB/ERNO of Bremen, West Germany to develop the Castor IVB rocket motor for the German and Swedish MAXUS Program. The purpose of the MAXUS sounding rocket is to provide up to 15 minutes of microgravity time for European scientific experiments. These experiments will target chemical, metallurgical, and pharmaceutical research in zero or microgravity conditions.

The Castor IVB with the microgravity experiment payload will be launched essentially straight up to an altitude of approximately 360 miles above the earth. During the coast phase and beginning of descent, the payload will be separated from the rocket and experience near zero gravity conditions for about 15 minutes. The experiments in the payload section will be conducted during this 15-minute microgravity period.

The Castor IVB motor is very similar to the Castor IVA motor we have been manufacturing and delivering to McDonnell Douglas for the Delta II launch vehicle. Castor IVB will use the same case, igniter, and propellant formulation as Castor IVA. The major difference in Castor IVA and IVB will be in the nozzle. The IVA uses a fixed nozzle, canted 11 degrees to the motor centerline. The IVB will have a movable nozzle capable of vectoring 6 degrees in all directions. This new nozzle and its actuation system will enable the Castor IVB to be guided--a first for the Castor series. Three motors will be test fired in 1990 at the Army's Test Area to qualify the new Castor IVB.

According to Mike DeFatta, Program Manager, the MAXUS Team is hard at work designing and analyzing the new motor. The Castor IVB motor offers opportunities for the Huntsville Division to continue the dependable Castor tradition. **RR**

Cal Wiggins, Vice President and General Manager, signs the MAXUS contract while Jim Crane (left) and Ron Clements (right) look on. Jim is the New Business Manager for this program, and Ron is the Programs Director.

CASTOR IV MOTORS USED ON DELTA ARE STILL SUCCESSFUL - CUSTOMER PRAISE

The following two notes were received from Customers regarding the Delta Vehicle program that uses nine of our Castor IV motors for each launch.

"TO Delta Project Manager - August 20, 1984 Another special thanks and congratulations to the people of Delta. The AMPTE launch was, as usual, handled with professional skill from start to finish. I keep thinking that maybe I should worry more than I do about launches but the Delta Project keeps proving that I don't need to. I do know that there is no "routine" in your work and that continued attention to detail is required. Thanks again. Delta is real productivity." Noel W. Hinners

"To the Delta Team: I would like to corroborate Noel Hinners' expressions above. I do worry a great deal, but your dedication and proficiency always allay my concerns and allow Delta to prevail over its problems. The next 2 months will be a challenge that you will meet with your demonstrated professional capability for you are truly...'THE BEST THERE IS.' Thanks!" Bill Russell, NASA

The Employee News Bulletin

March 18, 1977

Thiokol / HUNTSVILLE DIVISION

Publication for Thiokol Employees
(Not cleared for Public Release)
EDITOR: Jo Killian 876-5905

OPERATIONS TECHNICAL COMMITTEE

Members of the Operations Technical Committee were recently appointed by Dick Wall, Director of Operations. They are shown above. Seated are Roy Murphy, Chairman; Lucille Pockrus, Secretary, and Rex Atchley - this committee's first customer. Members are John Nelson of R & D, Bobby Tanner of Engineering, John D. Brown, Manufacturing, and Billy Ray Yell of Quality.

****

HISTORY

LETTER CONTRACT for 63 TX-354-5 motors received from the Air Force to be used on the TAT Vehicle. This contract is for about $2 Million and the total contract is expected to amount to about $5 Million.

BILL BARNES, DEANE HERBERT, GIL SCHLENDERING, CARL HAMMOND AND JIM BERRY to visit Space Systems Division to negotiate a contract resulting from our proposal for sixty TX354-5 motors for use on an improved TAT Vehicle.

(Copied from Dec. 10, 1965 Bulietin)

BILLY RAY YELL RECEIVES PRO ACHIEVEMENT AWARD

Billy Ray Yell was formally recognized recently for his outstanding performance with the PRO Achievement Award. Billy Ray was nominated by his boss, Wray Goode, who says:

"Billy Ray Yell should be recognized for the outstanding initiative he has exhibited in training Plant Inspectors, Operators, Foremen, Receiving personnel, Control Laboratory personnel and others in the proper implementation of 'inspection status control,' procedure compliance, and preparation of travelers.

