DCN 519

U. S. NAVY LABORATORIES

BOOK NUMBER 2 OF 8

B. Naval Air Warfare Center, Point Mugu, CA
C. Naval Air Warfare Center, Indianapolis, IN
D. Naval Air Warfare Center, Lakehurst, NJ
E. Naval Surface Warfare Center, Carderock, MD
F. Naval Surface Warfare Center, Annapolis, MD
G. Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station, Panama City, FL

94-09-12 11:40 RCVD

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE DATA CALL

CAPACITY ANALYSIS: DATA CALL #12

168

TECHNICAL CENTERS

Category	Technical Center
Technical Center Site	NAWCWPNS, Point Mugu
Location/Address	Point Mugu, California

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Section IV: Appendices

INTRODUCTION

NAVAL AIR WARFARE CENTER WEAPONS DIVISION, MISSION AND SITES

The Naval Air Warfare Center Weapons Division (NAWCWPNS) is a full-spectrum research, development, test, evaluation, and in-service engineering center for weapon systems associated with air warfare (except antisubmarine warfare systems), missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems. In addition, NAWCWPNS maintains and operates DOD's largest and most completely instrumented air, land, and sea test range complex.

NAWCWPNS was formed through the combination of four Navy shore facilities: the Naval Weapons Evaluation Facility, Albuquerque, New Mexico; the Naval Ordnance Missile Test Station, White Sands, New Mexico; the Pacific Missile Test Center, Point Mugu, California; and the Naval Weapons Center, China Lake, California. Integrating the full-spectrum activities of these four organizations provides an expanded capability for research, development, test, evaluation, and support throughout the weapon-system life cycle. The current structure of NAWCWPNS includes an overall Command function; laboratory (R&D) functions concentrated within the R&D Pillar, reporting to the Deputy Commander for R&D; T&E functions in the T&E Pillar, reporting to the Deputy Commander for T&E; a single Services and Information Directorate; and Naval Air Weapons Stations at Point Mugu and China Lake as "base-keepers."

The primary sites of NAWCWPNS are at China Lake, California, located in the high desert approximately 150 miles northeast of Los Angeles, and at Point Mugu, California, located on the coast approximately 60 miles northwest of Los Angeles. A major detachment is operated at White Sands, New Mexico (as a tenant at the White Sands Missile Range (WSMR)), and another smaller group is located at Albuquerque, New Mexico (as a tenant at Kirtland AFB).

NAWCWPNS is a truly integrated structure. Many organizational entities are spread across multiple sites. For example, the Aircraft Weapon Systems programs at the China Lake and Point Mugu sites have been consolidated into a single organization with facilities and capabilities at both sites, and the personnel work as an integrated team. Similar consolidations at NAWCWPNS have been made in the areas of Engineering and In-Service Engineering, Targets and Threat Simulations, Information and Electronic Warfare, Air Intercept Weapons and Attack Weapons, and most base support functions. Additionally, this integration has resulted in the Naval Western Test Range Complex, which is composed of the Point Mugu sea range and test facilities combined with the land ranges and test facilities at China Lake and White Sands. The Complex provides complementary, full-spectrum test capability for weapon systems and aircraft. Additionally, the Major Range and Test Facility Base (MRTFB) portion of the funding is managed through a consolidated centralized program office.

NAWCWPNS as a total entity represents the work of more than 8,000 civilian employees and 1,300 military personnel. It is the Navy's complete sector of scientific and technical knowledge for air warfare systems, guided missiles, and aircraft weapon integration. Existence at China Lake of DOD's largest weapons R&D laboratory in immediate proximity to the land test range has repeatedly been shown to be of great significance in furthering the air weapons development function. Equally significant is NAWCWPNS Point Mugu's role as the Navy's primary weapons T&E site and air weapons in-service engineering support site with its contiguous Sea Test Range and its air weapons in-service engineering support, which complements the China Lake R&D role.

Since NAWCWPNS is an integrated organization at multiple sites, an artificial split is being made to respond to BRAC data calls. The organization is completely integrated across sites and functional areas and pursues work with the philosophy that RDT&E is a seamless process. In addition, many support functions are provided through a single, central, consolidated organizational element. Although the data calls are provided separately as requested, the capabilities of the NAWCWPNS sites must be treated as an integrated whole. As an example, the Threat Simulation Directorate is a single organization with personnel at both major sites supporting both Laboratory and T&E functions. The Directorate has a consolidated budget administered by a single comptroller, and a consolidated position management structure administered by a single Human Resources Department.

NAWCWPNS LABORATORY FUNCTIONS

The laboratory functions at the NAWCWPNS are performed in the R&D Pillar at China Lake and at Point Mugu. The data provided in this data call response reflect the operations of that organization.

SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- *Determine common support functions and bases to be addressed by LJCSG*
- *Establish guidelines, standards, assumptions, measures of merit, data elements and milestone schedules for DOD Component conduct of cross-service analysis of common support functions*
- *Review excess capacity analysis*
- *Develop closure or realignment alternatives*
- *Analyze cross-service trade-offs*

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines. *Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.*

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan--FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross-service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments—personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards. *Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.*

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions. *"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.*

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit. *The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.*

- *Reduction of "lab" infrastructure*
- *Return on investment (COBRA)*
- *Military value (BRAC criteria 1-4)—the composite assessment of the quality of the remaining "lab" infrastructure*

1.5 Activities. *The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.*

1.6 Common Support Functions. *The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross-serviced were not included.*

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions only include those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 Workload. *Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)*

NAWCWPNS is a Defense Operating Fund (DBOF) activity. As such, funding is programmed to support a combination of in-house technical efforts, local Scientific, Engineering and Technical Assistance (SETA) contracts, non-local technical work performed by industrial contracts and infrastructure support (i.e. overhead).

The data that is presented in the following table do not reflect non-R&D activity at the Point Mugu site. The data are for efforts that are managed by the "laboratory" portion of the organization. The workyear data is for Direct workyears only and do not include the production or general overhead workyears associated with the Direct workload.

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	151	173	226	251	248	283	288	327	324	323	320	315
Total Actual Funds ($M)	153	173	236	248	244	289	298	327				
Programmed Workyears	1295	1532	1557	1421	1576	1922	1991	2040	1963	1884	1868	1850
Actual Workyears	1368	1532	1633	1578	1633	1843	1779	1910				

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 Excess "Lab" Capacity—Measured at the DOD Component Level

- *Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears*
- *Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93*
- *Projected at each activity = Estimated at FY97*

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): *Provide the information described for each common support function listed in Appendix C in which you are actively engaged.*

3.0 Mission: *Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.*

NAWCWPNS Point Mugu is an engineering center with a workload that encompasses a broad range of activity that span eight CSFs: Air Vehicles (both Fixed- and Rotary-Wing Avionics), Weapons (Conventional and Cruise Missiles, Bombs, and Guns and Ammunition), and C4I (Fixed and Mobile Ground-based C4I). The center's workload, consisting of development, T&E, and in-service support of systems in these CSFs, combined with a major test range, supports the fielding of integrated weapons systems to the Fleet. The following summarizes the capabilities of NAWCWPNS Point Mugu to support these CSFs.

CSF: AIR VEHICLES, Fixed Wing, Avionics

- Electronic Warfare Countermeasures Systems, R&D and ISE
- Electronic Warfare Systems Support Equipment
- EA-6B Weapons Systems R&D and ISE
- Life Cycle System Engineering for Tactical Aircraft Systems
- Tactical System Software Upgrades
- Avionics Systems Integration

CSF: AIR VEHICLES, Rotary Wing, Avionics

- Electronic Warfare Countermeasures Systems, R&D and ISE
- Electronic Warfare Systems Support Equipment
- EA-6B Weapons Systems R&D and ISE
- Life Cycle System Engineering for Tactical Aircraft Systems
- Tactical System Software Upgrades
- Avionics Systems Integration

CSF: WEAPONS, Conventional Missiles/Rockets

- Digital Hardware-In-The-Loop Simulation
- Tactical Aircraft Weapons Integration
- All-Up-Round and Launch Platform Integration Testing
- Provide and maintain facilities required for the above functions; facilities are used by Government and contractors

CSF: WEAPONS, Cruise Missiles

- Digital Hardware-In-The-Loop Simulation
- Tactical Aircraft Weapons Integration
- All-Up-Round and Launch Platform Integration Testing
- Provide and maintain facilities required for the above functions; facilities are used by Government and contractors

CSF: WEAPONS, Bombs

- Digital Hardware-In-The-Loop Simulation
- Tactical Aircraft Weapons Integration
- All-Up-Round and Launch Platform Integration Testing
- Provide and maintain facilities required for the above functions; facilities are used by Government and contractors

CSF: WEAPONS, Guns and Ammunition

- Digital Hardware-In-The-Loop Simulation
- Tactical Aircraft Weapons Integration
- All-Up-Round and Launch Platform Integration Testing
- Provide and maintain facilities required for the above functions; facilities are used by Government and contractors

CSF: C4I, Fixed Ground-Based C4I

- Tactical Aircraft Systems Mission Planning Systems R&D and ISE
- Tactical Systems/Software Upgrades
- EA-6B Electronic Tactical Warfare Intelligence Data Fusion and Engineering Support
- EA-6B Mission Support Systems Acquisition and ISE support

CSF: C4I, Ground-Based Mobile C4I

- Tactical Aircraft Systems Mission Planning Systems R&D and ISE
- Tactical Systems/Software Upgrades
- EA-6B Electronic Tactical Warfare Intelligence Data Fusion and Engineering Support
- EA-6B Mission Support Systems Acquisition and ISE support

3.1 Location

3.1.1 Geographic/Climatological Features: *Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)*

The primary sites of NAWCWPNS are at Point Mugu, California, located on the coast, appropriately 80 miles northwest of Los Angeles, and at China Lake, located in the high desert, approximately 150 miles northeast of Los Angeles. Major detachments are operated at Albuquerque, New Mexico (as a tenant at Kirtland AFB), and White Sands, New Mexico (as a tenant at the White Sands Missile Range). A smaller detachment is operated at Eglin AFB in Florida to provide joint technical management with the USAF of the Joint Direct Attack Munition (JDAM) program.

