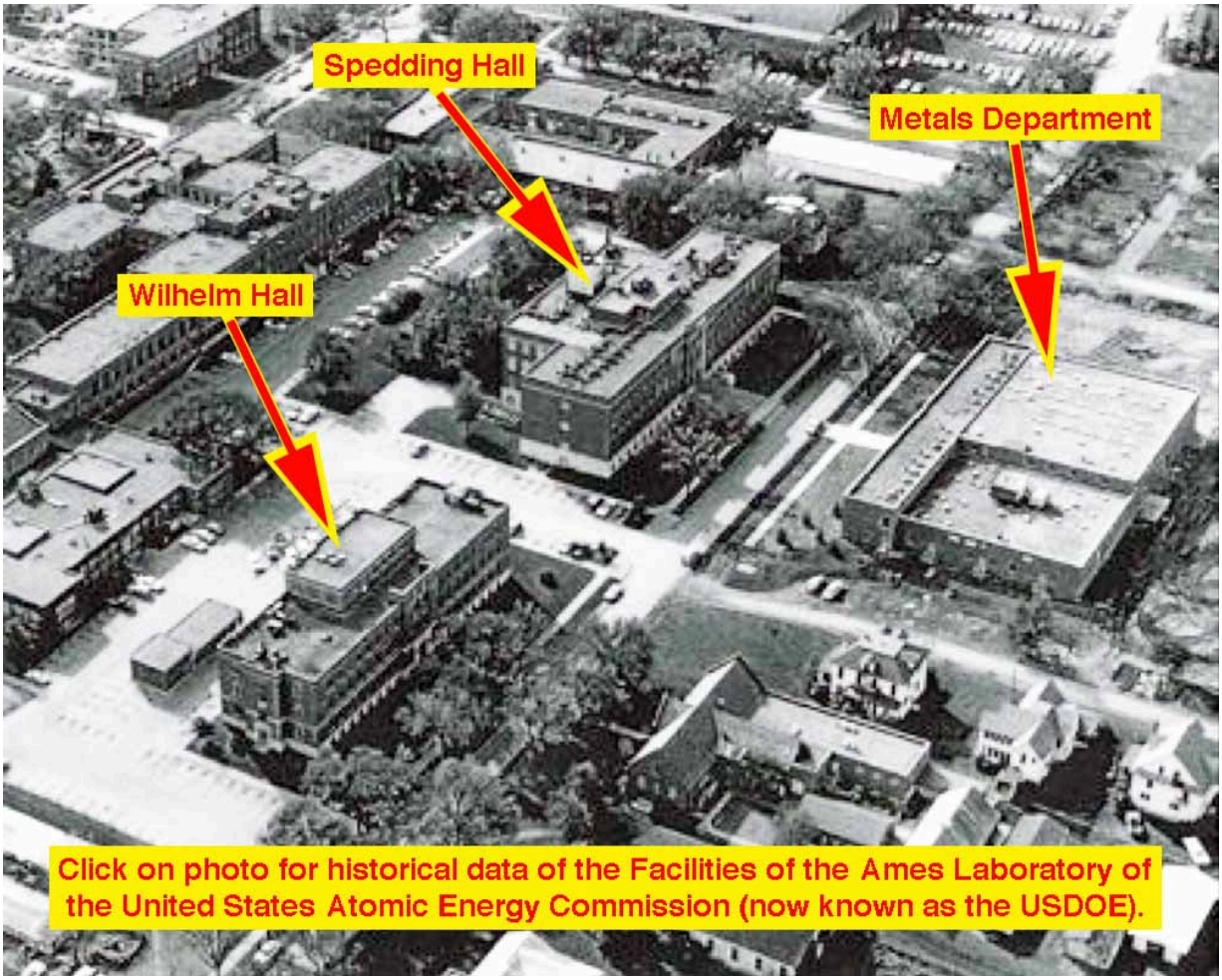
Nuclear Research: I was recruited by the Ames Laboratory of the United States Atomic Energy Commission while in my senior year in college, to work at a subterranean nuclear research facility that was located beneath the campus of Iowa State University, upon graduation. This facility had previously produced over two million pounds of enriched uranium for the Manhattan Project. One of the entrances to this facility was by way of an elevator that was located within Spedding Hall. My areas of work included Spedding Hall, Wilhelm Hall, and the Metals Department. See the aerial photo below.



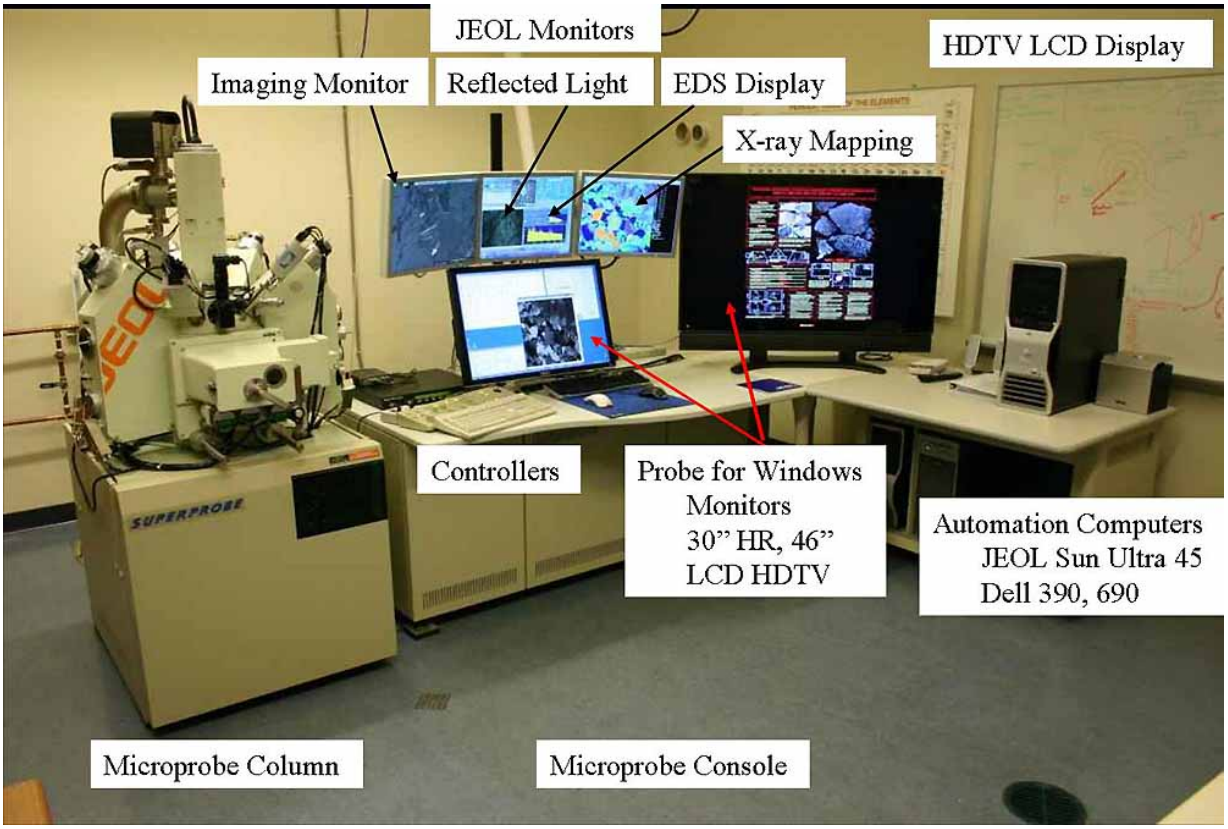
The area beneath the Iowa State University campus was an underground nuclear research and production facility, with cyclotrons, nuclear reactors, ion exchange columns, spectrometers that were the size of grand pianos, and a myriad of highly technical equipment. There were at least four other entrances that I was aware of that were via long descending tunnels. As you can probably imagine, each entrance, including

the elevator in Spedding Hall had a security guard who would check your credentials upon entry and provide you with your security badge, and recover your security badge upon exit.

My work revolved around an electron beam microprobe, a device that provided microscopic, non-destructive, qualitative and quantitative analysis of metallurgical samples — presumably of military interest. This device worked in a similar manner to a scanning electron microscope, except the the scanning electron beam was strong enough to knock electrons from the K-orbit of an atom and send then hurling into the atom's nucleus — this is known as K-capture. Upon K orbit electron capture, the nucleus would immediately emit an X-ray photon whose frequency or wavelength was characteristic of the nucleus of the atom that had just captured the K-electron. Since the electron beam performed a raster scan of the metallurgical surface, the position of the electron beam with respect to time was known and recorded, as was the X-radiation that emanated from the irradiated atom's nucleus. By compiling

this information in real time, video images can be constructed to reveal the metallurgical qualitative and quantitative makeup of the sample, as well as an enlarged image of the sample (from capturing the backscattered electrons that impinged upon the sample).

I was recruited for this position because I had a degree in chemistry with a specialty in instrumental methods of analysis, additional training in electrical and mechanical engineering, and was able to read and understand technical French — much of the original work on this equipment was done in France by Raimond Castaing, et al. Below is a photo of a modern electron beam microprobe; the one that I was responsible for was a much earlier version that was not as compact, nor as sophisticated.



Tanks: In the middle of 1966, I accepted a job with the Defense Engineering Division of Chrysler Corporation as a Test and Development Engineer, where I worked upon a number of interesting projects that included:

1. The development of the M48A4 tank, which was basically an M48-A3 tank hull that we reengineered to accept an M-60 series tank turret and cupola. The result was an M48 tank

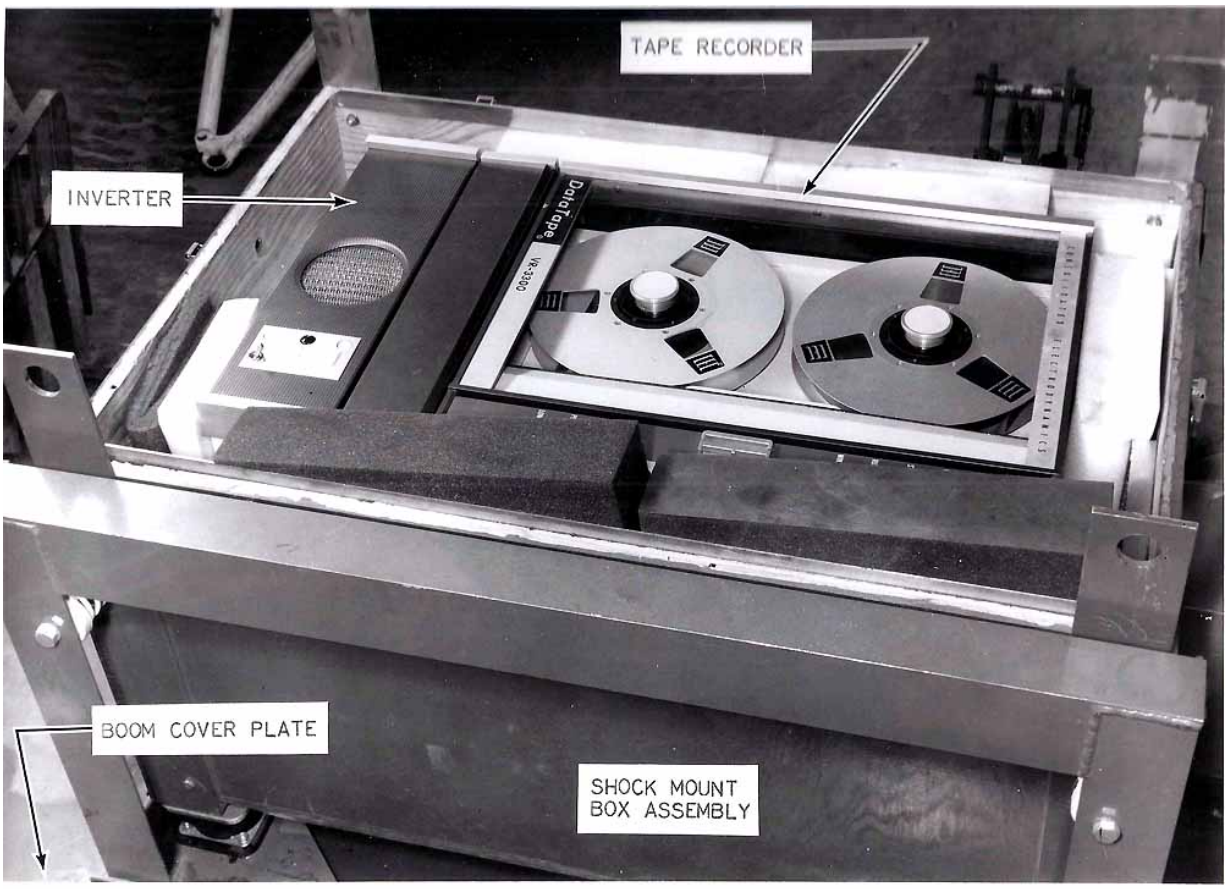
that had significantly greater ballistic range and firepower that could be shipped to allies as older equipment that would undergo less scrutiny. Sixty of these tanks were made, some of which were sent to the Israeli Army and were used in the Six-Day War. See photo below.

2. The development of the M60A1E1 tank, subsequently known as the M60E2 tank — a stabilized day and night vision tank that could fire both ballistic and guided missiles (MGM-51 Shillelagh missile) through a combination gun-launcher tube. This tank was unique for its time

as it had a very sophisticated ballistic computer and laser beam rangefinder. This program used the hulls from the M60 tanks whose turrets were retrofitted for the M48A4 tank program that was previously mentioned above. A new stabilized turret and cupola were designed for this program. The original concept was for these tanks to stop an onslaught of Soviet armor should an invasion of eastern Europe occur. The M60E2 tank had a crew of four (a driver, a loader, a gunner, and a commander) and was capable of operating in a chemical, biological, and nuclear environment. This was one of the vehicles that I had the opportunity to command during acceptance testing. Thirty of these M60E2 tanks went to South Korea; the other thirty were sent to Israel (some of which I saw while at a tank base in Israel).

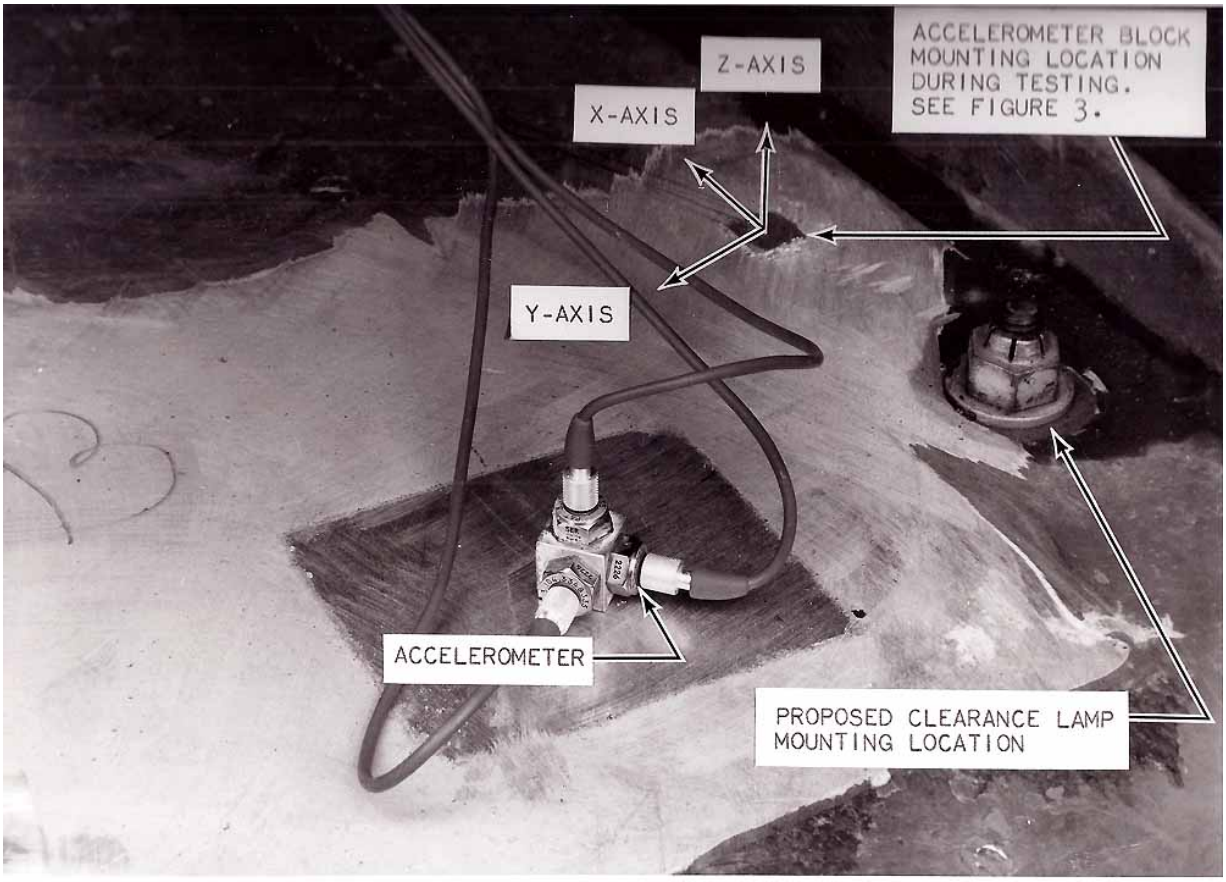
3. Testing of the M728 Combat Engineer Vehicle as a result of clearance lamp failures that occurred during European field operations. This vehicle is basically an M60 series hull with a moldboard (plow) at its front, a winch with a boom at its rear, and a short barreled demolition cannon in its turret. See photo below.

One of my assignments was to outfit this tank with a multichannel frequency modulated tape recorder . . .



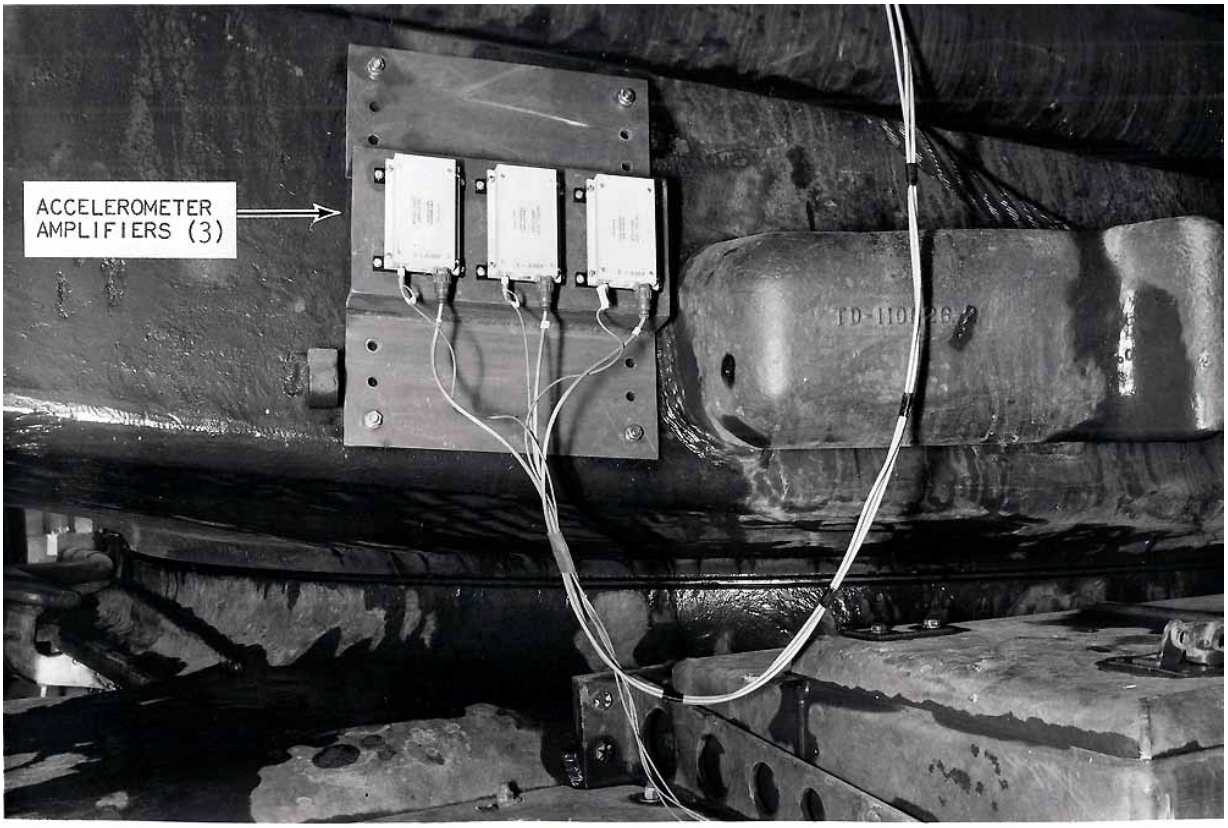
VEHICLE, COMBAT ENGINEER, FULL TRACKED - M728 TAPE RECORDER, INVERTER, AND SHOCK MOUNT LOCATION AND CONFIGURATION FIGURE 5		PA-08-302
Prepared for: ARMY MATERIEL COMMAND By: CHRYSLER CORPORATION DEFENSE ENGINEERING	10-17-66 Date	66-1906 Negative

. . . to obtain three-axis vibration data from various piezoelectric accelerometers that were mounted in the vicinity of the clearance lamps that were failing . . .