Mr. Yell has performed above and beyond his normal duties as leader of the Process and Product Inspection Group. He has developed his own training materials, kept records of people involved and documented his training meetings. He has conducted these meetings at times (off-shift) that were most advantageous to the Company and people involved, at personal sacrifice.

Billy Ray spends a great deal of extra time working with Motor Manufacturing and Quality Department people to improve their "on-line" performance relative to our products and to satisfy our in-plant customers. In addition to his training activities, Mr. Yell handles a heavy load of formal and informal "on-line" audit activities, which are conducted or coordinated by himself, various Quality and Production Engineers, and other Inspection personnel.

Billy Ray's knowledge of Motor Manufacturing and Inspection operations is invaluable and is used to coordinate, instruct and assign inspectors to achieve the most efficient utilization of resources. He is dedicated, hard-working and quick to respond to direction and request, loyal to the Company and works well with customer representatives. His efforts have resulted in numerous compliments from Operations Directorate and Quality Directorate management. Billy Ray is a real PRO."

Billy Ray is shown at the award presentation with Sam Zeman, Manager of Quality Assurance, and Wray Goode, his Supervisor.

FOR SALE: Automatic Garage Door Opener with Remote Control. Sears 1/3 HP. Perfect condition. $125.00 Call Dave Burns, 144.

FOR SALE: Plastic storage chest with lock, fits regular size pick-up truck. $40. Call Jim Hightower 412 or 881-2977.

FOR SALE: 1983 Chev S-10, automatic with overdrive, power steering, brakes, locks. White on blue, 27,000 miles. Excellent condition. New costs $10,500- asking $6,400. Call Fred Yarbrough at 525 or 232-4410.

The Employee News Bulletin

MORTON THIOKOL, INC.
Huntsville Division

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

James Motes Receives Division's First PRO Employee Achievement Award

Plant Inspector James Motes is the Division's first to receive the PRO Employee Achievement Award.

James came to the Division in May 1957 as a Process Inspector. His contributions in the area of quality inspection have been numerous over the years. His attention to detail really paid off last week. His initiative prevented four MK-70 motors from being loaded short of propellant, which could have resulted in potential rejects. The motors were loaded, the casting can was removed, and the motors were ready for cure when James Motes decided to examine each of them for propellant level. THIS WAS NOT ONE OF HIS ASSIGNED INSPECTION POINTS, but he had been instructed to keep his eyes open for any other anomalies after he completed his mandatory inspections. He noticed that the propellant level had dropped abnormally after release of vacuum and the motors were short of propellant. He called this to the attention of others and corrective action was taken to add more propellant. A potentially expensive problem was thus avoided. Just a little extra attention saved a lot.

Thanks, James, for being a POSITIVE RESULTS ORIENTED team member!

James Motes (right) receives Divisions first PRO Employee Achievement Award from his supervisor, Billy Ray Yell.

Here's Millie Troup and Bill Honea

This is Billy Ray Yell, Jimmy Hill, and Allen Thomas

THIOKOL MANAGEMENT CLUB OFFICERS & DIRECTORS

Pictured from left to right: Gene Thomas, Louise Fenton, Gary Davis, Jo Killian.

Employee News Bulletin

February 16, 1973

Thiokol / HUNTSVILLE DIVISION

THIOKOL MANAGEMENT CLUB OFFICERS & DIRECTORS

Pictured from left to right: Gene Thomas, Louise Fenton, Gary Davis, Jo Killian.

HOW MANY THIOKOL EMPLOYEES CAN YOU IDENTIFY?

We think this is an American Rocket Society Field Trip to Tullahoma (AEDC) in about 1955.

SERVICE AWARDS BANQUET

The Service Awards Banquet Committee worked hard to makean enjoyable evening for us. The Chairman was Steve East, and other memebers were Major Kidd, Mary Whisenant, Cecil Stokes, Faye Edmonds, and Donna Summerville. The new member this year was Dottie Luke of Marketing.

This is David Polk, Gene Burroughs, Billy Beal, Charles Moon

Tom Newby, James Evans, Andrew Mitchell

Ralph King, Lawrence Miller, John McGee, J. W. King, Joe Holley

This completes our Service Awards Banquet Presentation

Hill English, Bill Cooley, Harold Whitesides, Paul McFall, Bo Stokes, Dennis Maser

Felton Norris, Gene Huckaby, Don Nelson, John Nelson, Bobby Tanner

Buddy Blackwell, Wayne Throneberry, Billy Ray Yell

Bill Aycock

The Employee News Bulletin

MORTON THIOKOL, INC.