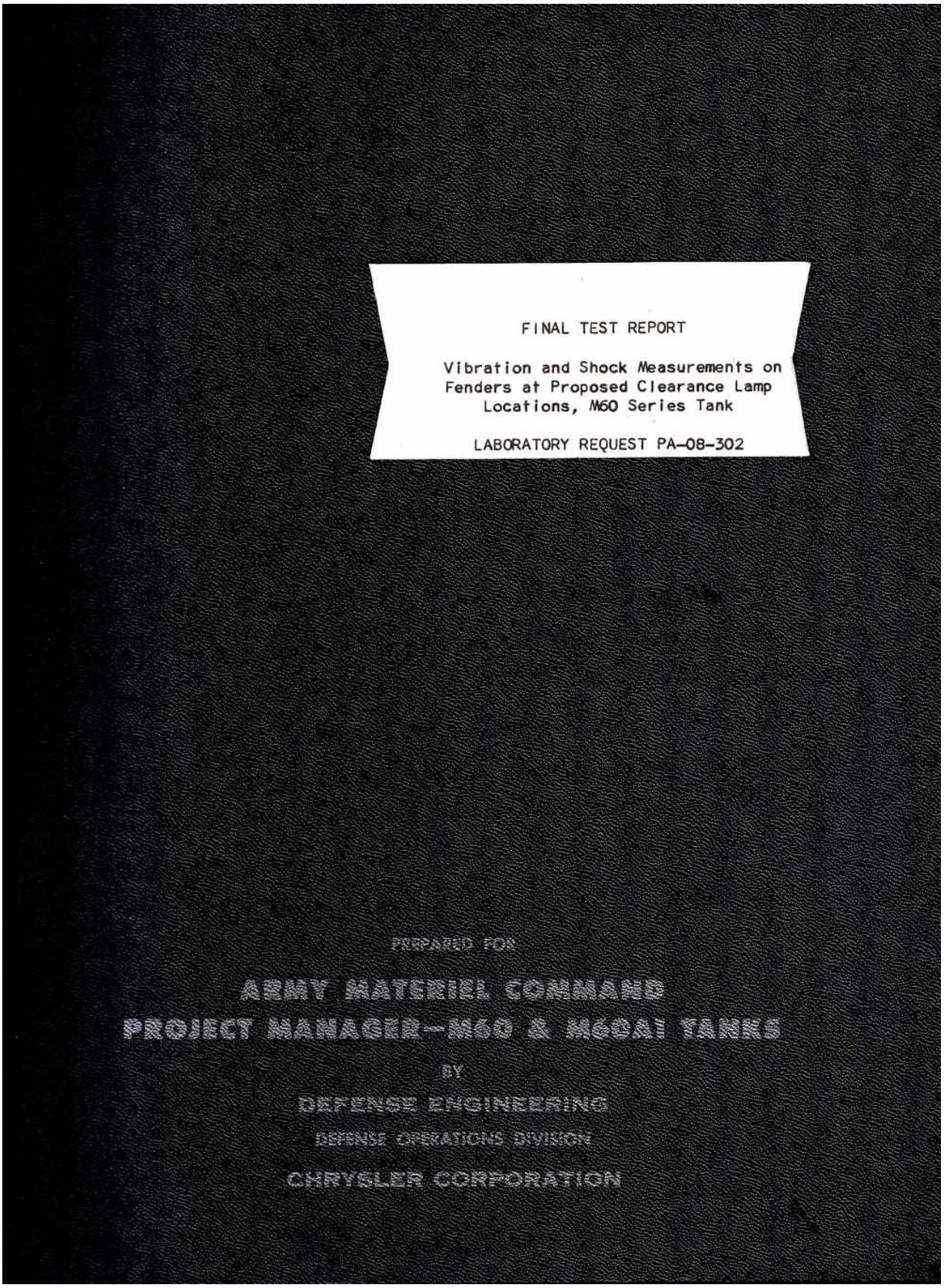
VEHICLE, COMBAT ENGINEER, FULL TRACKED - M728 ACCELEROMETER LOCATION AND MOUNTING CONFIGURATION FIGURE 1 POSITION "B"		PA-08-302
Prepared for: ARMY MATERIEL COMMAND By: CHRYSLER CORPORATION DEFENSE ENGINEERING	10-17-66 Date	66-1904 Negative

. . . where the accelerometers were connected to accelerometer charge amplifiers that sent vibration information to the multichannel frequency modulated tape recorder for analysis . . .



VEHICLE, COMBAT ENGINEER, FULL TRACKED - M728 ACCELEROMETER AND AMPLIFIER LOCATIONS AND MOUNTING CONFIGURATIONS FIGURE 3 POSITION "B"		PA-08-302
Prepared for: ARMY MATERIEL COMMAND By: CHRYSLER CORPORATION DEFENSE ENGINEERING	10-17-66 Date	66-1903 Negative

. . . to determine the stress that the failed clearance lamps received, and, after analyzing the data, to write a report that would detail the findings and recommend corrective action.


FINAL TEST REPORT
Vibration and Shock Measurements on Fenders at Proposed Clearance Lamp Locations, M60 Series Tank
LABORATORY REQUEST PA-08-302
PREPARED FOR
ARMY MATERIEL COMMAND
PROJECT MANAGER-M60 & M60A1 TANKS
BY
DEFENSE ENGINEERING
DEFENSE OPERATIONS DIVISION
CHRYSLER CORPORATION

FINAL TEST REPORT

Vibration and Shock Measurements on Fenders at Proposed Clearance Lamp Locations, M60 Series Tank

LABORATORY REQUEST PA-08-302

REQUESTED BY:

H. H. O'Neill

CONTRACT NO:

DA-20-113-AMC-11170(W)

WORK DIRECTIVE:

70-76

DATE:

21 October 1966

PREPARED BY:

M. S. Arlow

M. S. Arlow

APPROVED BY:

H. R. Anderson

H. R. Anderson
Test Operations

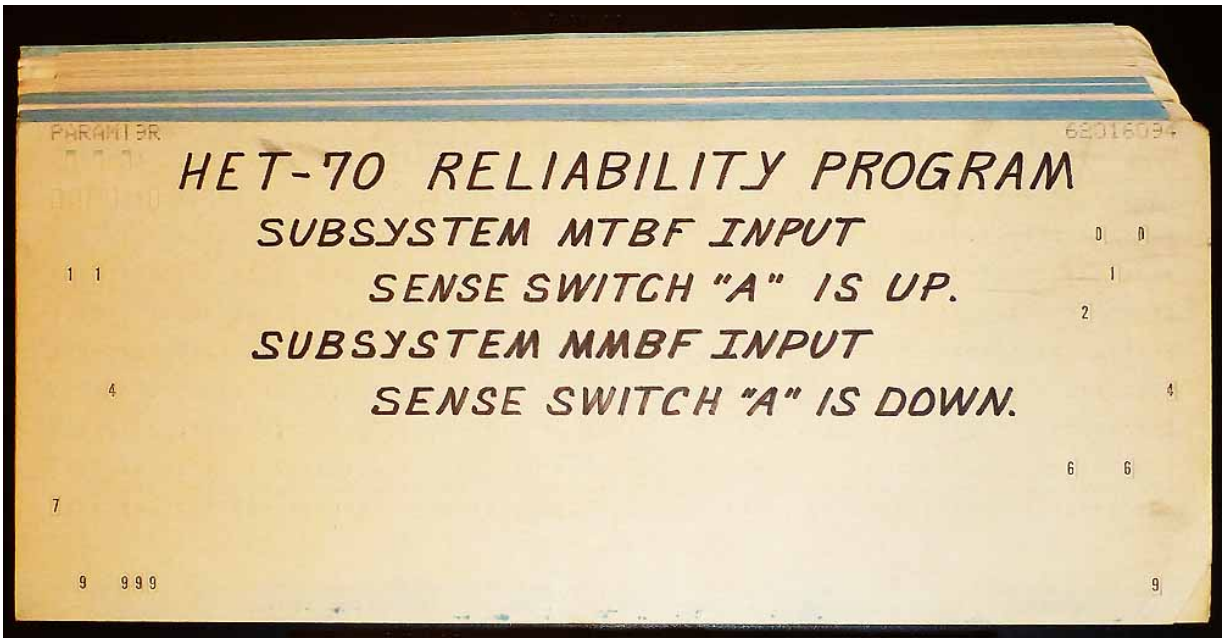
PREPARED FOR
ARMY MATERIEL COMMAND
PROJECT MANAGER - M60 & M60A1 TANKS
BY
DEFENSE ENGINEERING
DEFENSE OPERATIONS DIVISION
CHRYSLER CORPORATION

I also had the opportunity to command this vehicle during testing and found out that at high speed, to my surprise, this tank cornered like a sports car.

4. Hydraulic and mechanical engineering work, and troubleshooting routines for the M60 AVLB This vehicle was basically an M60 series hull with an hydraulically operated Armored Vehicle Launched Bridge attached to its chassis. See the photo that follows.

5. Fortran programming to estimate subcomponent reliability requirements for the HET-70 (the heavy equipment transporter for the main battle tank). Things were quite different in the 1960's; a single computer took up an entire room, required a separate air conditioning system and false floors for cable runs; input was by keypunched EAM cards on an IBM 026

Printing Card Punch machine. See photo below of keypunched EAM cards.



This was an interesting program wherein I had to examine each major transporter component and calculate the reliability requirement to assure a battlefield success over a specific period of time. It should be noted that as my career progressed, my experiences went from hands-on to more intellectual assignments.

6. Linear programming to determine the best equipment and logistics necessary to attenuate advancing columns of Soviet armor in eastern Europe. This was a highly classified project that eventually caused me some serious trouble.

Unknown to me at the time, both of my parents were politically active in areas that were considered by the United States Government to be subversive. My security clearance was immediately suspended during this program and

I was taken into custody by the Bureau of Naval Intelligence for days of intense and heated questioning that occurred in clandestine offices within the old Packard Building in downtown Detroit. See photo below.

This was a very unpleasant and surreal experience that emulated the aggressive interrogations that occurred on the TV series, NYPD Blue After days of interrogation by the

Bureau of Naval Intelligence, I was sent to the VA Hospital in Ann Arbor, Michigan for a psychiatric examination (presumably to see if I was still fit for the work that I had been successfully performing to date, and regarding my ability not to disclose the exact details of my work to others who did not have a need to know what I was doing). See photo below.

After a couple of weeks of prodding and bureaucratic nonsense, my security

clearance was reinstated without further incident.

Aerospace Support Activities: In 1967, I was alerted to a job opening at Cox Instrument Division of Lynch Corporation (owned by Curtiss-Wright) by one of my Defense Engineering Division coworkers. I was hired on-the-spot and began another military career in aerospace support, which eventually led to numerous temporary duty assignments at Kelly Air Force Base. I also immediately filed my Transfer Updating DD Form 48 so as to maintain my security clearance at my new job. To see the panoramic photo below of Kelly Air Force Base, please enlarge your computer screen window.

Soon, I was writing Air Force Technical Orders and was involved in provisioning activities to support aerospace equipment.

Some of my work involved provisioning and documentation support activities at Kelly Air Force Base, where I worked with a brilliant retired Marine by the name of Raymond Parker in Building 131.

On occasion, my work also entailed entering hazardous areas, past the Kelly Air Force Base flight line of B-52 Bombers and obtaining technical data from aerospace ground support equipment. Below are two photos of B-52

Bombers; the first one shows how they were typically lined up on the flight line with their start carts while I was at Kelly Air Force Base, the second photo illustrates their typical armament capability.

Below is a picture of me in civvies, taking a break in a hazardous area at Kelly Air Force Base, circa 1970. Hazardous because of the large amount of jet fuel and hydraulic fluid that is used, under high pressure, during the operation of this equipment — all of which is Class 1, Division 1, Group D (explosive environment usage). Below, I am shown standing in front of a test stand that is used to check out, adjust, and calibrate aircraft engine controls and accessories; my left hand is leaning on one of

those components. Also notice that I did have much more hair at the time.

This area in the above photo contained equipment that was so critical to our national defense that between each such facility was a three to four story high metal ball that was filled with liquid carbon dioxide. If any of the

workplace infrared photosensors were to detect a flash (even from a camera), an alarm would sound and one would have 20 seconds to evacuate before all of the doors would automatically motor shut and liquid carbon dioxide would shower from the ceiling plenums, turn gaseous, and displace all of the air in the facility, extinguishing the fire to save this one of a kind equipment.

It is important to note that each piece of, or accessory to an engine, can be described as a mathematical model. These mathematical models are put together so as to describe proper component or engine operation. Hence, each component had to be tested, adjusted, and calibrated before it can be bolted and lock wired to the next one.

As you can imagine, these facilities were quite large to house such equipment, and were often 800 or more feet long and 100 or more feet wide, hence, a successful egress upon alarm was always problematic and one had to be constantly on alert, and to be ready to leave the

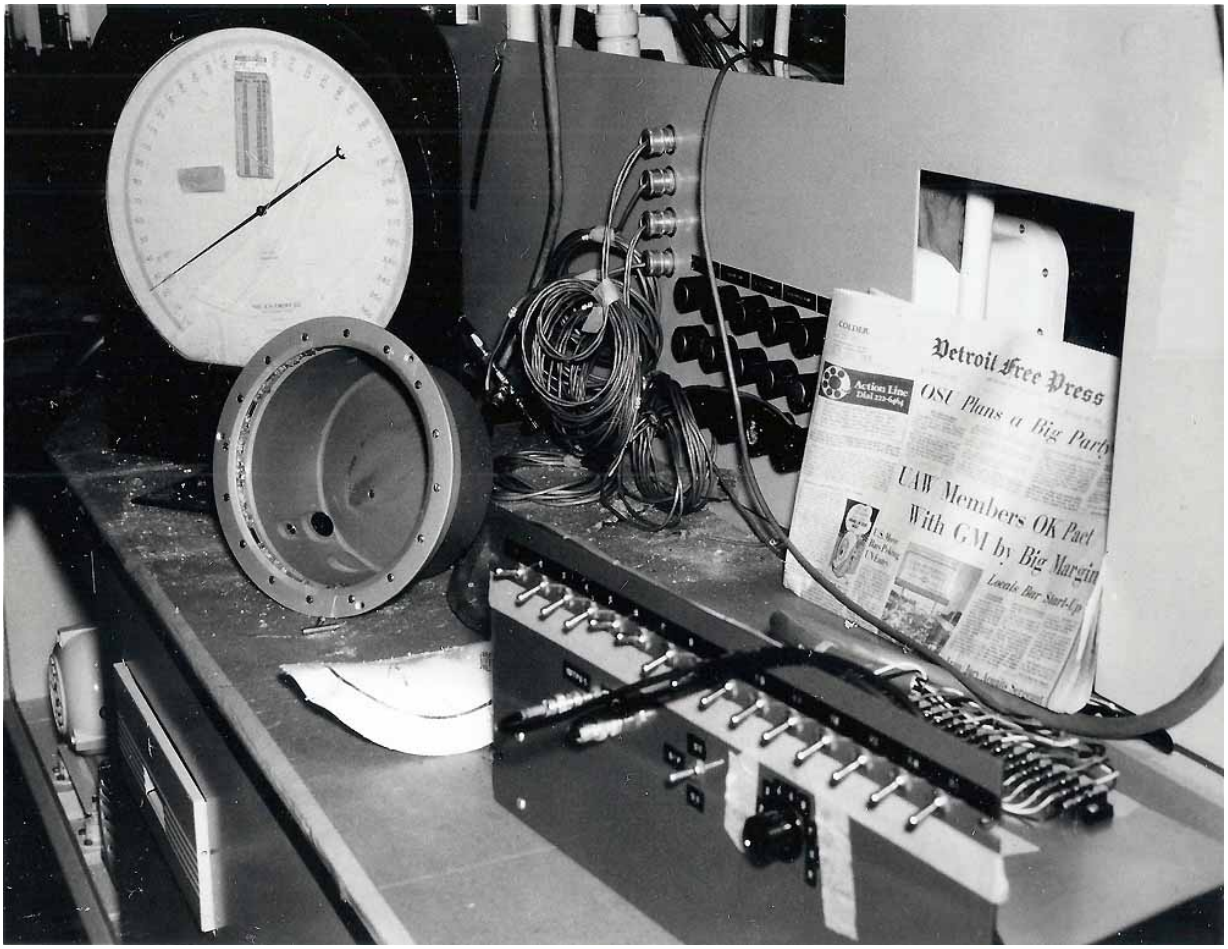
building immediately. To add to the tension herein, these facilities were also quite noisy. Just imagine if one had to take a bathroom break and an alarm sounded.

It should also be noted that all lighting, even handheld, had to be of explosion-proof construction. Where photography was required in dimly illuminated areas, a tripod and time exposure were required, and the lighting was painted in by smoothly and carefully waving a hand-held explosion-proof light source over the areas of interest while the camera shutter was held open. Obviously, I had the required security clearances and camera passes to gain facility access and to accomplish my missions.

The above photo is the only non-misson one that I took. ***Note that I took off my eye and ear protection momentarily for this photo***.

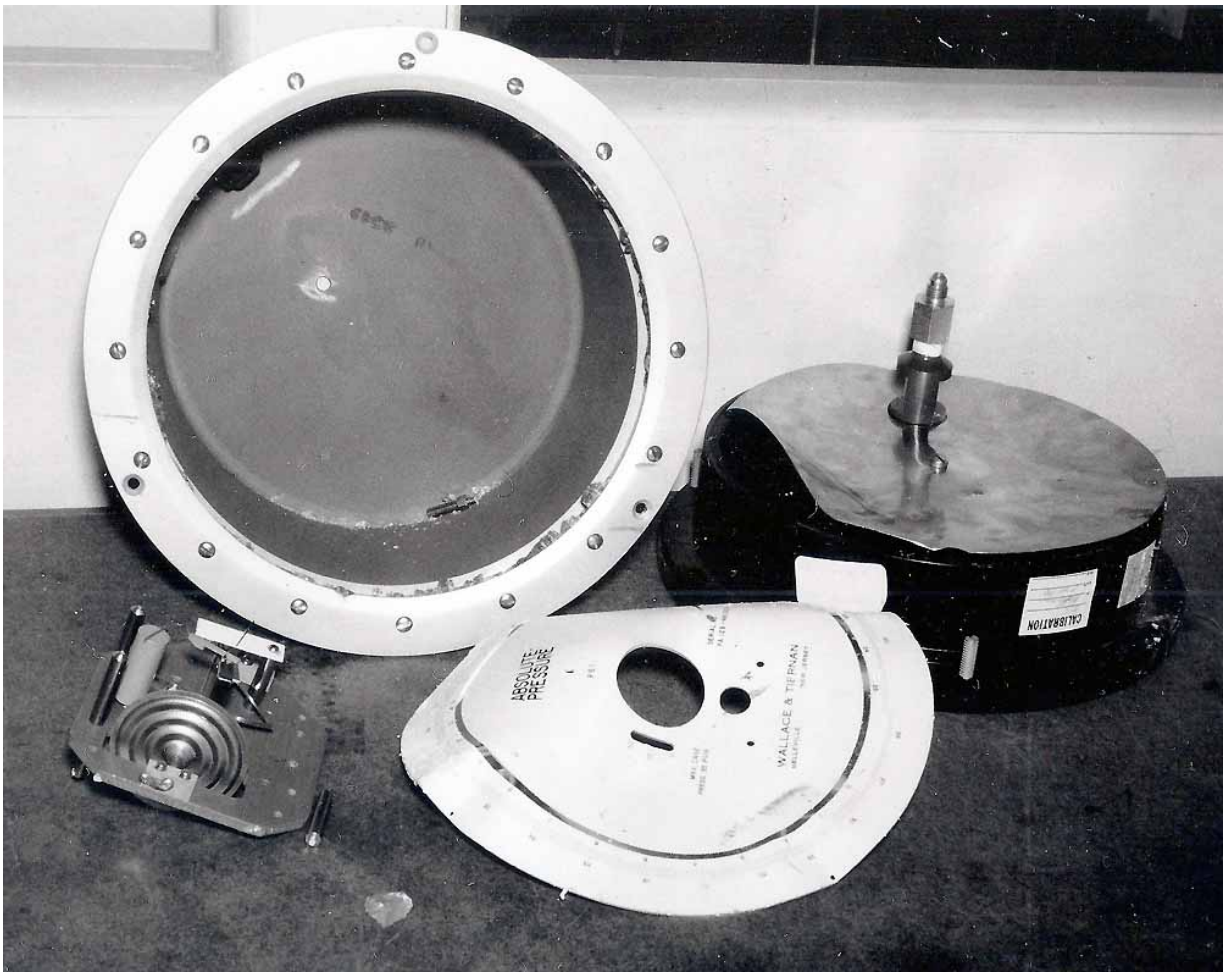
When considering where I have been and all of the equipment that I have worked with, luckily, I have never been seriously injured. However,

during a test stand aneroid barometric gauge calibration procedure, one of the gauges was accidentally over pressurized; it exploded approximately 50 feet from where I was working . . .