Huntsville Division

January 30, 1987

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

GODSEY RETIRING AFTER 35½ YEARS AT HUNTSVILLE DIVISION

J. C. "Jack" Godsey is retiring today. He came with the Huntsville Division as a Jr. Electrical Engineer in July 1951, and progressed through the ranks of the Quality Directorate. John Thirkill stated, before he left to take his new assignment as head of the Space Division, "Jack Godsey can take pride in the part he has played in the success of the Huntsville Division." In addition to managing the Quality area, he was responsible for coordinating all activities that would influence the quality of our rocket motors. Items developed or introduced under his guidance are many but include systems of instrumentation for measuring phenomena of oscillatory burning, a complex wave analyzer, high-frequency pressure transducers, special instrumentation for measuring thrust termination transient forces, and a system for obtaining instanteous digital read-out of pressure-thrust integrals. He designed and adapted special gages for use in wind tunnel tests of ducted rockets. Under his direction, great emphasis was placed on non-destructive testing of components and systems. He wrote and presented several technical papers during his career. He was also active in ASQC, AIA - Quality, and served as Chairman of the Pressure and Thrust Measurements Committee of the JANNAF Static Test Panel.

Godsey has always been a "Thiokol man." In addition to his regular assignments he was the type of person who wanted to help get the job done. When Chuck Babcock was recovering from an accident he had in 1972, Godsey was asked and conducted successful Union Negotiations that year. John Thirkill also said of him: "Jack has contributed in many ways to enhance our reputation as a supplier of quality rocket motors."

Jack was born in Birmingham, Alabama, and received a Bachelor of Science degree in Electrical Engineering from Auburn University. He and his wife now live in Guntersville, Alabama, and he said he has enough to keep him busy for several years. He has many hobbies; now he can get more involved with all of them. We wish you a very happy retirement life!!!!!

PRO Awards Banquet

Vernon Bush congratulated by Bill Savelle for award received prior to Vernon's promotion to Director, Operations

Jeanette Shull
with LaThair Munk

Susan Bishop (r)
awarded by
LaThair Munk,
Director F&A

Ron Clements (l)
congratulated by
Programs Director,
Bill Barnes

Faye Jones (r)
with Vernon Bush

Billy Ray Yell (l)
with Sam Zeman

Jack Hagler (l)
wife Helen and
Ernie Fleming

Buddy Blackwell (r)
with Director, Operations,
Vernon Bush

Mary Cash (l)
honored by Sam Zeman,
Director, Quality

The Employee News Bulletin

February 6, 1987

MORTON THIOKOL, INC.
Huntsville Division

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

SAM ZEMAN PROMOTED TO DIRECTOR, QUALITY

Sam Zeman, foremerly Manager of the Quality Assurance Department, has been promoted to Director of Quality. He replaces J. C. Godsey, who has retired. Sam will be responsible for managing the Quality Directorate as well as coordinating quality and safety activities in the Division to assure that we produce rocket motors to meet all the needs of our Customers. Prior to Sam's assignment as Manager of Quality Assurance in 1984, he had been Chief of the Rocket Engineering Section since 1968 in the Engineering Department. In this assignment he had been responsible for hardware design, ballistics, ignition, documentation, and many other engineering activities including failure analyses.

Sam came to the Huntsville Division in 1958 as a Senior Engineer. At that time he directed the development of safe-arm units for Minuteman coordinating all ignition work on the program between Elkton, Wasatch, and Huntsville. In 1959, he was appointed leader of Igniter Research and Development Group where he was responsible for developing the exploding bridgewire initiators, squibs, pyro-technics, igniters and components. He became Chief of the Igniter Section in 1962. In this assignment, he made significant contributions to ignition systems for Minuteman, Pershing, Nike Hercules, Space Booster, Falcon, Littlejohn, Castor, Jupiter Spin and Vernier, Nike Zeus and Spartan. Sam said he has enjoyed being involved with all the programs at the division through the years and likes working with our employees and customers.