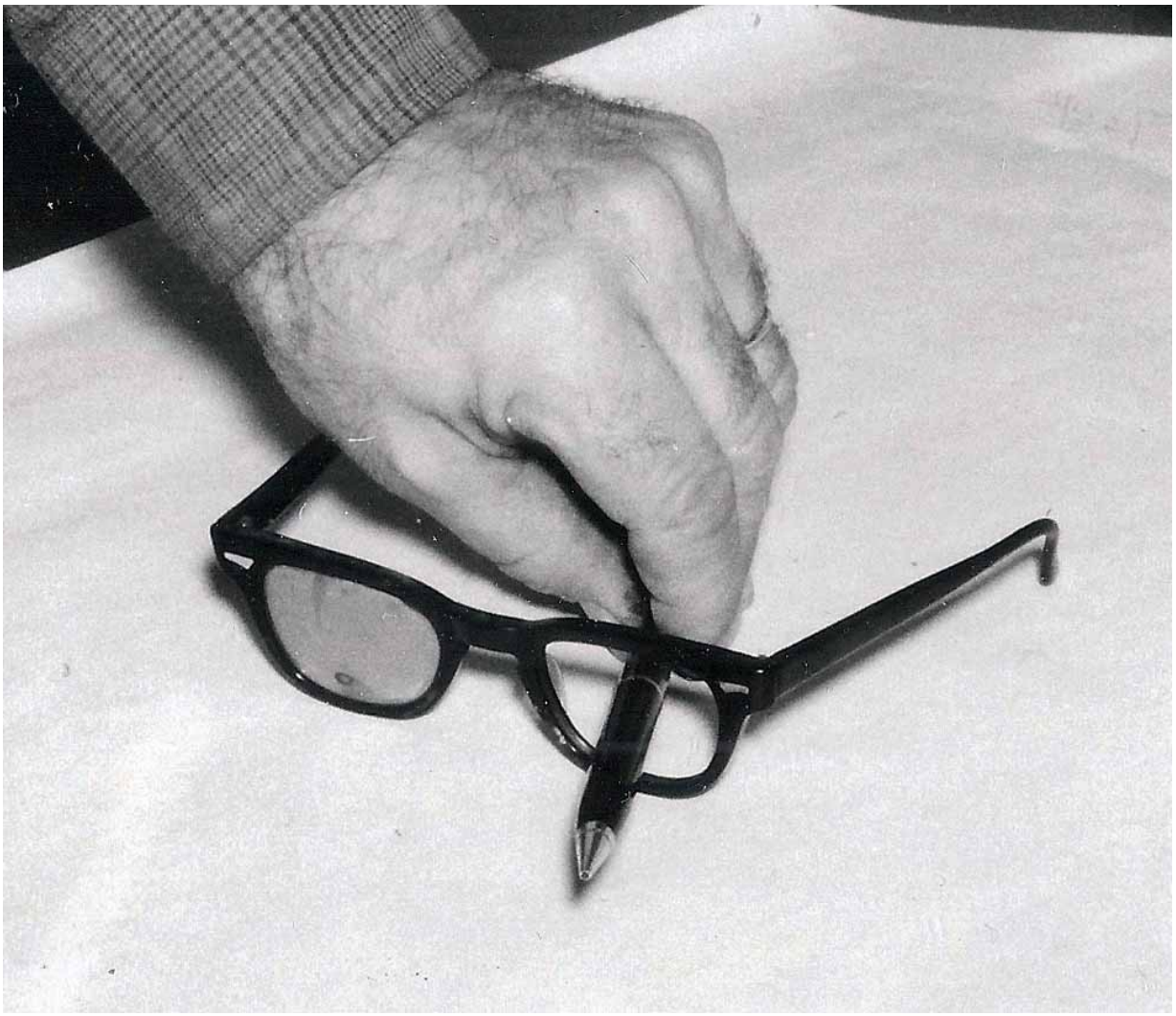


. . . sending shards of glass and shrapnel into the face, neck, and chest of one of my

coworkers, Ed Retko . . .



. . . that resulted in such a serious injury such that we could not wait for an ambulance. Instead, a responding patrol car rushed Ed to a local hospital.



Unusual Provisioning Activities: Over the years, I became quite adept at preparing Air Force Technical Orders and at accomplishing provisioning and screening activities. These activities were overseen in Building 131 by Raymond Parker, a member of Mensa

International. Raymond Parker also claimed membership in an organization of intellectuals that was even superior to Mensa International, although I cannot remember the name of that organization at this moment.

While TDY at Kelly Air Force Base, I was able to work quite well with Raymond Parker even though he was very particular and keen to odd traits, such as counting the serrations on the edges of dimes, quarters, and half dollars so as to ensure that he was not being cheated.

Raymond Parker was the go to person at Kelly Air Force Base for any provisioning activity — he knew it all, to the last, minute detail, and could apply provisioning codes from memory for just about anything.

Eventually, I became used to working with Raymond Parker and tolerating his obsessive-compulsive behavior. Once I thought that I understood him, Raymond Parker was easy to work with — I gave him exactly what he wanted and rarely had a disagreement with him — in

other words, I knew how to effectively work with him, even though I suspected an undercurrent of insanity in his brilliance; I also knew more about the equipment that was being provisioned than he did but never let on.

As the years went by and I had formed my own corporation, I was asked by a military contractor to supply technical assistance with a provisioning problem that they were having at Kelly Air Force Base. My military contractor contact was Edward Laughiniger, someone whom I had worked with years before and knew well.

He was having a provisioning problem with Dorothy Parker in Building 131. To make a long story short, I was hired to solve the problem. The two of us flew down to San Antonio, Texas, checked into a hotel, and went out for dinner at the Old San Francisco Steakhouse, where a girl on a swing would arc up to about 30 feet in the air and ring a bell on the ceiling in front of the array of dinner tables, to the cheers and whistles of the diners. And that is when things were about

to go wrong for Ed Laughiniger, as he was very sensitive as to how his surname was pronounced (Le-Gin-ig-er). While we were waiting for our table, the maître d' called out over the PA system, for all to hear, "Mr. Ed Laughing Nigger, your table is ready." Ed was understandably furious and firmly corrected the maître d' on the pronunciation of his surname. Regardless, I was able to enjoy my dinner while the girl on the swing rang the bell. See photo montage below.


OLD
GIFT CARD
ORDERS: CLICK
HERE


GIFT CARD
ORDERS: CLICK
HERE


MAYO'S
BUNNY

The next day, we drove to Kelly Air Force Base, checked in with Base Security, and proceeded to Building 131, where I had previously had free rein with my security clearance. However, this time was different. Both Ed and I had to be escorted to the provisioning area; I was concerned by this change in security

procedures.

Building 131 was a huge bullpen type of building with clusters of four desks with a single telephone line drop from the ceiling — repeated hundreds of times. Hence, with all of the workers there, it seemed quite probable that both a Raymond Parker and a Dorothy Parker could coexist in the building, but I was a little uneasy with my rapidly pending thoughts.

Suddenly, our security escort said, “Gentlemen, you are about to be in for a treat!” I looked straight ahead and saw what appeared to be the rear outline of Raymond Parker in skin-tight polyester pants and a tight sweater. When our security escort called out, “Hey, Dorothy,” my worst suspicions were confirmed; Ed took one look and about shit in his pants!

From there, things continued to go downhilll. Our security escort ushered us into a private conference room. Ed was very uneasy and unnerved by these events and showed overt signs of having difficulty in coping with the

unfolding situation. Soon, the room was filled with military brass and a few guys in blue suits (probably FBI or plainclothes Air Police).

It was about 9:30 AM and Dorothy (Raymond) Parker started the provisioning meeting in a manner that I had previously experienced and expected.

In short order, Ed Laughiniger had a strong disagreement with Dorothy (Raymond) Parker about how the provisioning of his equipment was to be accomplished. I tried to mitigate the situation and called for a bathroom break. Ed and I were standing at the urinals when Dorothy entered the Men's Bathroom and went to use one of the stalls. As Ed turned to see who was entering the bathroom, he almost urinated on my right shoe. Just then, Dorothy began to explain why he/she had to use the Men's Bathroom due to a civil suit with some of the female workers in Building 131. Dorothy also claimed that he/she had the "biggest tits in the building." Needless to say, none of this left Ed Laughiniger feeling any better about the unfolding situation.

At that point, I doubt that Ed finished urinating, as he was fit to be tied and quickly zipped up his pants. I had a completely different reaction — I was comfortable with my sexuality and perceived this situation to be a bit odd but amusing; in short, I was probably the least bothered by it of anyone in our group. I did not even see it as a national security threat, as everything was out in the open, however, I am sure that Raymond's security clearance was either pulled or about to be pulled. See the newspaper article below.

Sues To Wear Women's Clothes

SAN ANTONIO, Texas (AP) — A civilian employee at Kelly Air Force Base preparing for a sex change operation filed a civil rights suit Monday against his supervisors for refusing to allow him to dress in women's clothing.

Dorothy J. Parker, who changed his name from

Novice Skydiver

Raymond Lloyd Parker, said in the suit that the decision by Kelly officials has caused him severe mental anguish.

The suit alleged the officials have violated Parker's constitutional right to sexual autonomy.

Maj. Gen. Lynwood E. Clark, Kelly AFB commander, has affirmed a grievance

Survives Plunge

SHOBDON, England (AP) — Jonathan Vowles, 16, plunged 2,600 feet after his two parachutes malfunctioned Monday and crashed through a tiny hangar skylight, but was stopped 2 feet short of sure death on a concrete floor.

"It looked like he was going to hit the metal roof of the hangar," a witness reported. "But he crashed through the tiny skylight and his lines caught. If he'd hit the floor he'd have been dead."

Vowles, one of six schoolboys who volunteered to jump with the army's Flying Bugles skydiving team, suffered strained ligaments in his right leg in the accident on his first jump. He had been left dangling just 2 feet from the hangar's concrete floor.

Jonathan said he plans to join the army, "but one thing's for sure, I won't apply to join the paratroopers."

examiner's ruling that allowing Parker to cross-dress would "contribute to a nonproductive and disruptive work environment."

Parker said he has been taking female hormones since May 1977, causing his facial contours to grow softer and his breasts to swell.

He continues to work at Kelly and wear men's clothing, although many recognize him as a female, said his attorney, George W. Baugh.

We washed up and the three of us returned to the private conference room, along with the military entourage of observers. I doubt that ten minutes transpired before Ed Laughiniger got into a vehement argument with Dorothy Parker; both stood up across the table from each other. Ed made a fist and appeared to be about to throw an overhand right punch to the face of Dorothy (Raymond) Parker — I immediately stood up, sensing impending disaster, and blocked Ed's right hand with my left arm and then took total control of the situation.

At that moment, without thinking of the potential consequences, I immediately ordered my boss, Ed Laughiniger, and all of the military and security personnel out of the private conference room at Kelly Air Force Base. Much to my surprise, everyone followed my orders and left, leaving Dorothy and me alone in the conference room. I sat down for a moment, in total silence, and reflected upon what I had just done (insubordination) and waited for the next shoe to drop — it never did. I probably got away with it because nobody wanted to be there in the first

place and felt very uncomfortable in the presence of Dorothy (Raymond) Parker. My only concern was to get the job done and to fly home.

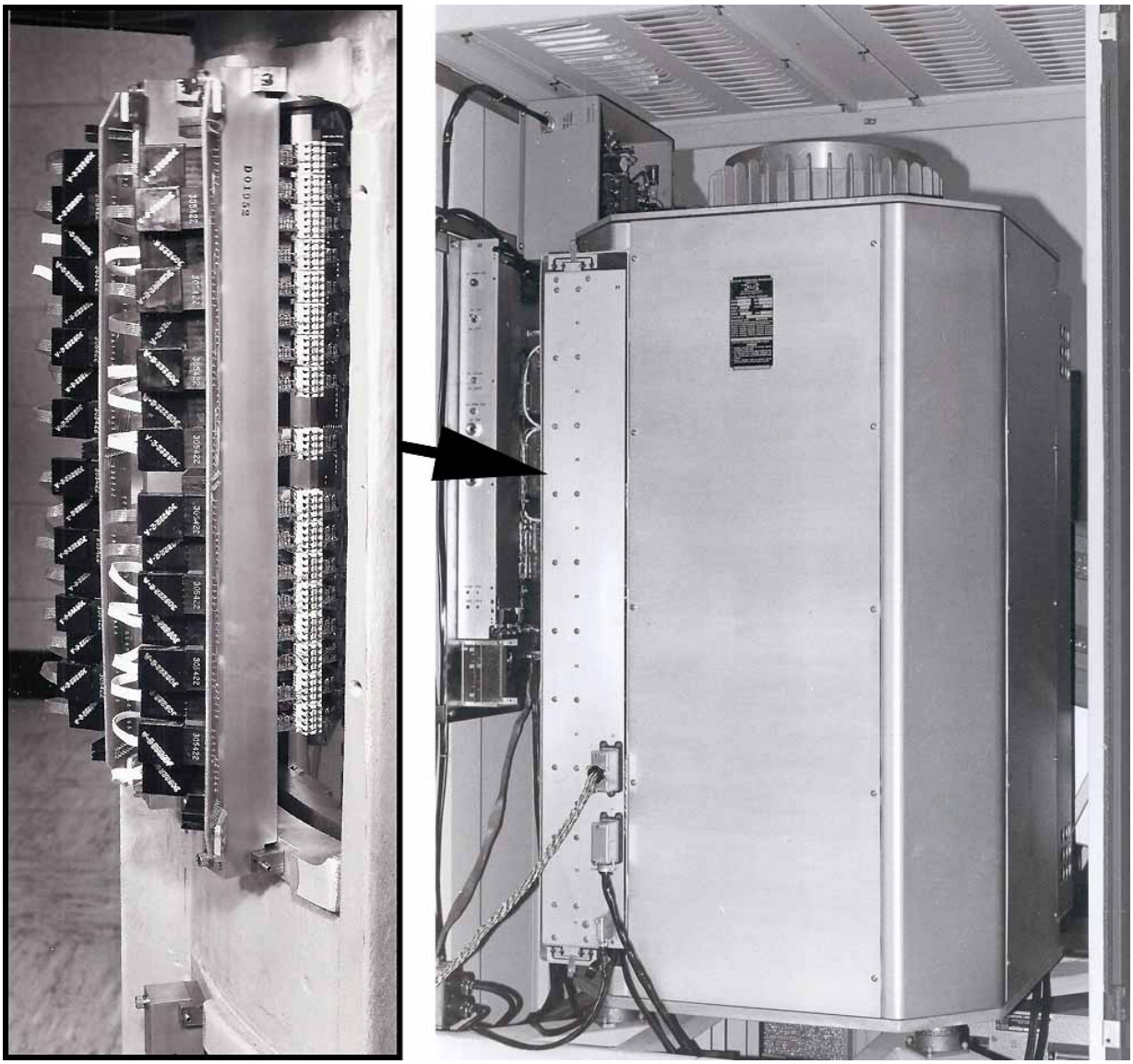
Much relieved, Dorothy and I worked until about noon, when we took a lunch break. I went to the cafeteria and brought my tray of food to a desk that adjoined Dorothy's desk, where we peacefully had lunch under the watchful eyes of blue suited and plainclothes operatives. While we were eating lunch, Dorothy regaled me with the details of changing one's sex and the trouble that it caused at Kelly Air Force Base (those details I shall leave for another time). Apparently, Raymond always felt that he was a woman that was trapped in a man's body. By the end of our meal, I really felt sorry for Raymond. I was also surprised that a group of coworkers had not yet taken him behind one of the hangars and finished the operation for him — understanding the macho attitude of military support personnel.

With good nature, Dorothy and I finished up all of our work by 4:00 PM, except for a few items

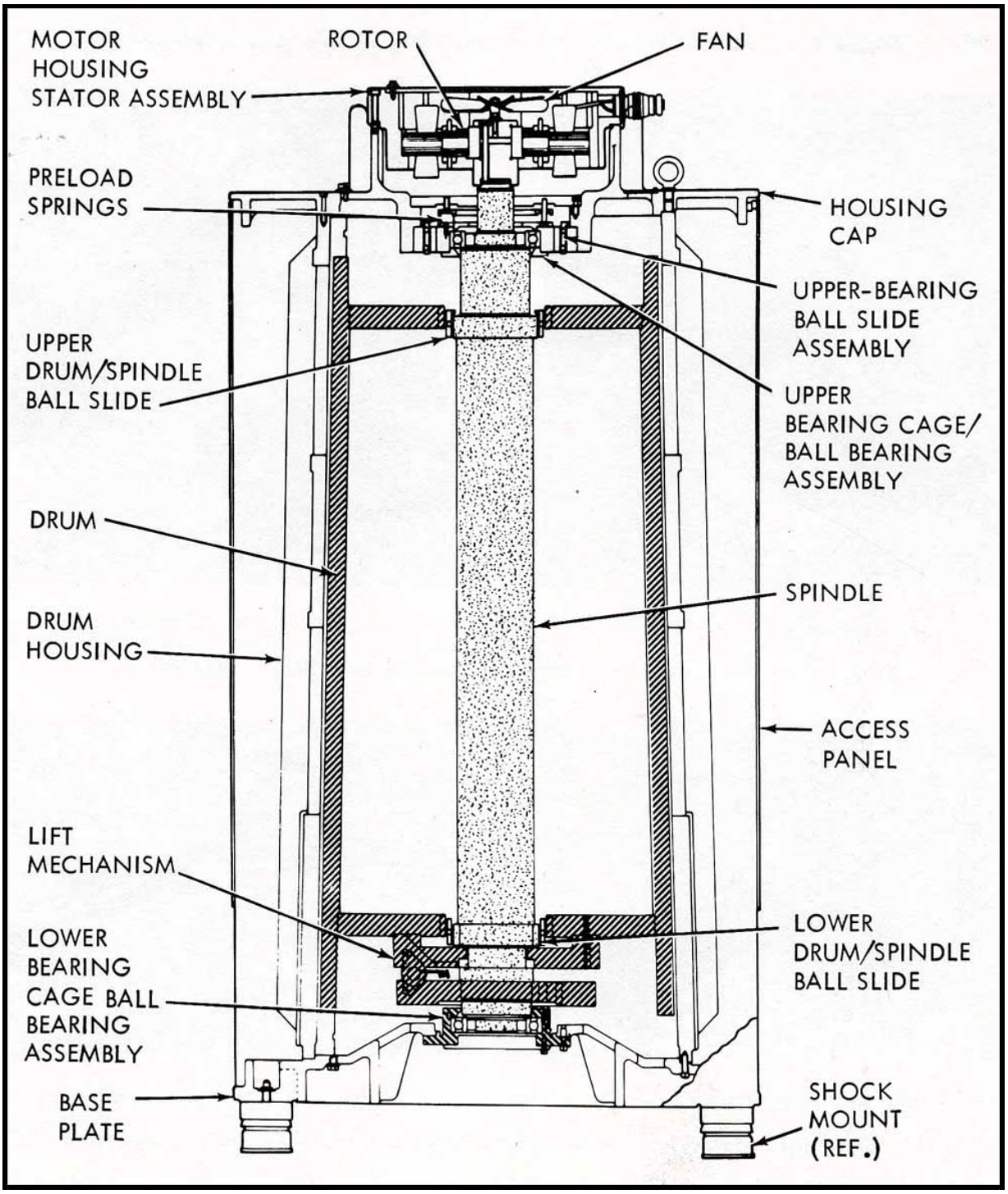
that required additional research and could be concluded over the phone between the two of us. We shook hands and I left, unescorted, and met Ed Laughiniger outside of Building 131, where he thanked me for my performance and drove to our motel. The following day, as we were driving to the San Antonio airport, he again thanked me, saying something to the effect that he doubted that there was anyone else who could have both handled the technical matters and personnel matters as well as I did. I told him that such was just part of my job and that I appreciated his concern. Shortly after completing this job, I lost contact with Dorothy (Raymond) Parker, as did his attorney, George W. Baugh, Esq. If anyone reading this travelogue has the means to track Parker down, I would greatly appreciate knowing what happened in his/hers life.

Electronic Training and Support: In 1972, as a sideline, I was providing electrical and electronic training to Vietnam veterans under the GI Bill. This training included everything from household

wiring to repair of color televisions and radar systems. I also began to work on magnetic memories for nuclear submarines (see photo below) as a Senior Engineer for Ex-Cell-O Computer Products, with occasional out-of-the-country troubleshooting activities.