He received his B. S. from the University of Illinois, and has had additional courses at Illinois Inst. of Technology, University of Alabama-Huntsville, and completed a management course at Vanderbilt. He has been granted six U. S. Patents and many foreign patents. He has written numerous technical reports and papers for presentation at technical meetings.

He is a member of AUSA, former President of the Management Club, and was active in Toastmasters for years. He and his wife, Nora, are members of the Covenant Presbyterian Church in Huntsville. They have two grown children; one is married and has two children.

ANOTHER RECORD FOR THE HUNTSVILLE DIVISION --- 1,886 ROCKET MOTORS WERE SHIPPED TO OUR CUSTOMERS IN JANUARY 1987. One month in 1986 we shipped 1,822. THIS TAKES A LOT OF HARD WORK BY ALL EMPLOYEES - THANKS FOR ANOTHER JOB WELL DONE!!!!!!

Bill Lovell

on scratch paper pads; David Booth on Sentry materials; Marty Ohrt on Sentry Burn Rate standardization Sentry Propellant Reduction; presentations by Billy Hunter, Manager of R&D; and to Bob Davis for his idea on Sentry liner. Congratulations!

SAFETY TRAINING CLASS GRADUATES

The first Supervisor's Safety Training Course Class graduated on October 27, 1987. This mandatory training course is designed to aid supervision in better performance of their professional duties and to assist them in compliance with OSHA and Army Safety standards. The Class is shown here:

Bill Byess, Wayne Throneberry, Instructor; John Cooter, Bill Yearta, G. D. Carroll, Homer Schrimsher, Tim Ingram, Wayne Steelman, Wray Goode, Jim Byrd, Randy Wells, Billy Ray Yell, Robert Stanley, B. F. White, A. C. Norris, Craig Meeks, Dave Aycock, M. Brewer, Walter Weeks, Darrell Simonds, John Powell, Instructor; and Billy Moon, Jr. Not available for photograph - Bobby Pillow. CONGRATULATIONS!

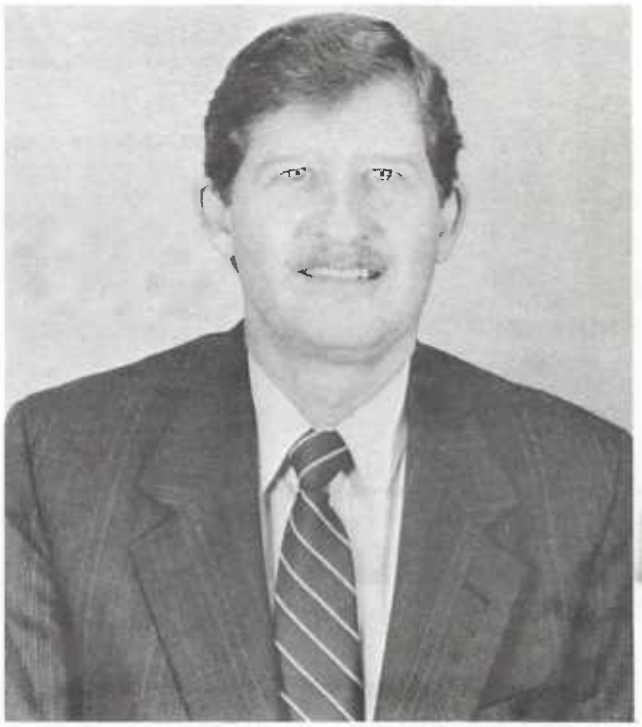
The Employee News Bulletin
MORTON THIOKOL, INC.
Huntsville Division

December 2, 1988

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

CARROLL BOBB NAMED DIRECTOR, QUALITY

Cal Wiggins, Vice President and General Manager of Morton Thiokol/Huntsville, recently announced Carroll C. Bobb as our new Director of Quality. He replaces Sam Zeman who is retiring in January, 1989.



As Director of Quality, Carroll will be responsible to the Vice President and General Manager for the quality assurance, inspection and test of the Division's manufactured items, and for inspection and quality support of purchased items.

Prior to joining our division, he was with Rockwell Int. Mr. Wiggins stated that Carroll brings a very comprehensive and directly applicable background of experience that will be of great benefit for our future activities. Carroll is excited about his assignment and is pleased to be a part of a growing division dedicated to excellence.