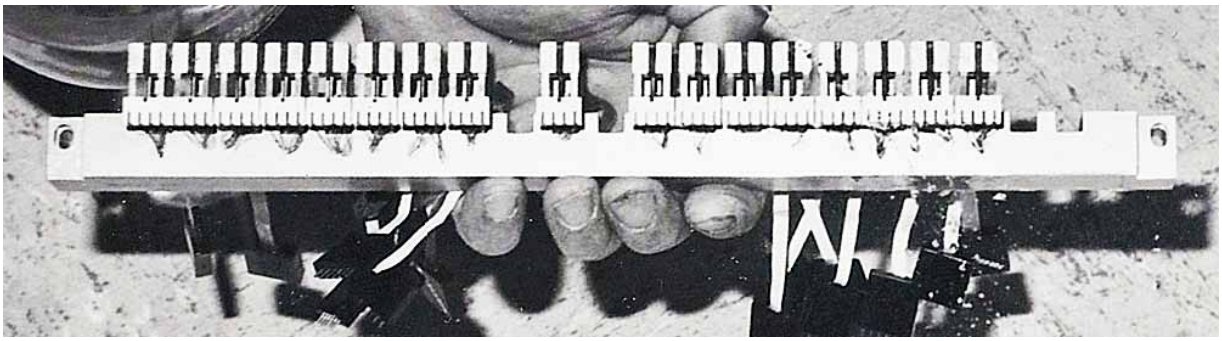


The magnetic memory system, shown above, was unique for its day. It could store large amounts of data on its drum surface, which was actually a conic section that was slightly wider at the base. See the sectional drawing below.



Instead of having one moving read/write head as in today's hard drives, this unit had a separate

read/write head for each track — so there would be no time lost in a head searching for a particular track of data. The mechanical design of this magnetic memory system was similarly unique; as the drum came up to speed, it would elevate slightly so that its conic section would engage the read/write heads, which were aerodynamically shaped so that they would fly a fraction of an inch above the surface of the drum, in the laminar film of air, that surrounded the rotating drum (conic section). See below photo showing three groups of aerodynamic read/write heads.



Multiple Launch Rocket System: In 1983, I began providing technical support for the aiming

device for the M270 Multiple Launch Rocket System (MLRS). Below is an image of the front page of a manual that I developed for a test stand that is used by depot maintenance personnel to test the ballscrew actuator that aims the rocket launch tube assembly.

DM 9-4935-647-6

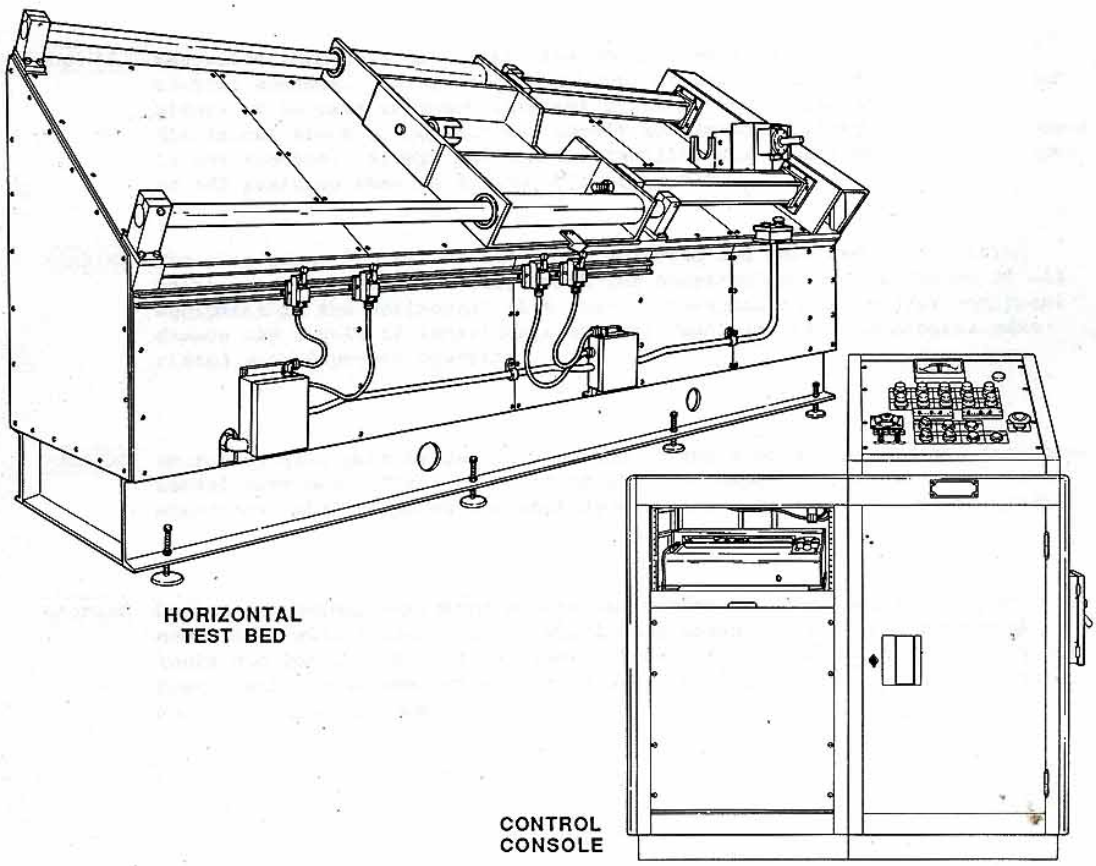
DEPOT MANUAL

FOR

HORIZONTAL TEST STAND

BALLSCREW ACTUATOR TEST STAND

Part No. TS-J-17693



U.S. ARMY MISSILE COMMAND
Redstone Arsenal, Alabama 35898-5000

This missile system saw considerable action in the First Gulf War, and has since been upgraded to increase its accuracy, its altitude to the edge of the atmosphere, and its and range to 200 miles. See photo below.


Click on this image to see a video
of an MLRS live fire demonstration.

As part of my support activities, in 1985, I was called upon to investigate a possible case of sabotage at the Aberdeen Proving Grounds to some MLRS support equipment. When I arrived at the site and inspected the equipment, I found a number of randomly cut wires that were not encased in conduit. When I further examined the randomly cut wires, I noticed rodent droppings in the vicinity of each cut wire. There was also latent evidence that someone had been eating a sandwich near the equipment and had dropped part of it on the floor and left it there. This is probably what attracted some field rodents to the equipment. In my report, I recommended that the equipment be rewired and that all wires should be run through electrical conduit.

Military Support for the State of Israel:
Starting around 1974 and continuing on for about ten years, I was involved in the Peace Fox and Peace Marble programs that brought the F-15 and F-16 aircraft to Israel. My company was also involved in offset programs where we would buy materiel pursuant to U.S. DoD

requests, inspect and military package it, and forward it to an East Coast port, where it was loaded into an overseas shipping container for transport to the Israel Defense Forces. When the materiel left my facility, I would bill the requesting agency. The U.S. Government makes use of offset programs to ensure that the allocated funds are spent in the USA and that they are properly used; this method of procurement ensures that the requested materiel actually gets to the military facility that requisitioned it, and does not end up as money in someone's pocket overseas.


Click on photo to display
the Peace Fox history.

Most of my work on the Peace Fox and Peace Marble programs was pretty much routine, however, while TDY in the vicinity of Hartford, Connecticut one evening after work in October 1979, I ventured out to a forested area that was near the Bradley International Airport. There, I came upon the aft remains of a Convair F-102 Delta Dagger with Connecticut Air National Guard markings on its tail. See the night vision

imagery below, and notice how the stars in the sky can be seen between the leafless tree branches.

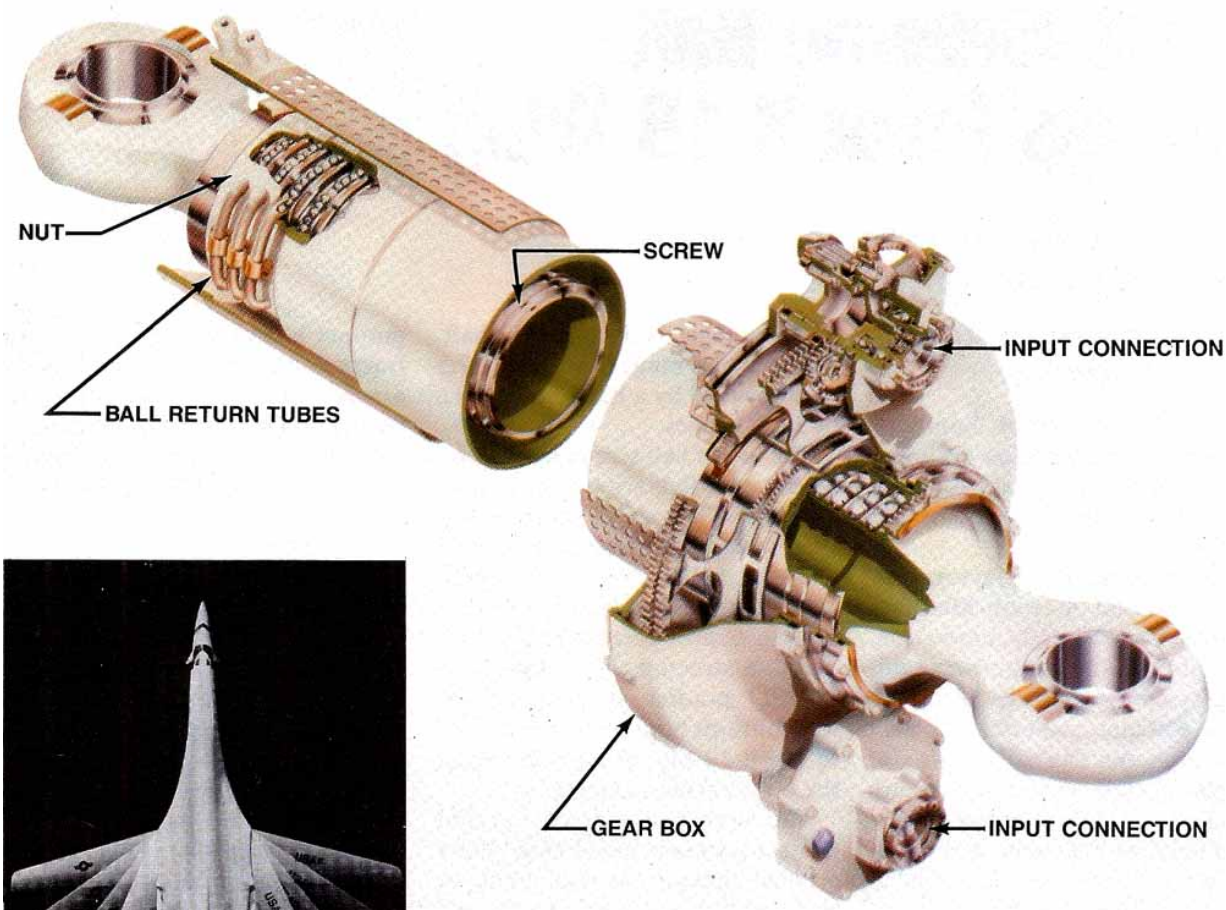
NOTE: On a clear night, when I have the time, I will often take out my night vision imaging equipment just to look at the stars; with light amplified 50,000 times or more and the image magnified, it is truly breathtaking to see what is out there in the sky.

The Convair F-102 Delta Dagger was designed to intercept invading Soviet bomber fleets during the Cold War and was parked at the Bradley International Airport on October 3, 1979 when an F4 tornado struck the area and lifted the aircraft off of the ground and dropped it in a clearing near the airport. I was never able to find the forward section of this airplane.

Some more recent highlights of my militarized and wartime unintended activities include the actuator for the Wing Sweep Mechanism of the B-1B Lancer Bomber to indicate the sheer size and complexity of the device that I wrote the Air Force Technical Order for. Images of this mechanism follow.

Below, is a photo of the overall Jackscrew Assembly.

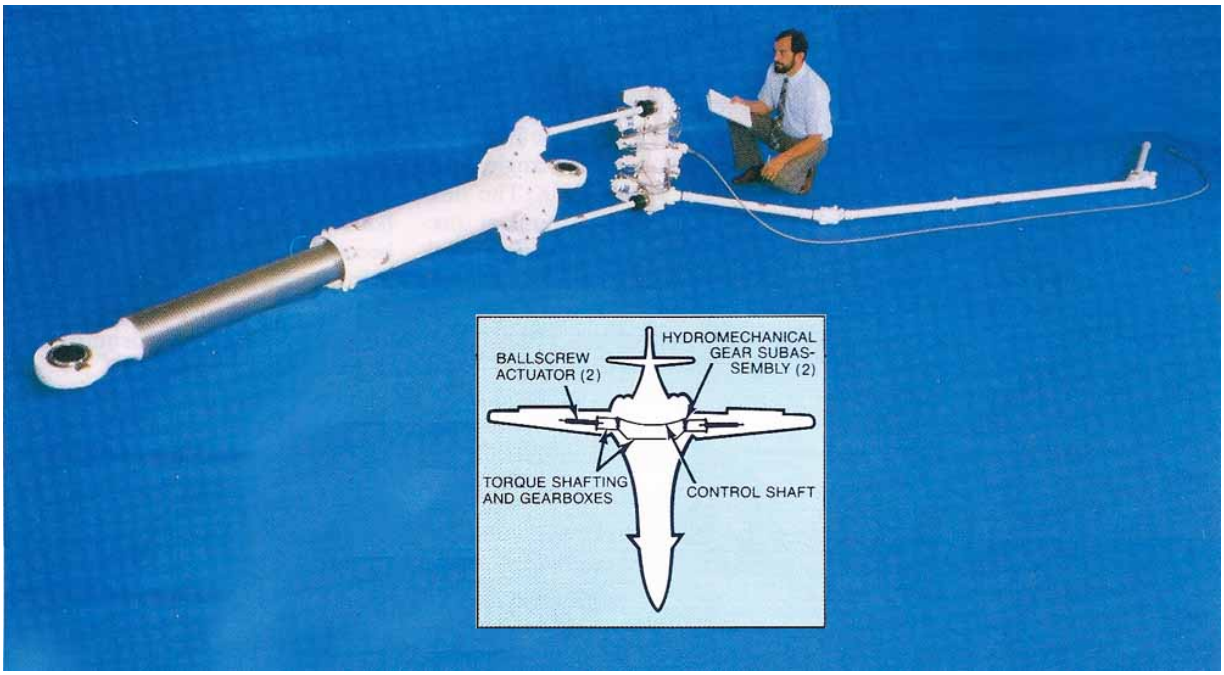
The proximal end of the Jackscrew Assembly attaches to the fuselage of the B-1B Lancer Bomber. An hydraulically driven gear box, at the proximal end, drives the jackscrew during extension and retraction so as to provide optimum wing sweep angles for all phases of flight operation. See photo below.



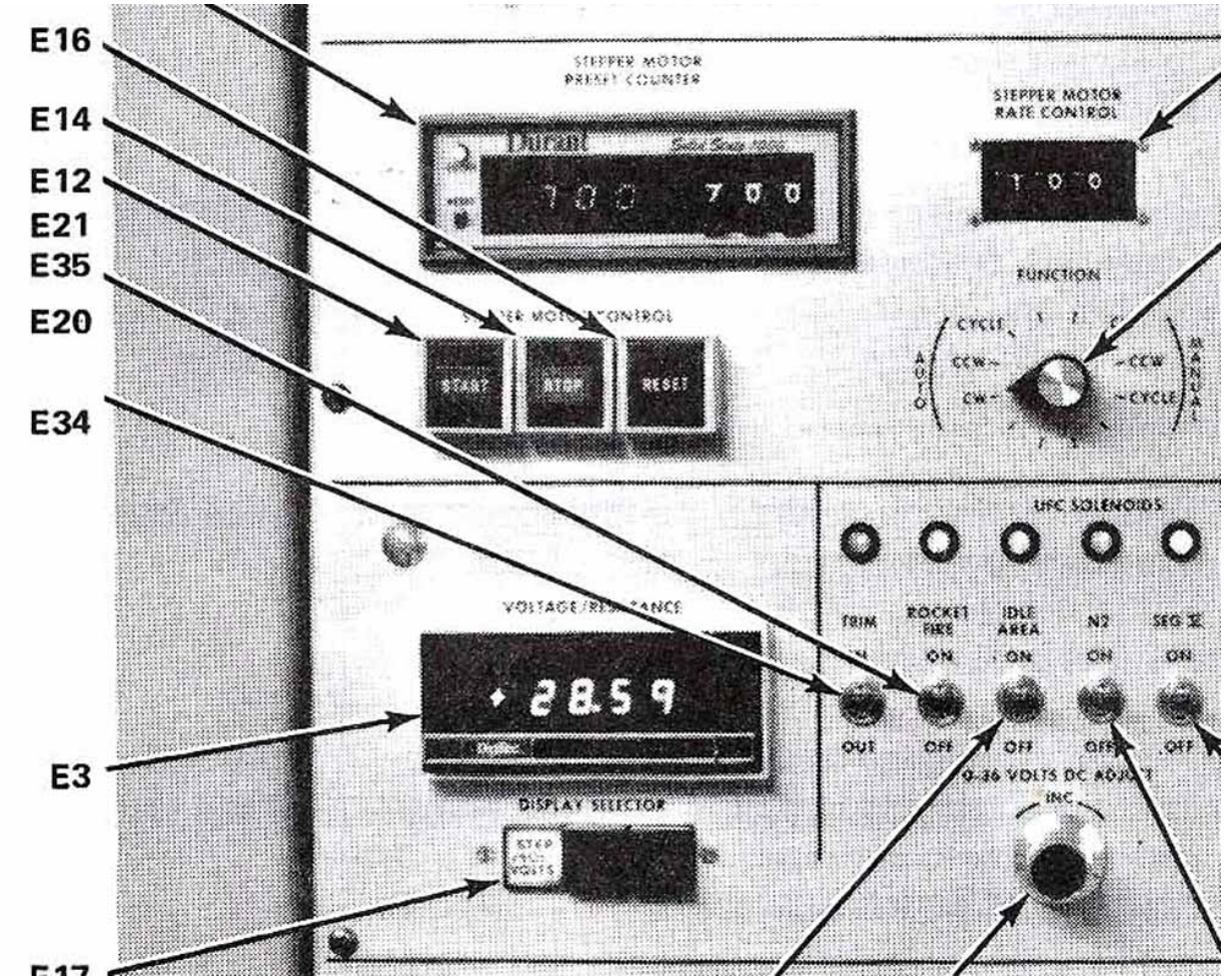
The distal end of the jackscrew attaches to the wing, that rotates about a short vertical pivot point. The sweep angle ranges from 15 to 67.5 degrees as the jackscrew traverses 36.71 inches, exerting a maximum operating force of 335,000 pounds. For reasons of safety,

engineering, and reliability, the jackscrew was designed for loads of 551,700 pounds, far exceeding the required force to adjust the wing positions.

Each B-1B Lancer Bomber has two of these wing sweep actuator assemblies, one for each wing, that must operate in unison. To accomplish unison operation, a control shaft interconnects each jackscrew to ensure coordinated operation. See the images that follow and note the size of the equipment compared to the man seated at the proximal end of the assembly.



During another military project, I was writing an Air Force Technical Order for a piece of electronic test equipment applicable to the McDonnell Douglas F-15 Eagle aircraft in 1976-1977 (note the timeframe). A panel on this piece of electronic test equipment included a ROCKET FIRE On-Off switch and indicator light (Items E21 and E35 in the image below).



This piece of equipment was used to perform post-overhaul performance tests on the FJ-A3 Unified Fuel Control (UFC) assembly that is used on the F100-PW-100 engine of which the F-15 aircraft has two such engines. During test operations, it simulates the Electronic Engine Control (EEC) of the F100 aircraft engine and functionally checks the integrity of the FJ-A3

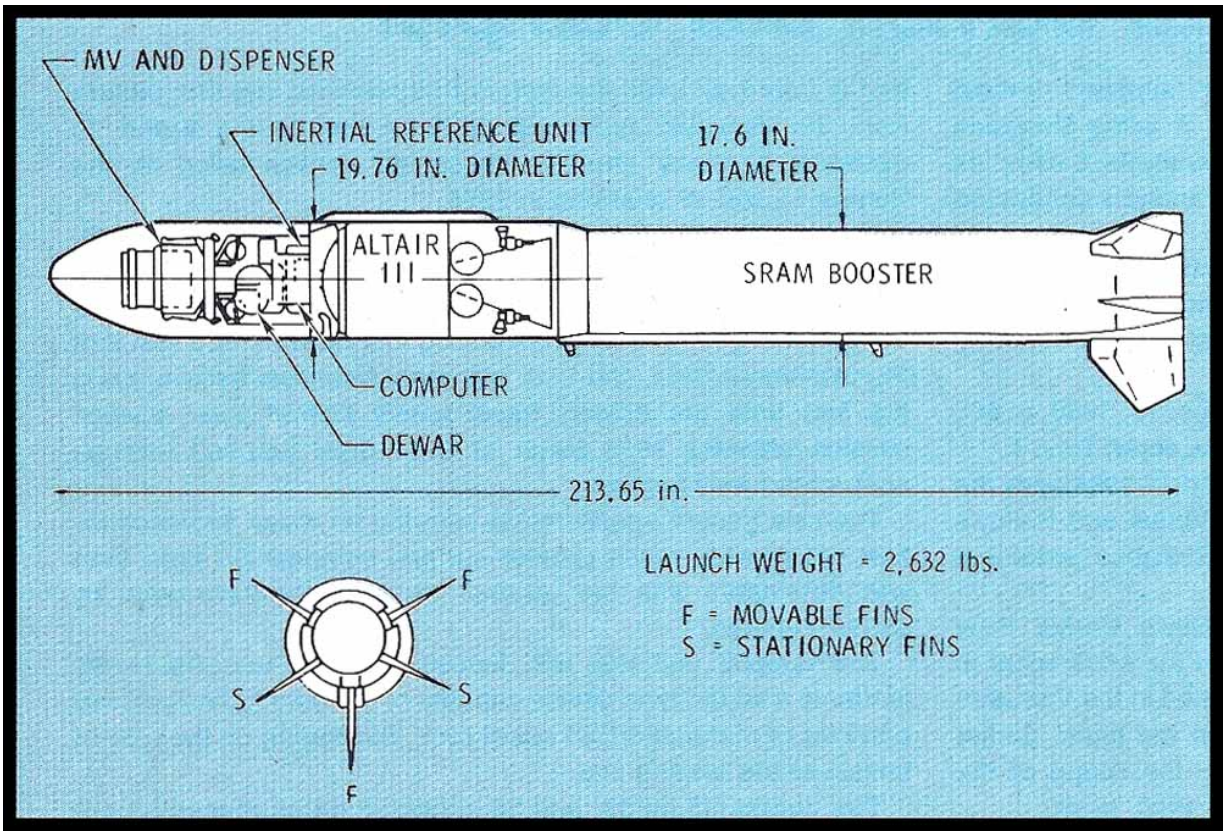
Unified Fuel Control and the Compressor Inlet Variable Vane (CIVV) Control electrical harness.

During the preparation of this technical order, the only information that Pratt & Whitney would supply about this switch was that it would select the rocket fire solenoid in the part under test — nothing more!

Withholding technical information was quite unusual, as there was a demonstrated need-to-know when supplying technical support for such equipment. Further investigation seemed to indicate that the ROCKET FIRE switch had something to do with banking the air inlets to the F-100 engines — something that might be advisable if the F-15 were to launch a sizable rocket from its undercarriage at high altitudes. Such a rocket might be used to attack and destroy satellites in Low Earth Orbit (LEO) — and that was my guess at the time. ***In all likelihood, I had stumbled upon a classified program in development.***

On November 9, 1981 (four years after my

presumption of the development of an anti-satellite weapon) Aviation Week & Space Technology announced that such an anti-satellite weapon (ASAT) was in development by Ling-Temco-Vought's LTV Aerospace division. See the two images below.



On May 2, 1983, Aviation Week & Space Technology published a photo and design information on the F-15 carrying an ASAT during compatibility testing. See image below.

On January 21, 1985, Aviation Week & Space Technology published a photo of an F-15 carrying an ASAT while in a steep climb that would be required for a launch attitude.

On August 20, 1985, President Ronald Reagan authorized a test against a satellite.

On September 13, 1985, Maj. Wilbert D. "Doug" Pearson, flying the "Celestial Eagle" F-15A 76-0084 launched an ASM-135 ASAT about 200 miles (322 km) west of Vandenberg Air Force Base and destroyed the Solwind P78-1 (gamma ray spectrometer) satellite flying at an altitude of 345 miles (555 km). See photo below.


ED
084

Prior to the launch the F-15 flying at Mach 1.22 executed a 3.8g zoom climb at an angle of 65 degrees. The ASM-135 ASAT was automatically launched at 38,100 ft while the F-15 was flying at Mach 0.934. See photo below.

The 30 lb (13.6 kg) Miniature Homing Vehicle (MHV) successfully engaged and destroyed the 2,000 lb (907 kg) Solwind P78-1 satellite at closing velocity of 15,000 mph (24,140 km/h). The targeted satellite was blown into approximately 150 pieces by the ASAT warhead.

My travels in retirement have taken me to numerous military facilities where portions of my work are on display, such as Ellsworth Air Force Base.

I was particularly interested in visiting Ellsworth

AFB because much of my work during the Cold War is memorialized there.

During the middle of the Vietnam War, I provided technical support for the Allison T56 turboprop engine . . .

. . . used on the Lockheed/Boeing AC-130H/U Gunship . . .

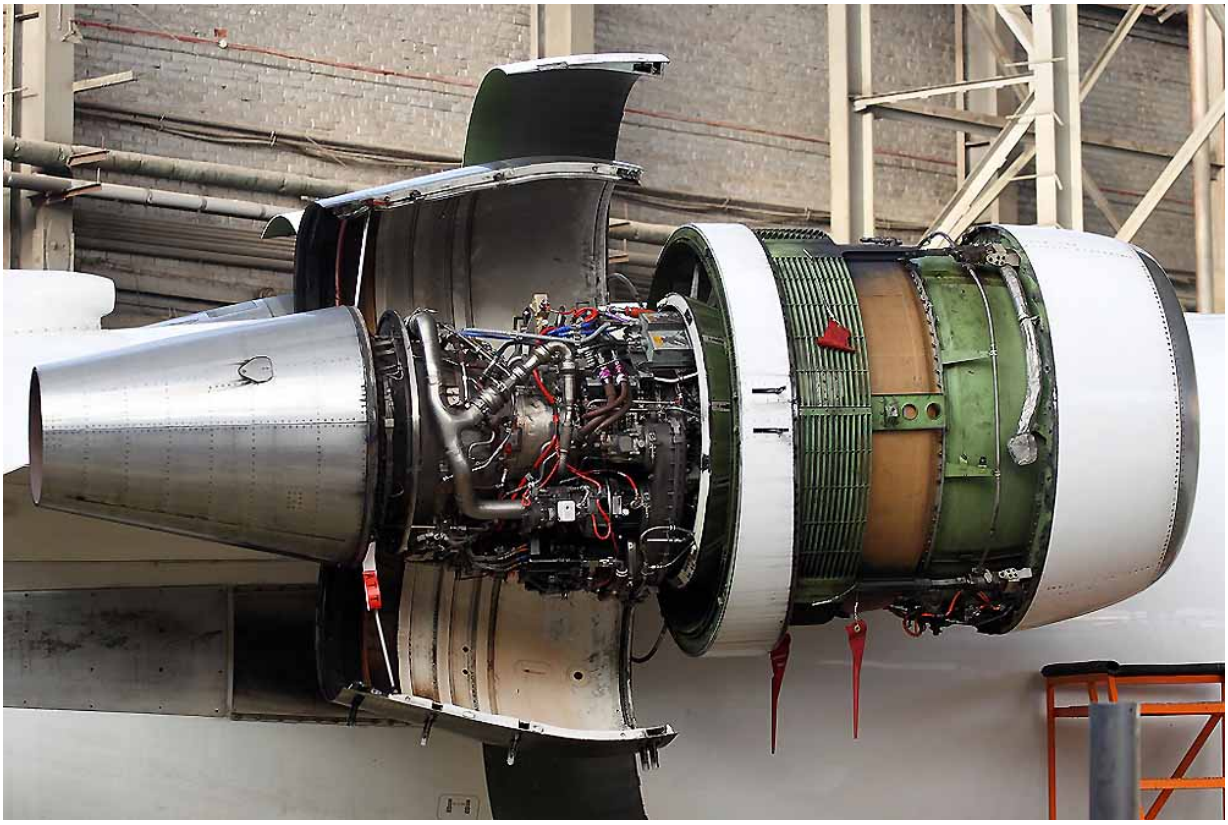
. . . the Lockheed Martin Aeronautics C-130 and KC-130 Hercules . . .

. . . Lockheed Martin P-3C Orion . . .

. . . the Northrop Grumman C-2A Greyhound . . .

. . . and the Northrop Grumman E-2 / C-2 Hawkeye.

I also provided technical support for the General Electric TF34 jet engine . . .



. . . used on the Fairchild Republic A-10/OA-10 Thunderbolt II . . .

. . . and the Lockheed-California S-3 Viking Multi-Role Carrier-Based Aircraft.

Similarly, I provided technical support for the General Electric J79 jet engine . . .

. . . that powered the Convair B-58 Hustler . . .

. . . the McDonnell Douglas F-4 Phantom II . . .

. . . the Northrop F-5 Freedom Fighter and Tiger II . . .

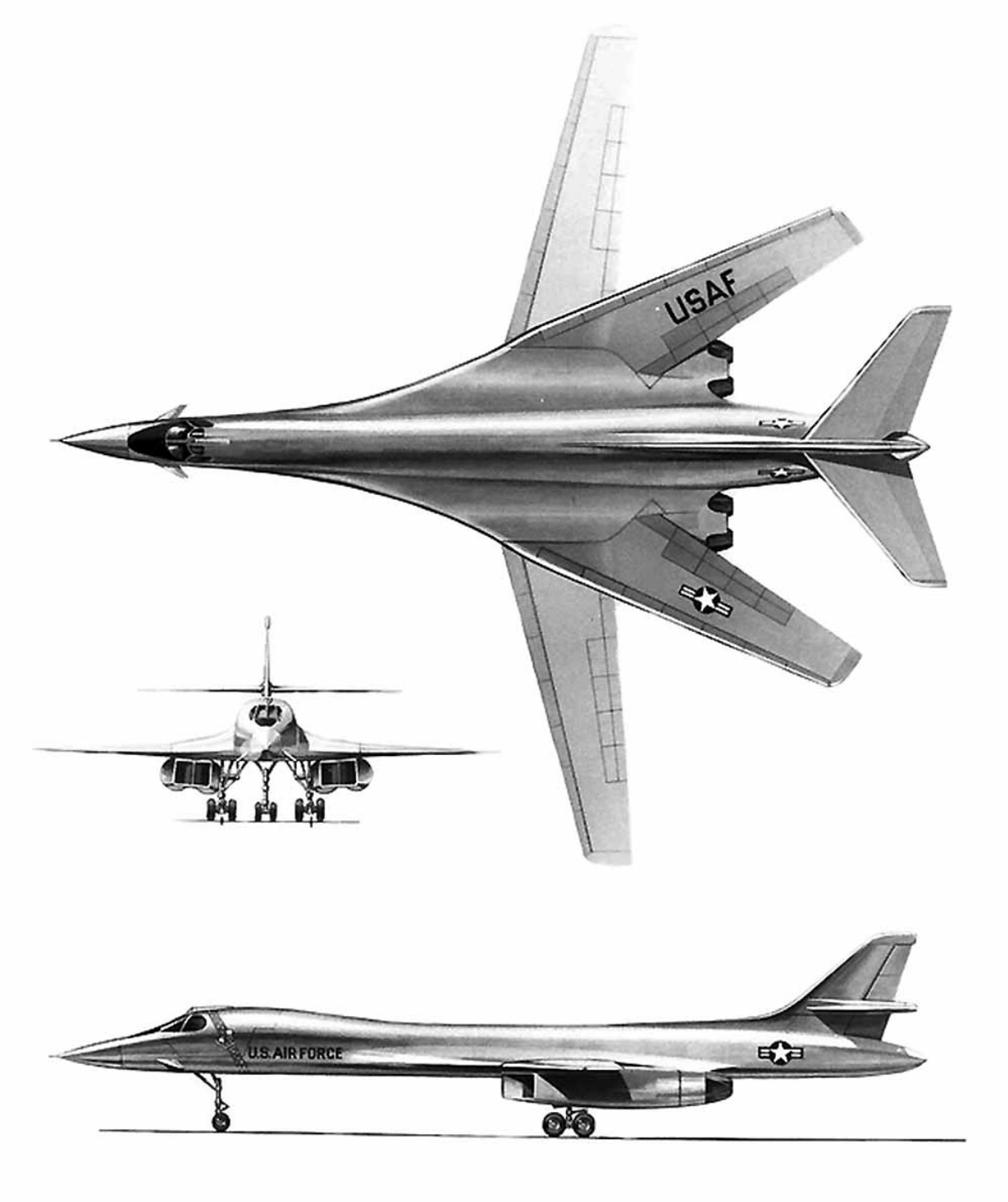
. . . the Lockeed F-104 Starfighter . . .

. . . the Convair F-106 Delta Dart . . .

. . . the Kfir ground attack/inteceptor of the Israeli Air Force . . .

. . . the North American A-5 Vigilante, and many others.

Prior to the Persian Gulf War (Operation Desert Fox), I provided technical support for the B-1B Lancer Bomber Much of my work related to the wing sweep mechanism for the variable wing geometry of this huge airplane. See photo below.



So it is easy to understand why I wanted to revisit, with pride, this masterpiece of

engineering. See the photo montage that follows.


SOUTH DAKOTA
AIR AND SPACE MUSEUM
ROCKWELL
B-1B "LANCER"
The B-1A was initially developed in the 1970's as a replacement for the B-52. Four prototypes of this long-range, high speed strategic bomber were developed and tested but the program was canceled in 1977 before going into production. The B-1B is an improved variant initiated in 1981. The first production B-1B flew in October 1984 and the first B-1B was delivered to Dyess AFB, Texas in June 1985. The B-1B holds almost 50 world records for speed, payload, range, and time of climb in its class. The B-1B was first used in combat in support of operations against Iraq during Operation Desert Fox in December 1988. In 1999, six B-1s were used in Operation Allied Force, delivering more than 20 percent of the total ordnance while flying less than 2 percent of the combat sorties. Eight B-1s were deployed in support of Operation Enduring Freedom (OEF). B-1s dropped nearly 40 percent of the tonnage during the first six months of OEF.

During my work on the B-1B, I developed the overhaul instructions for depot maintenance personnel for the jackscrew assemblies that change the in-flight wing geometry — to extend for takeoff . . .

. . . slow flight . . .

. . . and landing . . .

. . . and to retract the wings for high speed and supersonic flight.

Each bomber has two jackscrew assemblies that simultaneously and precisely change the wing sweep over time, such that each wing changes its geometry in exact unison so as not to induce unintended roll or loss of control during wing sweep maneuvers. A copy of the front page of the original validation copy of this Air Force Technical Order appears below.

PTO 16G3-2-89-3

SEQUENTIAL COPY
NO. _____ of _____ Copies

VAL
NO. _____
DATE 26 October 1988

PRELIMINARY
TECHNICAL MANUAL

OVERHAUL INSTRUCTIONS
WITH ILLUSTRATED PARTS BREAKDOWN

DEPOT MAINTENANCE

JACKSCREW ASSEMBLY
5902228

BEAVER PRECISION PRODUCTS DIVISION
DANA CORPORATION

F33657-81-C-0210

Published under the authority of the Secretary of the Air Force

1 JULY 1988

Our group received a letter of commendation from the Advanced Technology Group of Sundstrand Corporation for our work on this project. The wing sweep mechanism is an essential and critical piece of flight equipment. Hence, everything that I did herein had to be perfect, exactly as needed, and in strict accordance with the applicable military specifications. In the commendation letter below, Bernie Coyne was the contracts administrator, Bob Arnold and Glenn Viazanko were the manufacturing engineers for the jackscrew assembly, and I was the one who wrote and illustrated the Air Force Technical Order and conducted the validation activities. This letter of commendation speaks for itself.

Sundstrand Aviation Mechanical
Advanced Technology Group
Sundstrand Corporation

4747 HARRISON AVENUE, P.O. BOX 7002 • ROCKFORD, ILLINOIS 61125-7002 • PHONE (815) 226-6000 • TWX 910-631-4255 • TELEX 25-7440

November 3, 1988
In reply refer to:
TP-88:1.0754

Beaver Precision Products Division
Dana Corporation
P.O. Box 1199
Troy, MI 48099

Attention: Bernie Coyne

Subject: B-1B Technical Order Validation

Reference: T.O. 16G3-2-89-3

Dear Bernie:

On behalf of Sundstrand, I would like to express my gratitude for the fine validation that you, Bob Arnold, Glenn Viazanko, and Mike Arlow conducted at your facility. Your thorough planning was made apparent by the flawless success of the validation effort. I hope to be able to work with you and your people again on future projects. I received your advance validation copy and sent it to Rockwell within the hour. By November 11, 1988 I hope to be able to give you the order to deliver the the 20 validated copies. Your prompt incorporation of validation comments is greatly appreciated by Sundstrand, Rockwell, and the Air Force.

Very truly yours,

Thomas J. Chuchna

Thomas J. Chuchna
B-1B Publication Coordinator

ATPS

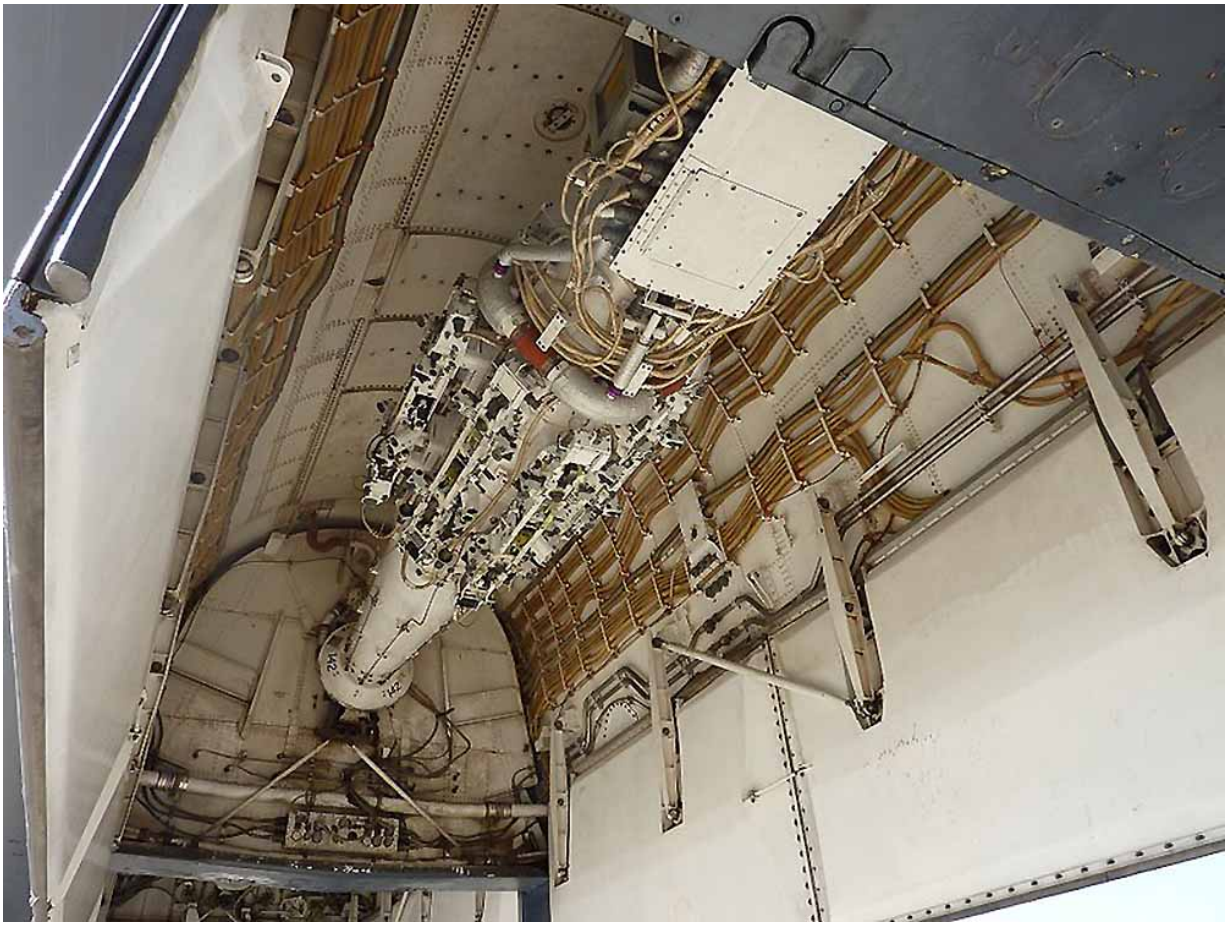
Committed to aerospace growth

Because of our constant attention to detail, this program was completed without so much as a single hitch. I feel very proud every time I see one of these big and noisy birds fly by. Not only is it amazing to watch, but the engine and afterburner noise is so intense that it can be felt inside of one's chest as the B-1B Lancer Bomber flies by with afterburners lit. See photo below.

Without going into details, the B-1B is capable of

carrying and delivering enormous bombs (both conventional and thermonuclear) . . .

. . . and multiple cruise missiles from a pair of rotary launchers.



Because of their mammoth size . . .

. . . some of these bombers are currently being reengineered to internally carry very powerful laser systems that are capable of destroying missiles and other aircraft from great standoff distances so as not to necessitate the penetration enemy airspace, when able.