He has a B.S. degree in Industrial Management from Clemson University, and is the recipient of an Executive Management Certificate from the Air Force Institute of Technology. He is a Life Member of the Air Force Association; Member, ASQC; Member, National Management Association, Past Member of the Board of Directors of Tulsa Junior College; and a Member of the Methodist Church. Carroll's hobbies are: golf, bass fishing, and coaching. He said that he has been involved in all levels of baseball.

He and his wife, Mary, have three sons. Gary works in Purchasing at Rocketdyne (Rockwell) in Canoga Park, California. He is engaged to a young actress. Gary has double degrees in Accounting and Finance. Their son, Randy, is a senior at the University of Arkansas. He is a baseball player. He was All American in Junior College and in the Southwest Conference. Set Arkansas and Southwest Conference consecutive game hitting streak. He hit the home run against the University of Georgia in 1986 in the World Series to win the game. Their son, Andy, received an Associate Degree from Tulsa Junior College. He is now in Hollywood, California, going to music school. He is studying to be a rock and roll guitar player. He has taught music and has had his own band.

The Employee News Bulletin

MORTON THIOKOL, INC.
Huntsville Division

November 21, 1986

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

THIRKILL RETURNING TO UTAH
SAVELLE NAMED ACTING GENERAL MANAGER OF HUNTSVILLE DIVISION

John Thirkill

Bill Savelle

John Thirkill announced this week that he will be returning to Utah effective March 1, 1987. He has been asked to be Vice President and General Manager of the Space Division at Wasatch replacing Ed Dorsey who is retiring. Even though he is delighted to get back to the mountains, the snow, and the challenge before him in his new assignment - he has stated that he also likes this area of the country and his work and the people at the Huntsville Division.

John also announced that Bill Savelle will be the Acting General Manager of the Huntsville Division. Bill comes to this assignment from being Director of Operations where he was responsible for rocket motor production and plant engineering activities. He first joined Thiokol in 1953, was called into a two-year tour of duty in the Air Force and rejoined us in 1959 as Program Manager of the Nike Zeus program. He was promoted to Manager of Propulsion Requirements in 1962, and became Director of Operations in June 1984. He is a graduate of Mississippi State University where he was in the Sigma Gamma Tau National Honor Society in Aerospace Engineering. Bill has also written several papers on supersonic gas dynamics and air augmented rockets. He was the recipient of the Commendation Medal when he was in the Air Force. He is a member of AIAA, active in community activities including the Huntsville Symphony and the Faith Presbyterian Church.

Bill said he enjoys working at this Division because of getting to work with the many levels of people with above average capability. He is looking forward to working with the wide variety of projects in the new assignment, but solicits the help of all employees in order for the Division to continue to move forward.