Unfortunately, several of these bombers have crashed during crew training exercises, including one that was based out of Ellsworth Air Force Base. This bomber had a midair collision with a bird that ruptured an hydraulic line, and

resulted in a fire and loss of aircraft control. Since this aircraft has automated nap-of-the-earth flying radar evading capabilities, bird strikes can readily occur at low altitudes. Normally, a five to six pound bird will not structurally affect this aircraft; it is believed, however, that the bird that took this bomber down was a migrating pelican that weighed 15 pounds. I was so concerned about this particular incident that I saved the article shown below.

DETROIT FREE PRESS/MONDAY, FEBRUARY 8, 1988 6A

Crash of bomber recounted

BY MARK THOMPSON
Free Press Washington Staff

WASHINGTON — Seconds after Capt. Lawrence Haskell assumed control of the Air Force's huge new B1 bomber for the first time, what he later described as "just a white blur" hurled past the cockpit and exploded into the right wing.

"There was a loud bang," said Maj. William Price, 42, the closest of the six crew members to the impact point. "You could hear it coming from somewhere way in the aft of the airplane." The highly trained crew had been using the world's most sophisticated technology to evade imaginary enemy defenses and guide phantom bombs to their targets.

They suddenly had a more compelling goal — survival.

In two minutes, the wreckage of the

> **"The aircraft began again the violent — this time more severe — shaking, grinding, and groaning."**
>
> **CAPT. LAWRENCE HASKELL, crewmember**

lock, 39, an electronic warfare instructor, seated in the jump seat between them, listened as Acklin and Haskell struggled to regain control of the jet.

said of the plane's final dive.

"It's out of control!" Acklin yelled.

"We gotta get out!" Haskell said in his final frantic radio call to the FAA, 99 seconds after the B1 hit the bird.

The ejection system began launching the ejection seats: Three-tenths of a second after Haskell pulled the handle, Price blasted from the plane, followed a half-second later by Butler.

In another half-second, Acklin's seat was to explode from the plane — but for unknown reasons it never moved. Two seconds after Haskell pulled the handle, he was blasted from the aircraft.

"I opened my eyes up and the thing I saw right square in front of me was the explosion of the airplane," Price said. "It was on the ground."

Seconds later, so were Price, Butler and Haskell — dazed, but alive.

$283 million jet was strewn across the Colorado lowlands. Three crew members were dead.

The survivors' testimony, recently released by the Pentagon, details a chilling account of a war game rendered real.

The Sept. 28 crash near La Junta, Colo., was the first accident involving one of the 100 B1s that constitute a keystone of President Reagan's military buildup. A 15-pound bird brought down the plane.

The cockpit's lights flickered as the bird pierced the wing. "It immediately shook the plane," said Price, an electronic warfare instructor seated in the right rear ejection seat.

The 150-ton, 147-foot long airplane, flying a low-level bombing run 600 feet above the ground at 644 miles an hour, lurched to the right. Maj. James Acklin, the instructor pilot, grabbed the plane's controls and pulled into a climb.

"I've got it," said Acklin, 36, a veteran B1 pilot with more than 400 hours flying time.

Seconds later, the fire warning light for Engine No. 3 flashed on the console and the fire horn blared into the crew's headsets. "Shut down No. 3!" Acklin, seated in the right front ejection seat, told Haskell. Haskell flipped a toggle switch to kill the engine.

Watching from the forward jump seat, between Acklin and Haskell, was Capt. Ricky Bean, 27, the student pilot who moments before had swapped seats with Haskell. It was the first B1 flight for Bean and Haskell, 33.

Seventy seconds after the bird hit, Capt. Joseph Butler, 32, the student electronic warfare operator seated behind Haskell in the left rear ejection seat, radioed that Taupe 52 — the code name for the plane — was calling it quits for the day.

"I don't think anyone in the airplane sensed it was really serious," Price said.

Price and Butler, sitting in the rear of the cockpit with Maj. Wayne Whit-

It was understood in the back that they didn't get the fire out on No. 3," Butler said. "And they thought there was a problem with No. 4 also."

Unknown to the crew — the plane's swept-back wings could not be seen from the cockpit — the pelican had punctured the right wing's thin aluminum skin and shredded a high-pressure hydraulic line. The hydraulic fluid ignited and blowtorched through the fuel line supplying the No. 3 engine.

About 88 seconds after the collision, Haskell talked to the Federal Aviation Administration: "Sir — we have an engine fire and — ah — bird strike . . . on No. 3 and No. 4."

Strange noises filled the cockpit as severe vibrations rocked the plane.

"When this happened is when we first realized we were truly in trouble," Price recalled. "It was only in the last what seems like 30 seconds or 45 seconds that we truly believed the aircraft was in grave danger."

Seconds later, Haskell got on the mike to his colleagues. "You guys get ready to get out," he said. While that meant little to the four airmen in ejection seats, Bean and Whitlock had to don parachutes and bail out through the emergency escape hatch.

The limping B1 climbed to some 3,500 feet above the ground — and began losing altitude and speed as it started rolling right.

Haskell grabbed the plane's controls to help Acklin.

"I was in a state of extreme fear. The aircraft began again the violent — this time more severe — shaking, grinding, and groaning," Haskell said. "That's what told me if we were going to leave, we would have to do it soon."

Price, in his ejection seat, screamed at Whitlock: "Open up the hatch!"

"He was standing right in front of the hatch, kind of leaning over," Price said of Whitlock. "He had his chute on and I think he was . . . starting to get in position to undo the hatch."

An instant later it happened. "You could feel it start to go over," Price

Acklin, Bean and Whitlock weren't so lucky. They were killed when the B1 hit the Colorado rangeland.

Nap-of-the-earth flying can be particularly

challenging during times of darkness or mountain obscuration, as in the example of U.S. Air Force Lt. Paul Ziemba, a neighbor, and the youngest officer ever to co-pilot a B-1B Lancer Bomber. The airplane that he was co-piloting flew into a mountainside while on a nighttime training mission in Texas. I keep this article posted in my hangar as a reminder about risk taking and flying under hazardous conditions.

The Eccentric/ MONDAY, FEBRUARY 1, 1993

Memorial service is scheduled for airman killed during training

BY TIM SMITH
STAFF WRITER

The body of U.S. Air Force Lt. Paul Ziemba, the Orchard Lake St. Mary's Preparatory School graduate who died Nov. 30 when the B-1B bomber he was co-piloting crashed into a Texas mountainside, soon will be buried on the grounds of the Air Force Academy in Colorado Springs, Colorado.

Paul Ziemba was the youngest Air Force Academy graduate ever assigned to fly the totally computerized aircraft.

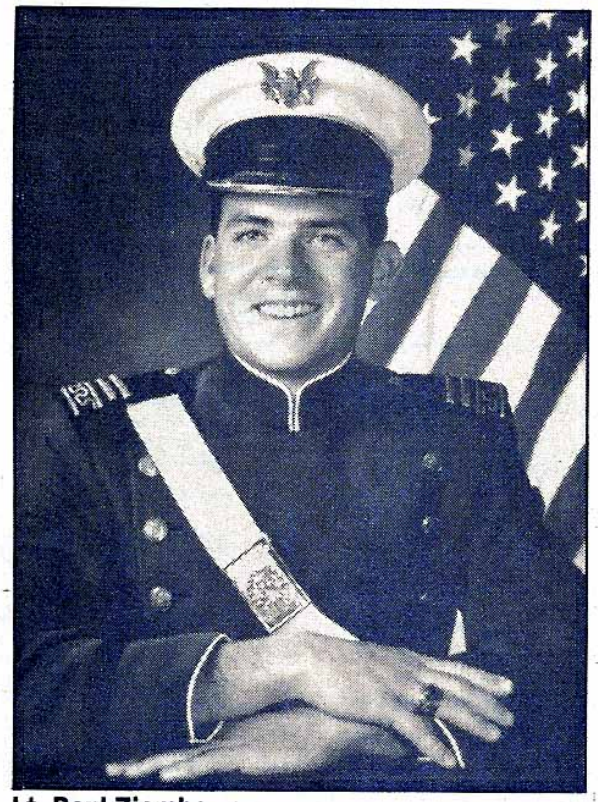
A memorial service for the 24-year-old Ziemba is scheduled for Saturday at the academy chapel with burial to follow, said the victim's granduncle, the Rev. Walter Ziemba of St. Mary's.

Burying the pilot at the academy is in keeping with the family's wish. Paul Ziemba was the youngest Air Force Academy graduate ever assigned to fly the totally computerized aircraft.

Ziemba and three other crew members were killed instantly when the controversial aircraft crashed near Valentine, Texas. They had just embarked on a night training mission.

Other victims included Maj. Zenon Goc, 34, the aircraft commander; 1st Lt. Timothy Cookson, 24; and Capt. Scot Genal, 32. Because of the impact of the B-1B into the mountain, remains of the four men were scattered about the accident scene.

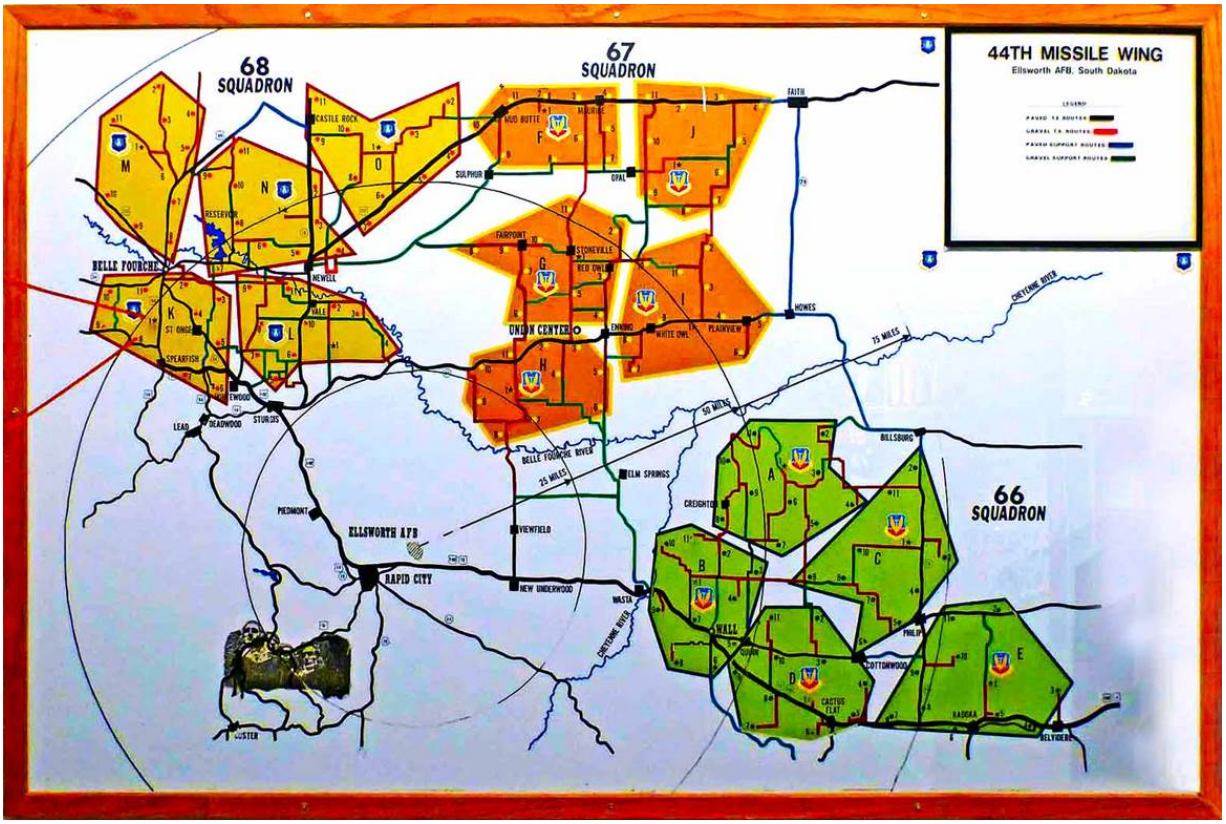
Paul Ziemba's father, Stephen, said in an earlier interview that positive identification was to have been made by DNA testing on body parts and interviewing family members.



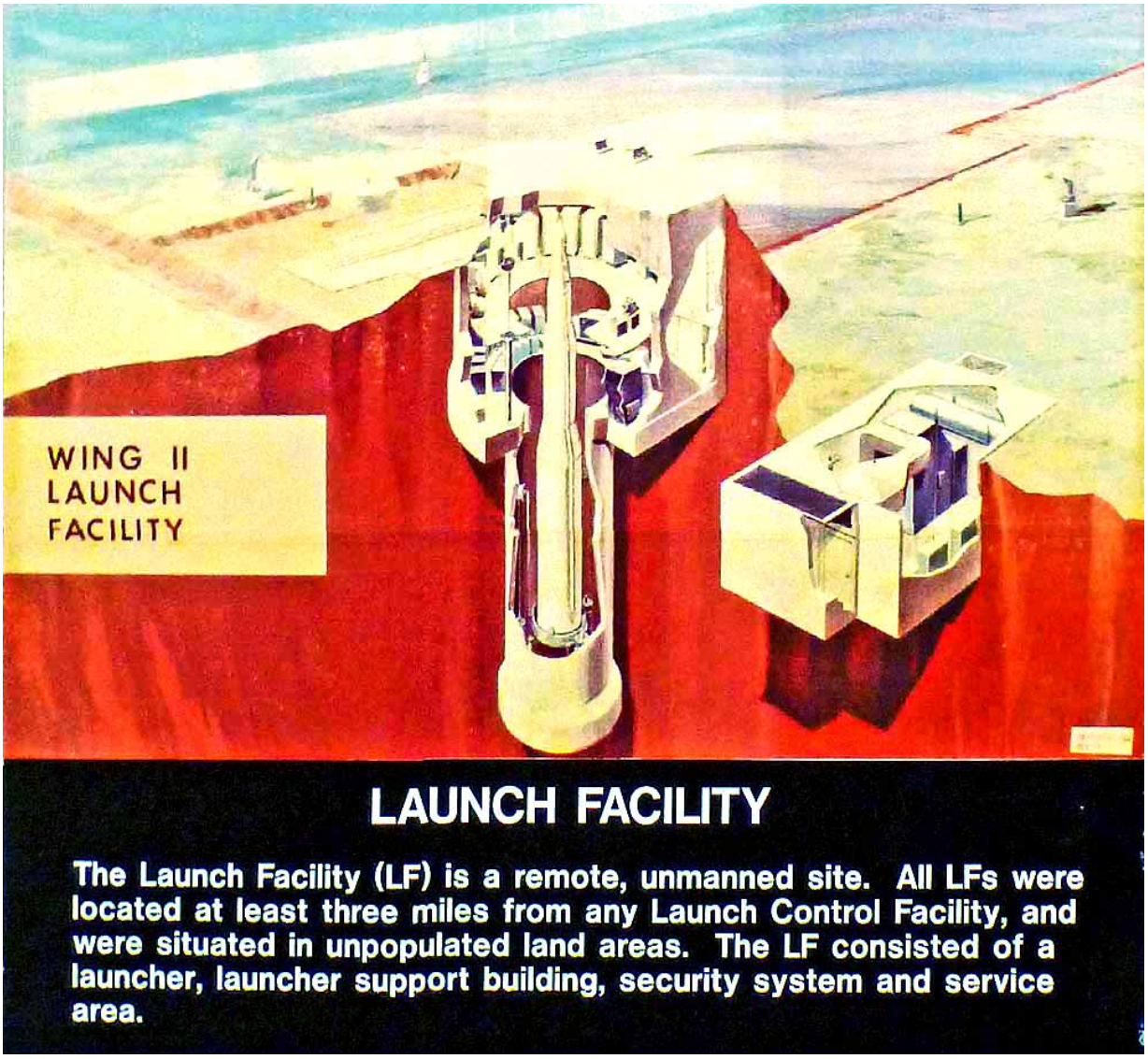
Lt. Paul Ziemba

Meanwhile, contributions in the pilot's memory still can be made to the Paul S. Ziemba Memorial Scholarship Endowment Fund, c/o St. Mary's Preparatory School, Orchard Lake, Mich. 48324.

Ellsworth Air Force Base is also the home of the 44th Missile Wing . . .



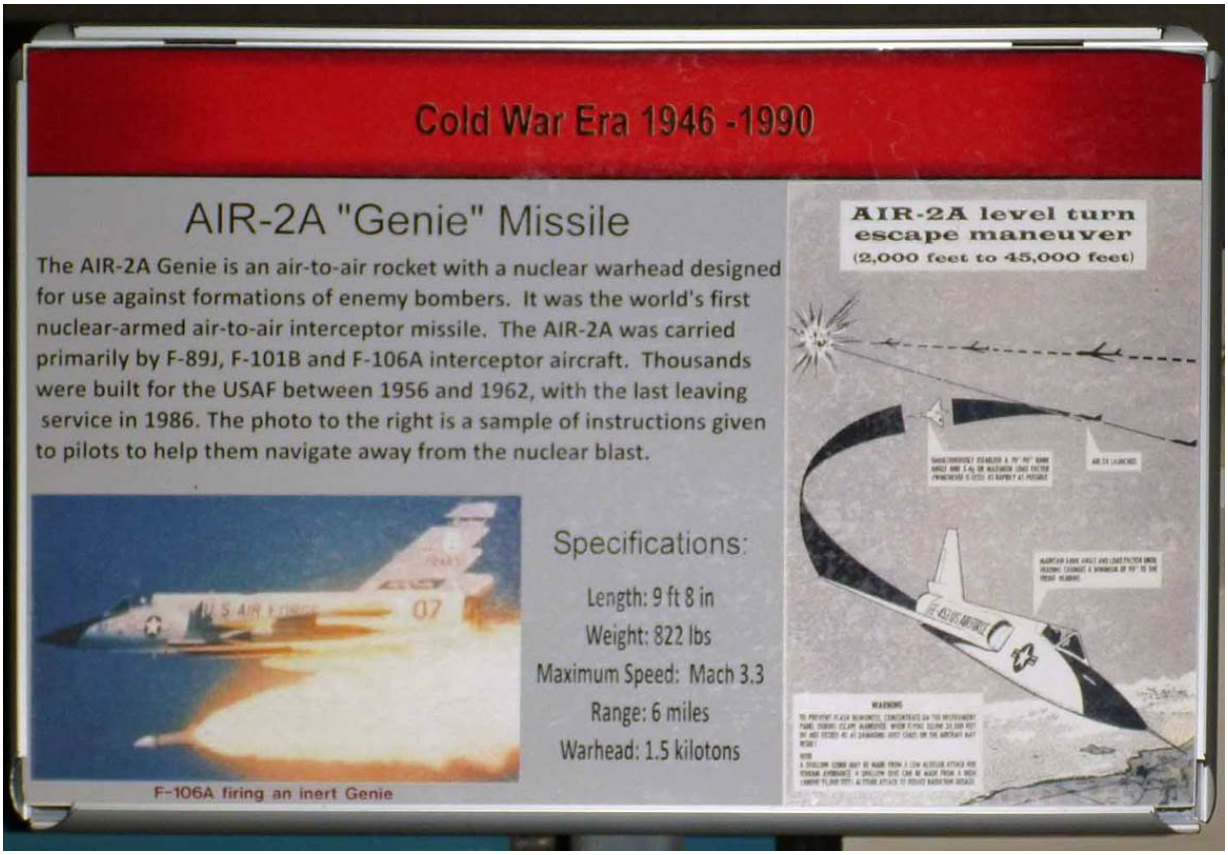
. . . for silo launched intercontinental ballistic missiles that dot the surrounding landscape.



During my stay at the museum, I was able to observe the launch consoles for this facility.

There were also numerous Cold War relics, such at the AIR-2A “Genie” Missile that was designed

to take down a fleet of enemy bombers with a single nuclear blast. It was test fired from one of the airplanes that I provided technical support for, the F-106. See photo below.



It should be noted that the W25 nuclear warhead of this missile is about seventeen inches in diameter and is about twenty-six inches long. This nuclear warhead has an

explosive yield that is equivalent to about 1,500 tons of TNT. See photo below of an AIR-2A Genie nuclear air-to-air rocket on a MF-9 Transport trailer.

Going back outside, there were a number of interesting static displays, such as this B-52 bomber, many of which are still in use today and are way older than the airmen who fly them. I

saw lots of these during the Vietnam War when I was working at Kelly Air Force Base.

There was also a tribute to the Berlin Air Lift and Operation Candy Drop.