The Employee News Bulletin

December 18, 1987

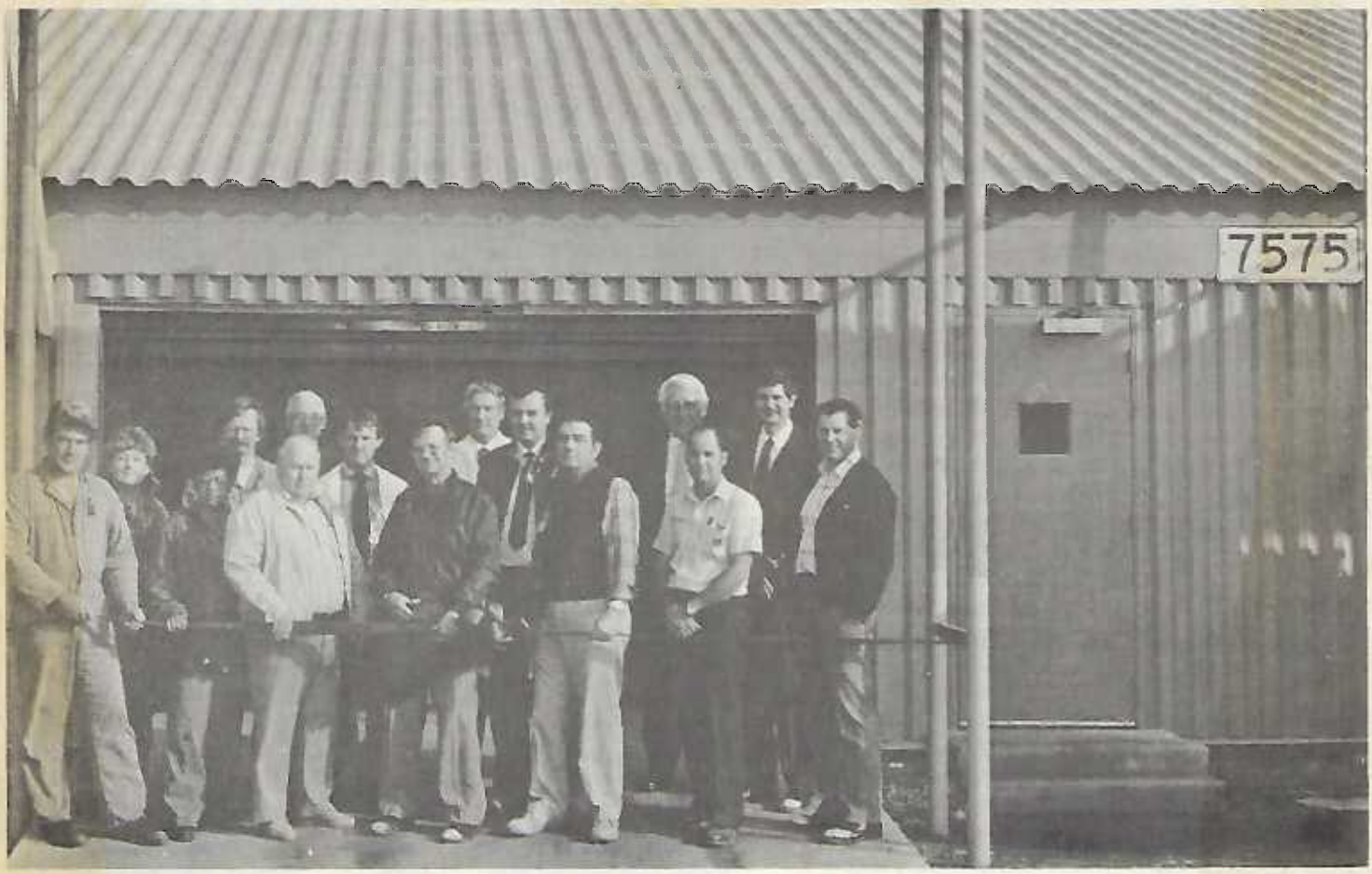
MORTON THIOKOL, INC.
Huntsville Division

Publication for Employees of Morton Thiokol (Not cleared for public release)
EDITOR: Jo Killian 882-8178

CALVIN G. WIGGINS TO BE VICE PRESIDENT AND GENERAL MANAGER OF HUNTSVILLE DIVISION

Luther C. Johnson, Morton Thiokol's Vice President of Tactical Operations, has announced that Calvin G. Wiggins will become Vice President and General Manager of the Huntsville Division of Morton Thiokol effective January 4, 1988. Mr. Wiggins, who has been Vice President and Assistant General Manager of Strategic Operations in Utah, has nearly 28 years of aerospace experience with an extensive background in management and manufacturing operations. Since 1960, he has held key positions at Morton Thiokol's Wasatch facility in Brigham City, including Vice President and General Manager of the Space Division and Vice President of Quality Assurance and Safety. Earlier, he was Manager of Manufacturing, Manager of Manufacturing Engineering, and supervisor of a variety of manufacturing operations. He served as an Officer in the U. S. Navy. He received a BA degree in chemistry from Columbia University in 1958 and joined our company in 1960.

RIBBON CUTTING CEREMONY OPENS THE MK 36 CASE PREPARATION FACILITY



On Wednesday, December 9, 1987, the Plant Engineering Department released the new, MK 36 Case Preparation Facility (Building 7575, in the South Plant) to The Motor Manufacturing Department. MK 36 case preparation work will be moving from Building 7368 in the North Plant to 7575 following the Christmas & New Year Holidays. Above is Mr. Charlie Williams turning the facility over to Mr. John D. Brown shown cutting the ribbon.

We wish to thank literally dozens of employees from many

Best [illegible]
a happy [illegible]
[illegible]

my friend!
Good luck!
Sue

J.B.
You're still the only one to pitch
a hitter in the golf league.
Don't look at it and do it again.
Thanks for our relationship that
[illegible] when we were young men
always treasure that.
Thunder

Wishing you the best
in your retirement
Jack Kenney

JB
I appreciate your patience
with me through the years
and all you have taught
me. I am lucky to be "raised"
by guys like you and John L,
Charlie Steger, etc... I will
miss you.

Mike Mu[illegible]
(i.e Mullet!)

Have fun and
enjoy your retirement!
Jennifer Warth

Best Wishes
Rick Patterson

Best Wishes for you
now and in Retirement
Billy Ray yell and I
hope you live to be
a 100 — Dave Hicklen

Billy Ray, forget all
I'll never and
the good times and
laughs over there in
inspection with you +
Gordon Yarusin. Those Days!!
were truly the good Ole Days!!
Remember the cup of hot water??
Take good care of yourself and
Dot. Enjoy your Retirement!!
Mary B.

Best Wishes!
May you have a happy
and healthy retirement.
Angela S.

BILLY RAY,

I WILL ALWAYS APPRECIATE WHAT YOU TAUGHT ME ABOUT BUILDING A ROCKET MOTOR (INCLUDING WHICH END THE SMOKE COMES OUT OF). I ADMIRE YOUR ACCOMPLISHMENTS AND WILL MISS YOUR CALM AND HUMOR. BEST WISHES TO YOU AND YOUR FAMILY.

Lon Bluvenitz(?)

Enjoy your retirement!
Donna (highpockets) White

WE'LL MISS YOU IN YOUR RETIREMENT, J.B.
HAVE FUN & ENJOY
YOU DESERVE IT
Jim Liddle(?) (SLICK)

[illegible] Wishes for [illegible] retirement
W. Hurwallace(?)

Thanks for being my friend!
Good luck!
Sue

J.B.
You're still the only one to pitch a shutout in the golf league.
Get back at it and do it again.
Thanks for our relationship. [illegible]
[illegible] when we were young [illegible]
[illegible] always [illegible]
[illegible]

Wishing you the best in your retirement
Jack Romney(?)

[illegible] appreciate your patience through the years [illegible] taught [illegible]"

[illegible] fun and retirement!
[illegible]

Billy Ray—

We've worked together for a long time and I have learned quite a lot from you. Thanks for all the help, laughs and fun through the years. I will miss you coming over to the Barn, some of the corrections gave us both a good laugh! Enjoy your retirement with Dot and think about us. It won't be the same anymore! Take care—

Kathy

P.S. I was a major contributor to the old articles you see here, sometimes it's good to be a jack rat. ☺

B.R.
GOOD LUCK & COME BACK OFTEN! THANKS FOR LOTSA HELP.
Frank (25 words or less) Mitchell

Billy Ray Patterson

Billy Ray!
Don't think because you're gone - that you will be forgotten! We're going to miss you. Hope you & Dot share many, many "happy & lazy" years together—
Mandy Clark

GOOD LUCK!
[illegible]

[illegible]

Billy Ray
Don't think
you're gone – the
will be forgotten
going to miss you.
You + Dot share many
many happy + "lazy"
years together –
Mandy Clark

GOOD LUCK

The best of everything to
you Billy Ray,
Robert T. [illegible]

Billy Ray:
We have been @ Thiokol
a long time together... I
will miss your smiling
face. Hope you & Dot
enjoy many happy retirement
years –
Ruthy Wilson

Billy Ray –
It won't be the
same without you.
Enjoy yourself but
don't forget to come
see us –
Gary N. Dial

Billy,
I know you will be
looking more for than
we did so – have fun
fun fun & thanks
Jimmy Randall

Best Wishes
John Epps

Have A HAPPY Retirement
[illegible]

Best Wishes

Congratulations!
Best of Luck
Don't Relax too hard
Roll Tide!!
Tom

Thank for the knowledge and being a friend

BRY,
Working with you has been a pleasure. That's rare. Enjoy yourself and keep in touch. Stay away from the work