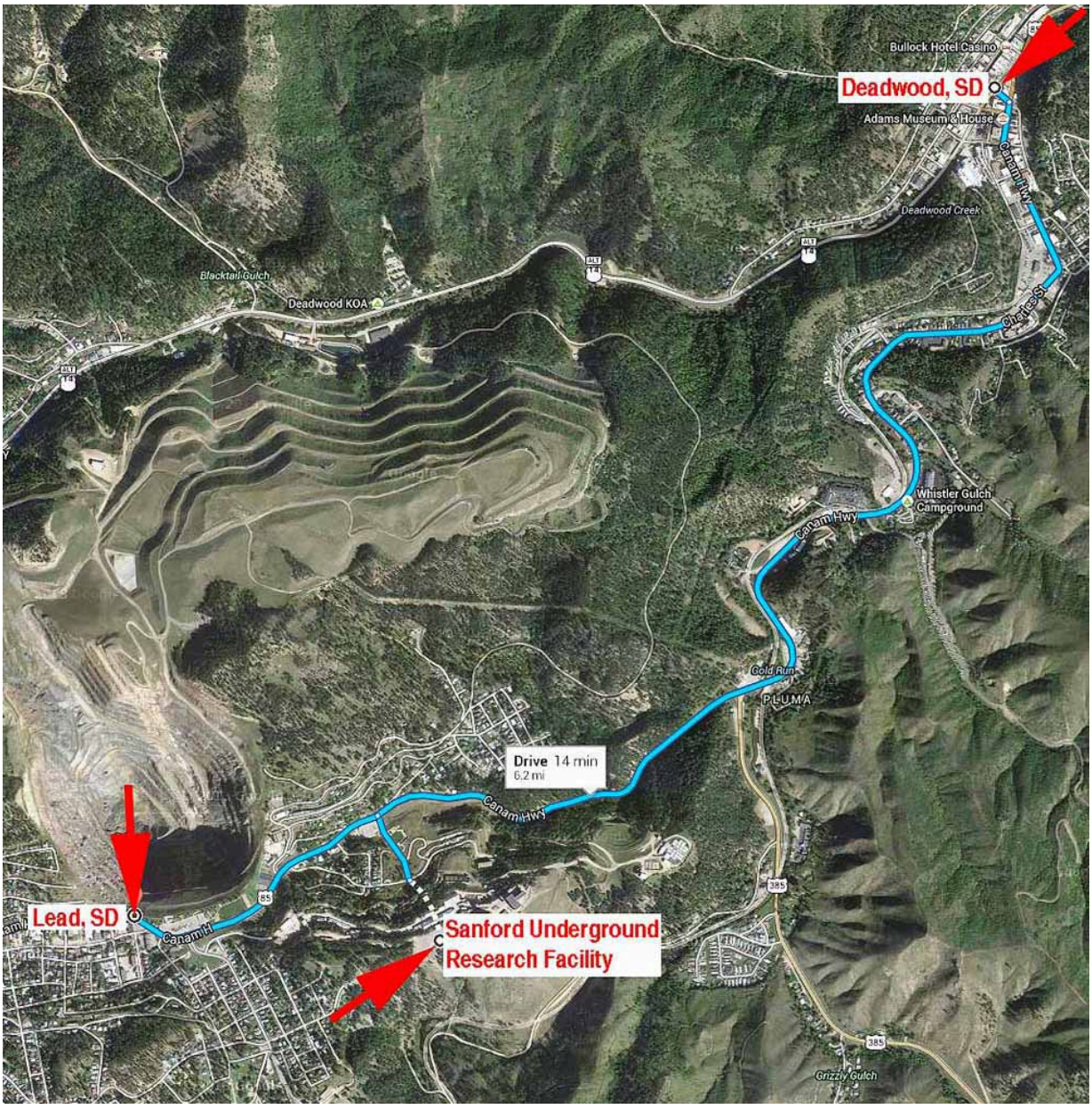
My professional interest in military science has also taken me to some very unusual research facilities. I visited the Homestake Mine because it has scientific interest to me as well as being a deep underground gold mine. Until it closed in 2002, it was the largest and deepest gold mine in North America, producing more than 40 million ounces of gold. The Homestake Mine is famous in scientific circles for being the site at which the **solar neutrino problem** was first discovered. This became known as the **Homestake Experiment**. The deep underground laboratory was set up by Raymond

Davis Jr. in the mid-1960s to become the first experiment to observe solar neutrinos.

I will be very brief in describing my scientific interest in solar neutrinos. Simply put, solar neutrinos are created as a byproduct of nuclear fusion when the nuclei of four hydrogen atoms are fused into one helium atom, resulting in a massive release of energy in the form of gamma rays and kinetic energy, that includes the emission of positrons and **neutrinos**. Based upon our understanding of the nuclear fusion process that occurs on our sun, the amount of neutrinos reaching the earth was about one-third of what was predicted, as measured by the Homestake Experiment. This problem was eventually resolved when it was found that neutrinos come in three different forms or "flavors" and that they can switch between forms or "flavors" during a process known as oscillation to produce only one type or "flavor" that is readily detectable.

Below, is a detailed aerial roadmap of our drive

from Deadwood to Lead, South Dakota.



En route, in the below photos, we could see the

aboveground remnants of the Homestake Mine, where the **Sanford Underground Research Facility** is located.

The terrain, en route, was quite striking, as shown in the photos that follow.

Soon, after some arduous driving, we arrived at the entrance to the Sanford Underground Research Facility . . .

. . . as can be seen in the aerial photo below. Unfortunately, we were not able to gain facility access, so I did some Internet research, which follows.

The Homestake Mine was converted into a nuclear research facility that is looking for **dark energy** and **dark matter**. This conversion was quite extensive, as can be seen from the construction photos that follow.

NOTE: I probably would have felt quite at home at the Homestake Mine, as, in my youth, I was a nuclear researcher for the Ames Laboratory of the United States Atomic Energy Commission;

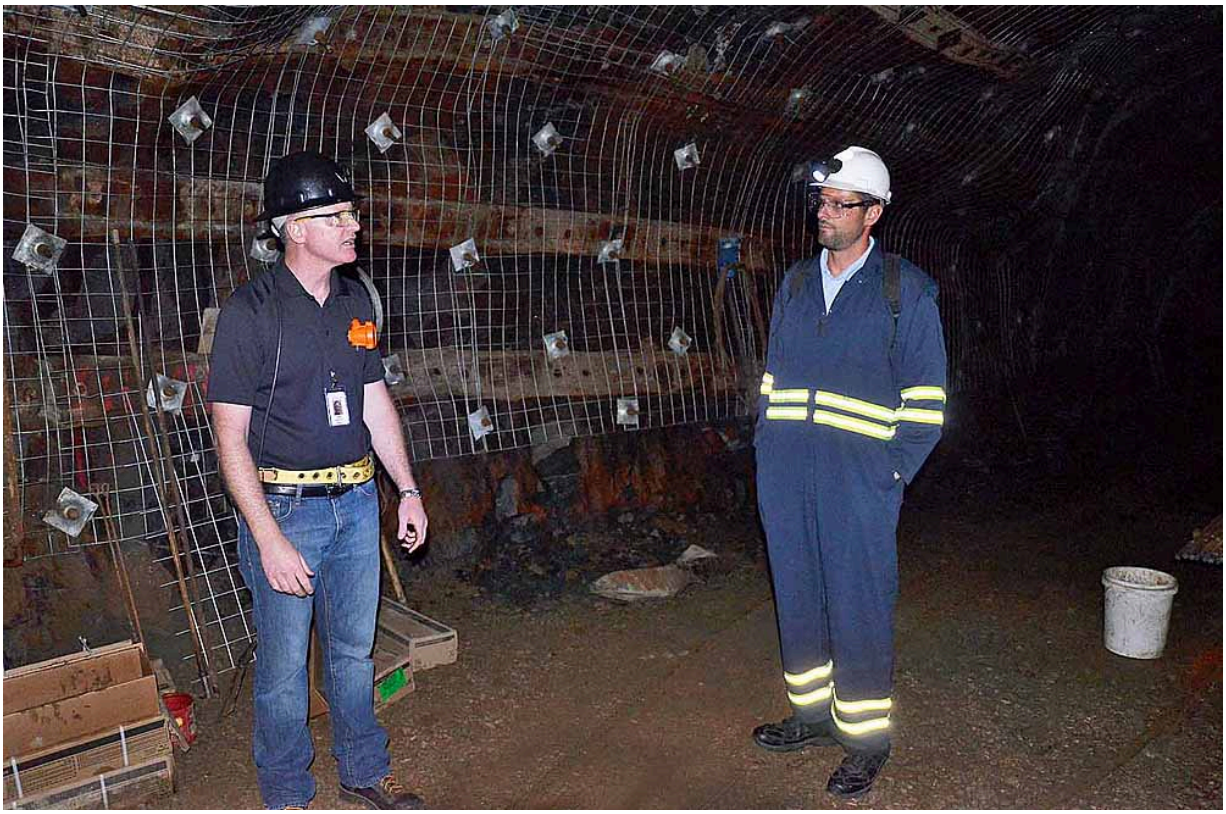
my specialty was spectrochemistry. I was was recruited, during my senior year at Michigan State University to perform nuclear research that required the use of an electron beam microprobe. I worked under the auspices of Dr. **Velmer A. Fassel (Ph.D. 1947)**(deceased), who was internationally known for developing an analytical process, inductively coupled plasma-atomic emission spectroscopy (ICP-AES), used for chemical analysis in almost every research laboratory in the world; he also was a former deputy director of the Ames Laboratory.

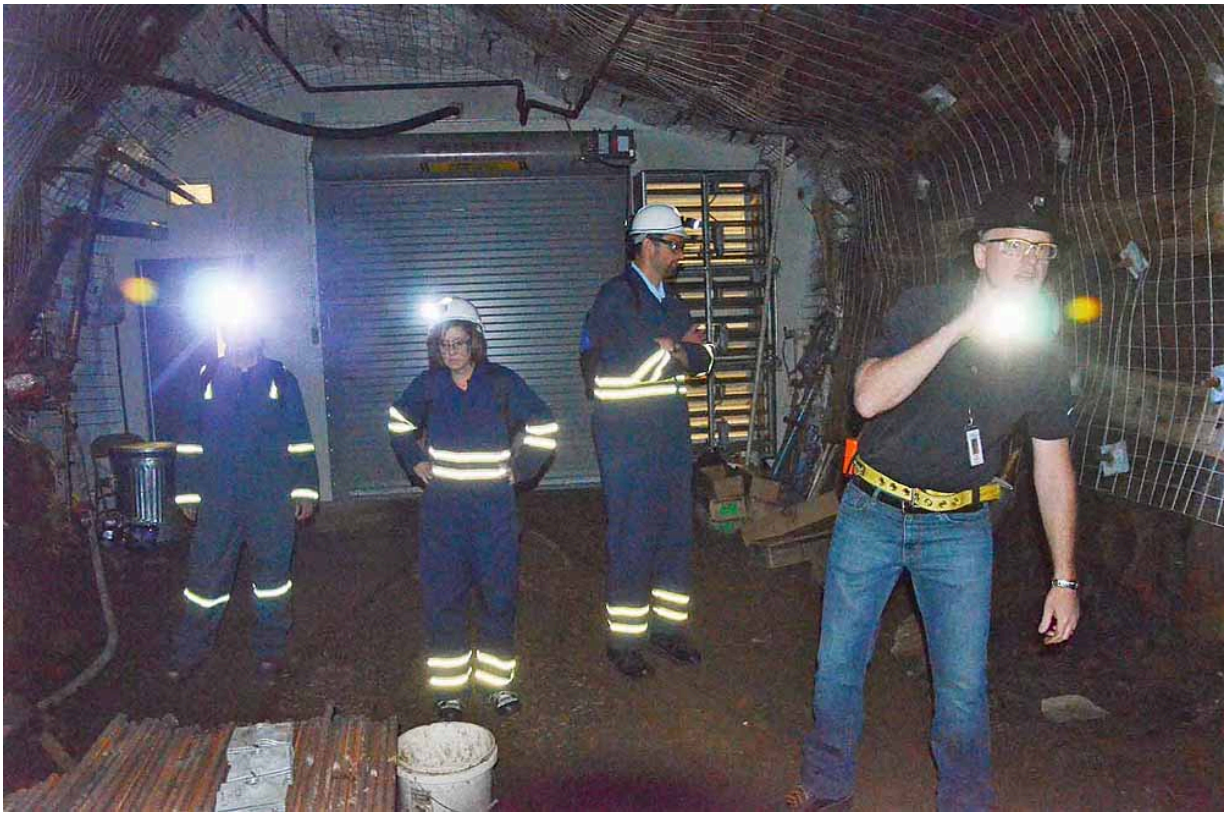
My subterranean laboratory was located on the Iowa State University campus, beneath Spedding Hall. Uniformed guards controlled laboratory access. Besides an elevator, a series of tunnels that descended into the ground provided access to my laboratory. This facility was eventually determined to be a source of beryllium contamination, for which I am currently being annually monitored by NIOSH, and for radiation exposure as well by the ORAU Dose Reconstruction Team.

Spedding Hall was named in honor of **Frank Spedding (B.S. 1925, M.S. 1926)** (deceased), who directed the chemistry phase of the Manhattan Project in World War II, which led to the world's first controlled nuclear reaction. He was Iowa State University's second member of the National Academy of Sciences and the first director of the Ames Laboratory. Dr. Spedding won the Langmuir Award in 1933, Only Oscar K. Rice and Linus Pauling preceded him in this achievement. This award is now called the Award in Pure Chemistry of the American Chemical Society. He is the first to bear the title Distinguished Professor of Sciences and Humanities at Iowa State (1957). Further awards include: William H. Nichols Award of the New York section of the American Chemical Society (1952); the James Douglas Gold Medal from the American Institute of Mining, Metallurgical, and Petroleum Engineers (1961) for achievements in nonferrous metallurgy; and the Francis J. Clamer Award from the Franklin Institute (1969) for achievements in metallurgy.

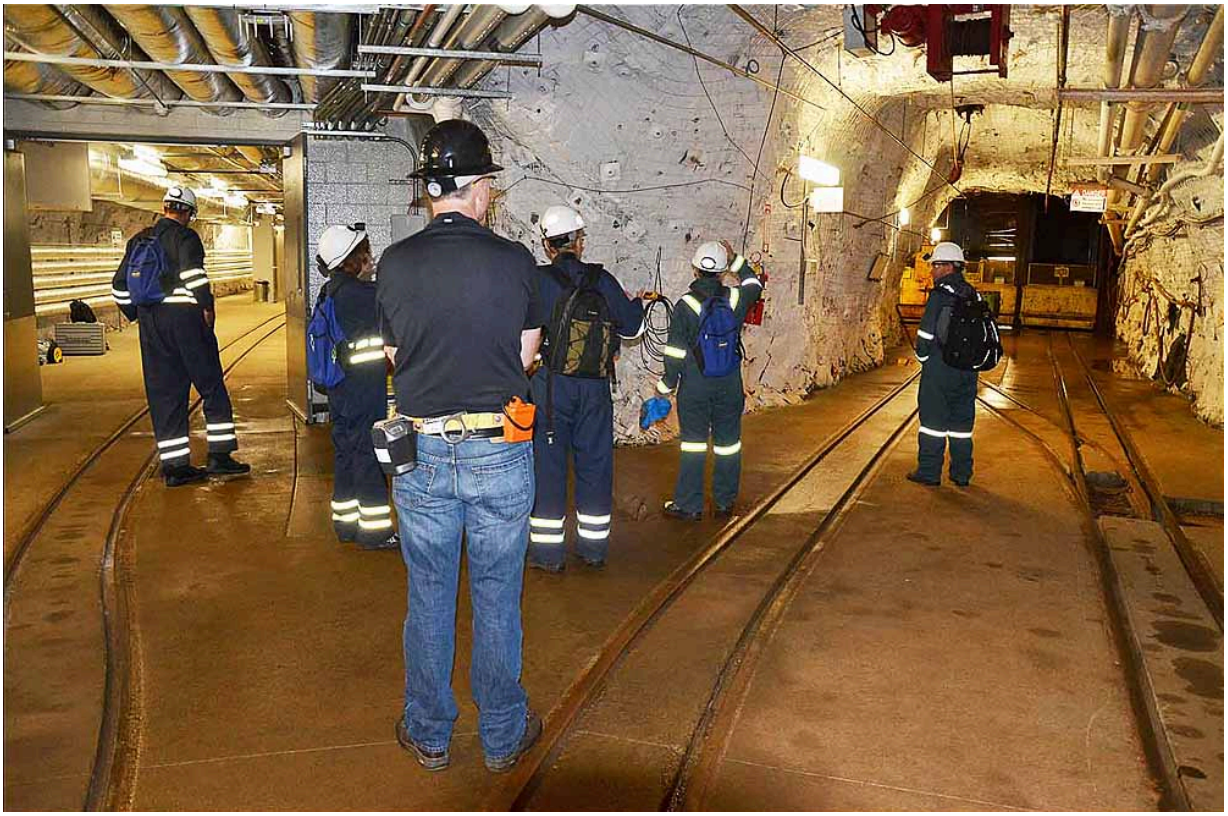

NORDBERG

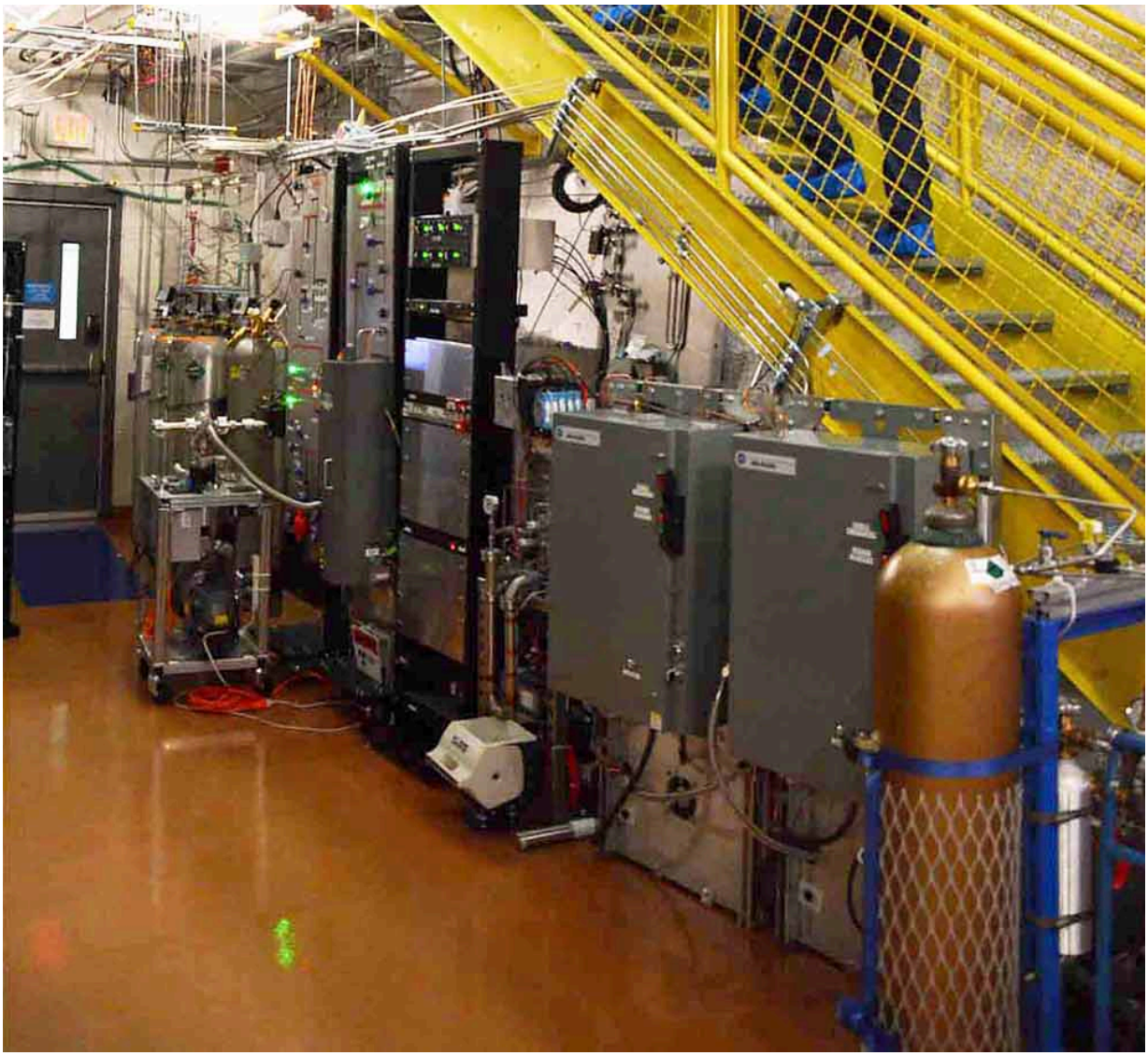

XL-100






EXIT
DANGER
YATES
YATES





In physical cosmology and astronomy, **dark energy** is a hypothetical form of energy that permeates all of space and tends to accelerate the expansion of the universe. Dark energy is the most accepted hypothesis to explain

observations since the 1990s that indicate that the universe is expanding at an accelerating rate.

Dark matter is a type of matter in astronomy and cosmology hypothesized to account for effects that appear to be the result of mass where no such mass can be seen. Dark matter cannot be seen directly with telescopes; evidently it neither emits nor absorbs light or other electromagnetic radiation at any significant level. It is otherwise hypothesized to simply be matter that is not reactant to light. Instead, the existence and properties of dark matter are inferred from its gravitational effects on visible matter, radiation, and the large-scale structure of the universe.