Best Wishes
Duff

Carroll Good Luck
Joe H

Best of Luck in Retirement,
Jeff

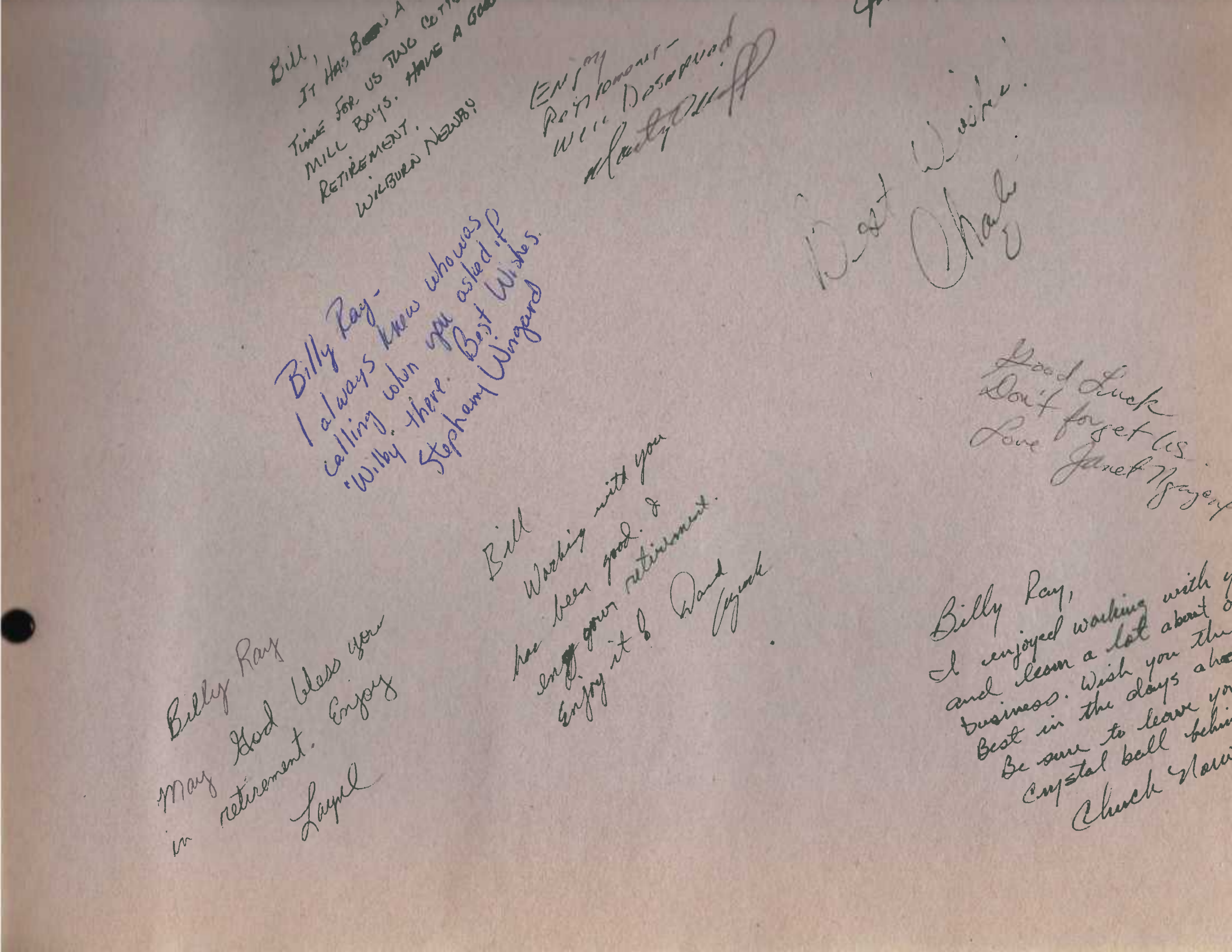
Be Sure to enjoy yourself
Best Wishes

Bill,
It has been a good time for us two cotton mill boys. Have a good retirement.
Wilburn

Enjoy Retirement - Well Deserved

Best Wishes,

Best Wishes



Bill,
It Has Been A
Time For Us The Cotton
Mill Boys. Have A Good
Retirement.
Wilburn Newby

Enjoy
Retirement
Will Dossman

Best Wishes
Chuck

Billy Ray-
I always knew who was
calling when you asked if
"Willy there. Best Wishes.
Stephany Wingard

Good Luck
Don't forget us
Love
Janet Joyce

Bill
Working with you
has been good &
enjoy your retirement.
Enjoy it & David
Joyce

Billy Ray,
I enjoyed working with y
and learn a lot about
business. Wish you the
Best in the days ahe
Be sure to leave yo
crystal ball behi
Chuck Mor

Billy Ray
may God bless you
in retirement. Enjoy
Layne


PRO


3
9


PRO