As previously stated, the Homestake Mine was converted into a dark matter research facility by Sanford University. This is a project that I have been following for some time and with great interest — both from a matter of general science and as a researcher with a degree in Chemistry and a specialty in Instrumental Methods of Analysis with a specific interest in photonics.

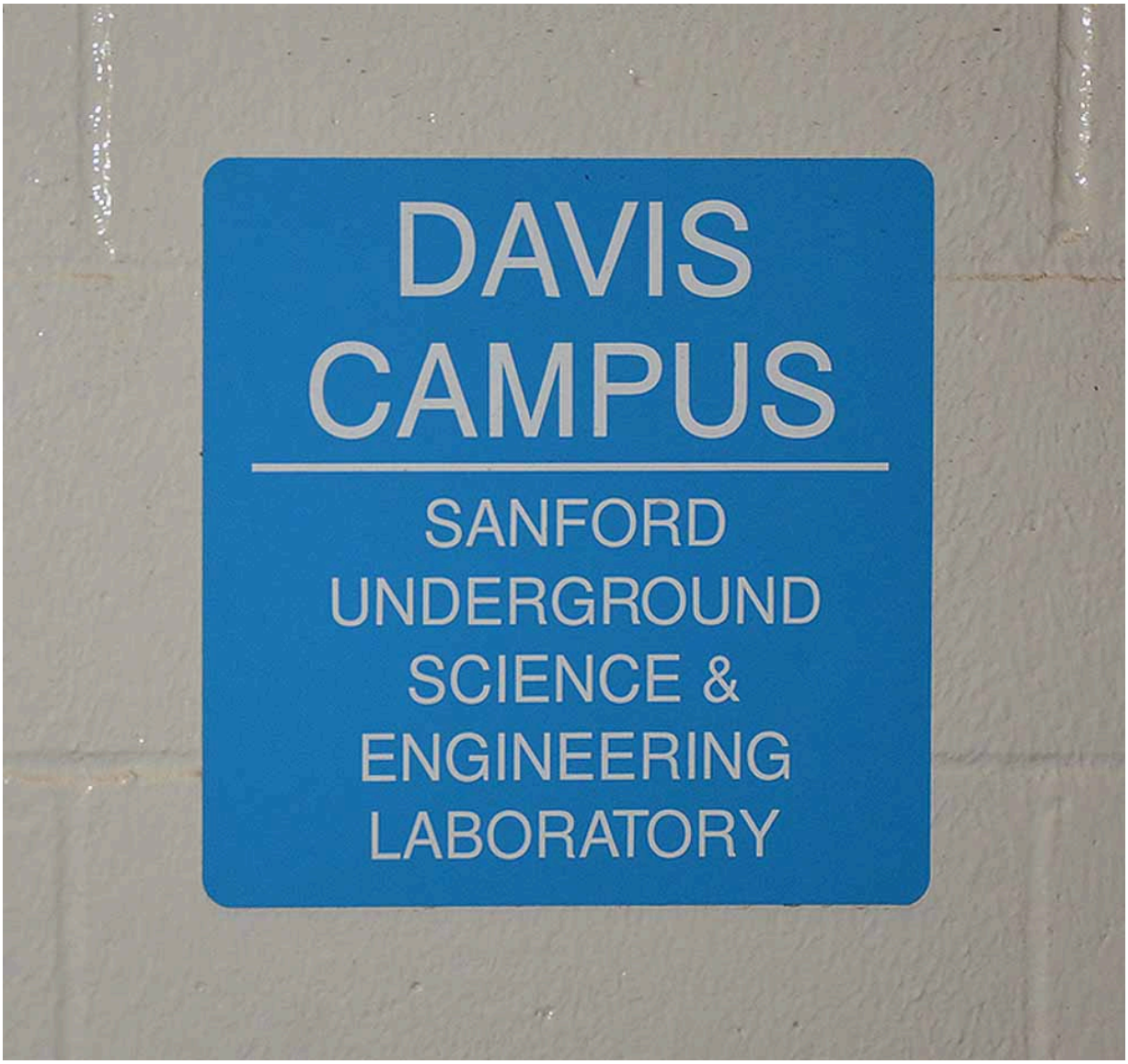
The **Large Underground Xenon experiment** (LUX) is a 370 kg liquid xenon physics experiment that aims to directly detect interactions between Weakly Interacting Massive Particle (WIMP) dark matter and ordinary matter on Earth. See photo below.

Despite the wealth of evidence supporting the existence of non-baryonic dark matter in the Universe, dark matter in our galaxy has never been directly detected on Earth. The LUX experiment utilizes a large detector mass in a time-projection chamber (TPC) configuration to identify individual particle interactions in the liquid xenon volume, which will allow it to look for

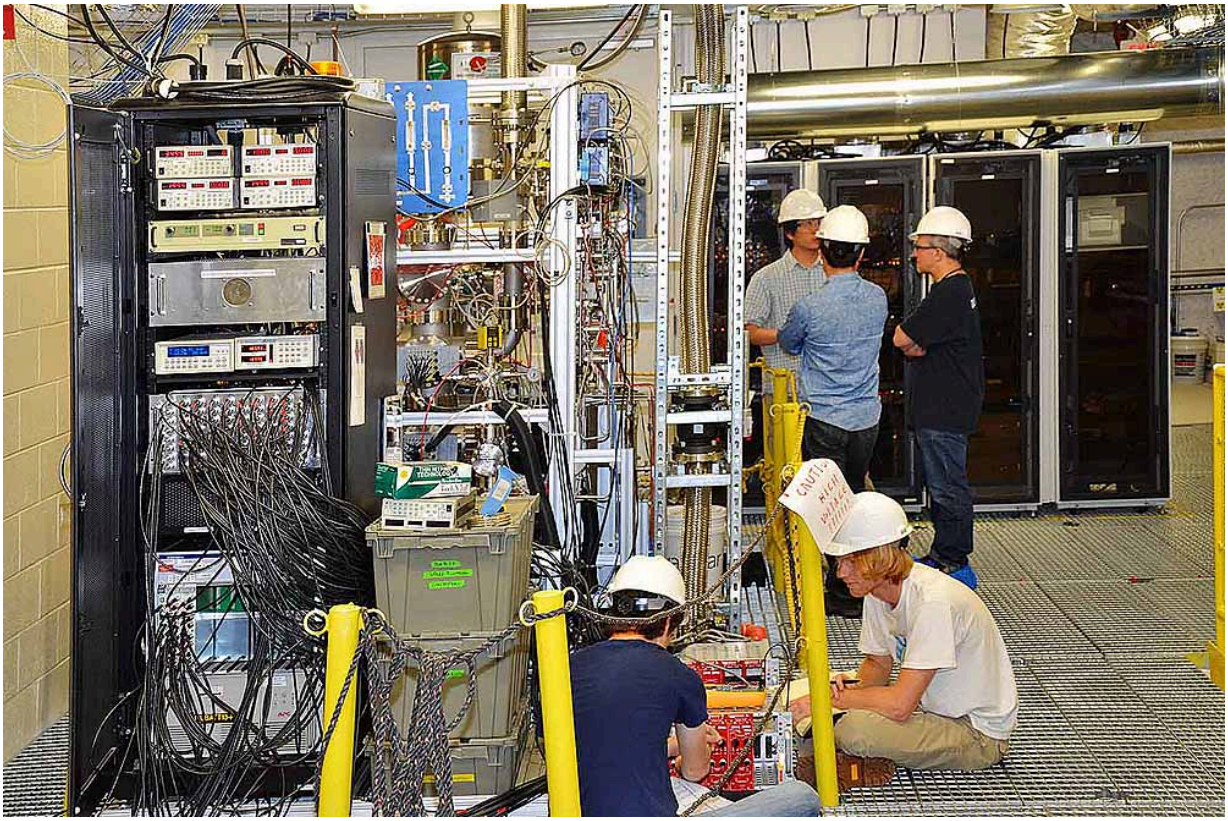
faint dark matter interactions with unprecedented sensitivity. See photo below.

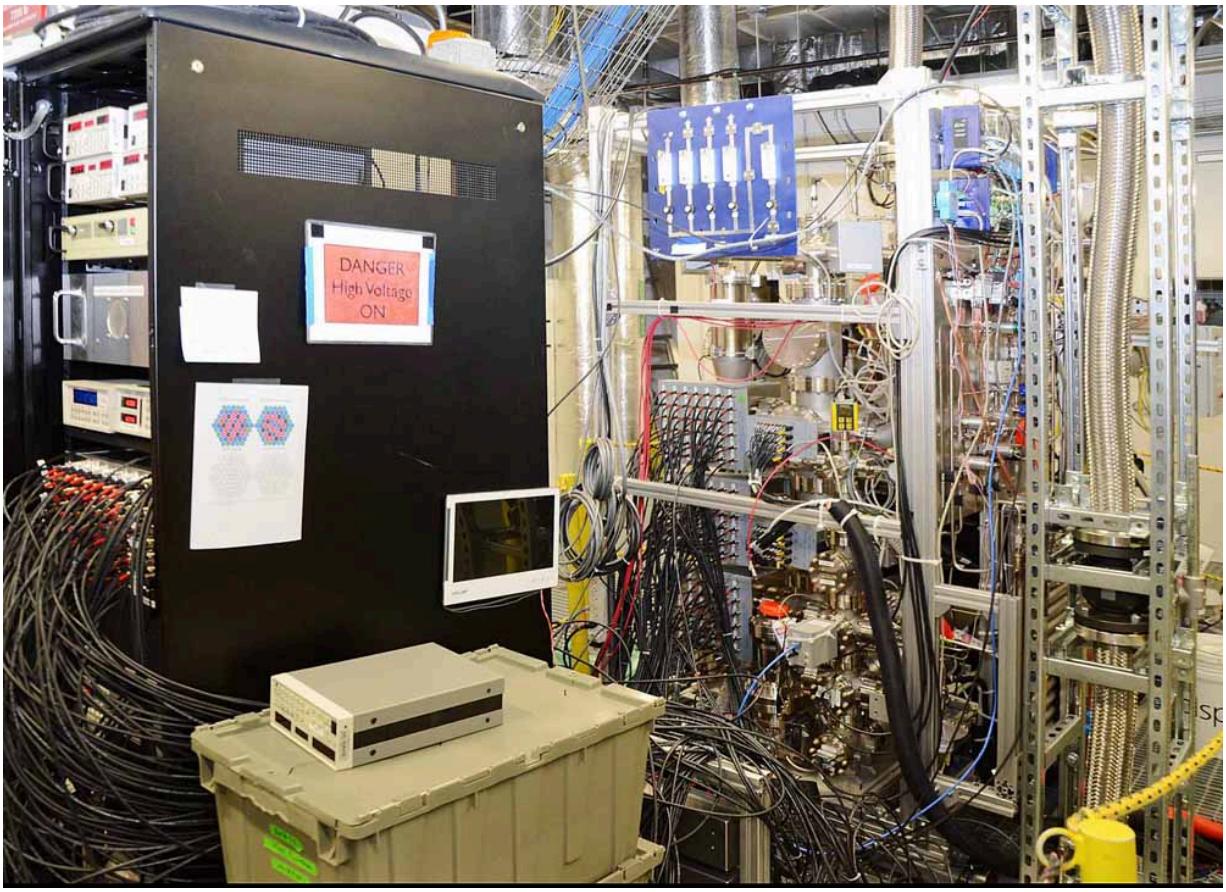
The Large Underground Xenon experiment is installed inside of a 70,000 gallon water tank for additional shielding. See the fisheye photo below for an overall internal tank view.

The LUX experiment is located 4,850 ft (about 1 mile) underground at the Sanford Underground Laboratory (formerly the Deep Underground Science and Engineering Laboratory, or DUSEL) in the Homestake Mine (South Dakota) in Lead, South Dakota. Underground, the detector is located in the Davis campus, . . .

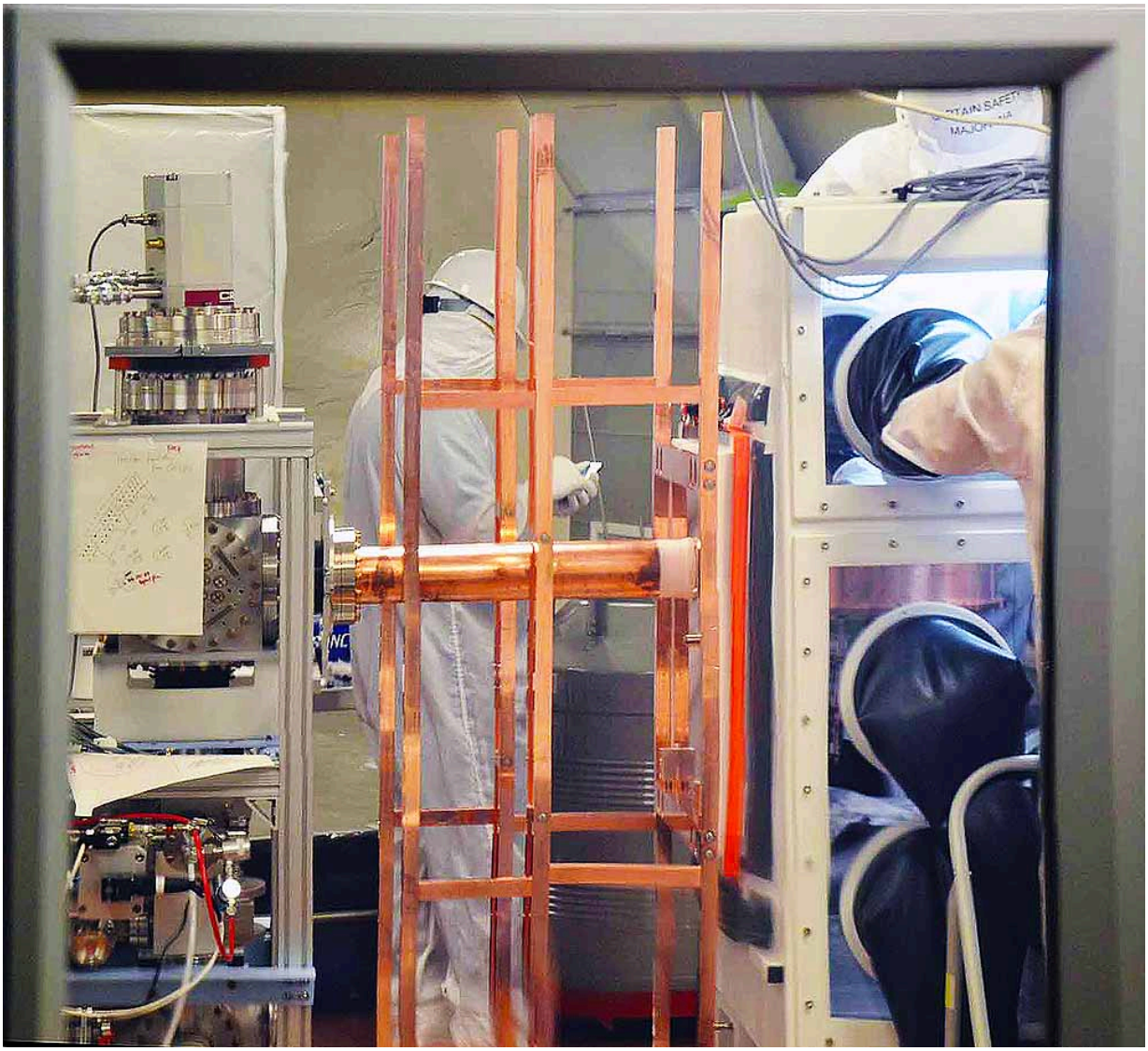


. . . the former site of the Nobel-prize winning Homestake neutrino experiment led by Raymond Davis. The LUX experiment needs to be operated underground in order to reduce signal background caused by high-energy cosmic rays at the Earth's surface. A few photos of the operating equipment follow.




DANGER
High Voltage
ON


Main Config Control
450L dewars
SRV dewar
TS dewar
HALT THE CONTROLLER BEFORE POWERING IT OFF!
DO NOT OPEN!
• 2 people must be present to open this box
• Only trained LUX persons may access this box

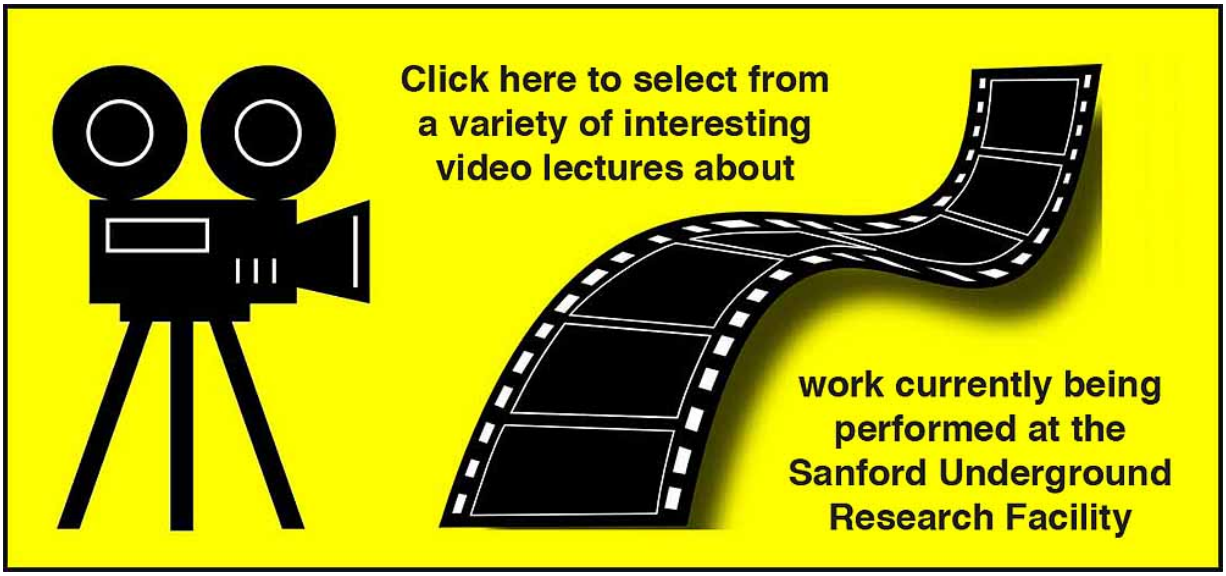


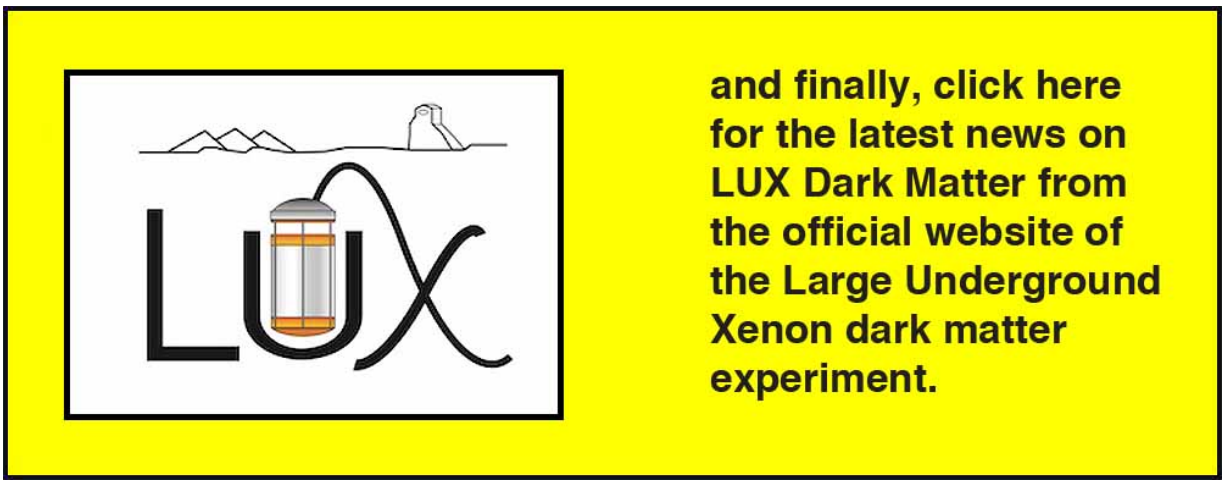
For more information on the Sanford Underground Research Facility, ***click on the image below.***

And, if you want to take this to the next level, you might want to investigate string theory, or simply click on the music video icon below.

For information on the progress of the LUX experiment, ***click on the image below***.

Additional information on dark matter and dark energy research is available from a series of videos that have been prepared by the Sanford Underground Research Facility.





And, just to complete matters, I recently flew my plane to Ames, Iowa, where, being a member of the Former Atomic Energy Workers Group, I am being monitored for the long term affects of having worked with and having been exposed to radiological materials. In the photo that follows, I am standing next to the fire door that leads to my former Electron Beam Microprobe Laboratory, now being used as a storage room because it was most likely contaminated with Thorium, which was experimentally used as a shortcut to manufacture, by transmutation, fissile material (Uranium 233) which proved too unstable for nuclear weapons.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