The location of Point Mugu is shown on the maps in Figures 1 and 2 in relation to the other activities. As can be seen, the NAWCWPNS complex provides a unique capability to exercise long-range, multiplatform weapon systems that require complementary capabilities of neighboring facilities. As an example (Figure 2) the Tomahawk cruise missile can be launched from the Sea Test Range at Point Mugu, from ship or submarine; fly over water to the desired distance; make a landfall and fly hundreds of miles overland through a special corridor; and impact realistic targets at NAWCWPNS China Lake or at the Utah Test and Training Range.

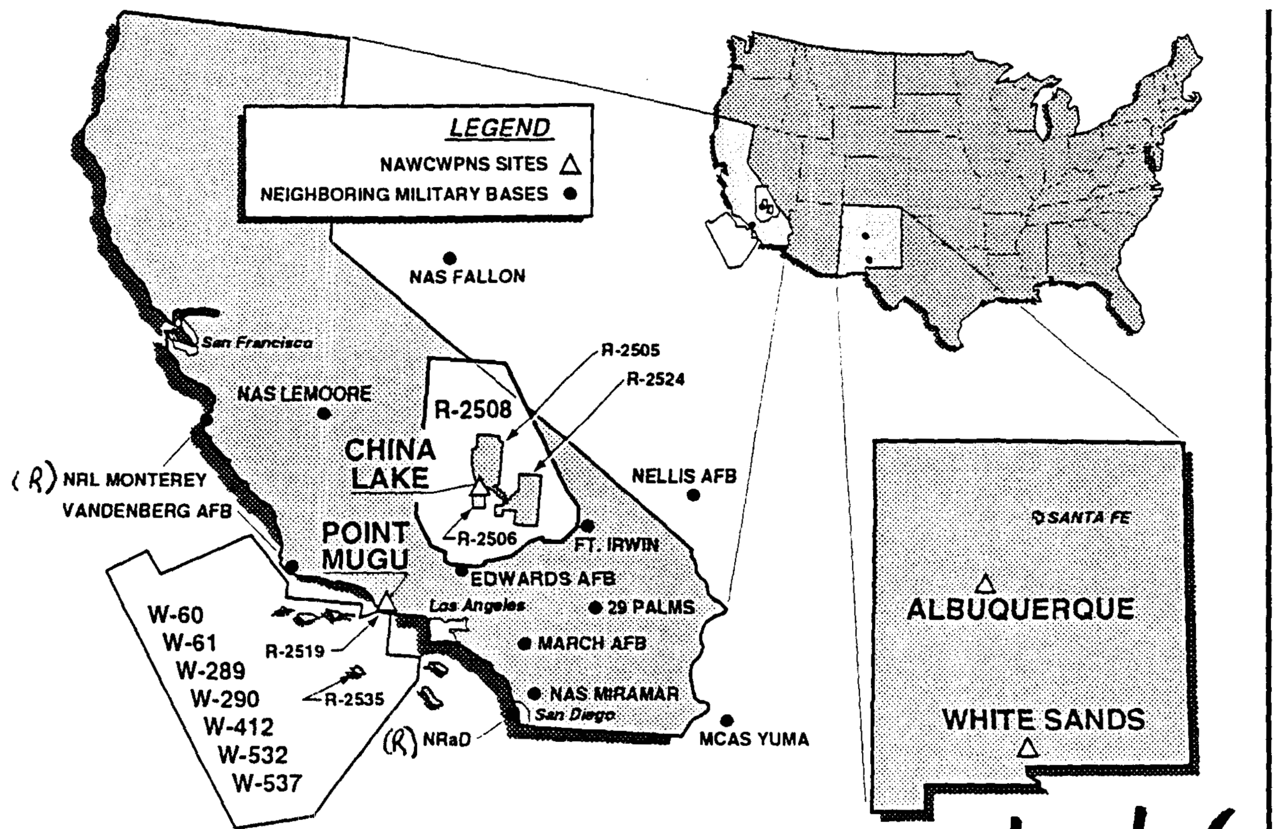

FIGURE 1. NAWCWPNS Site Locations.

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While Point Mugu's atmosphere is typically mild, comfortable and very favorable for conducting test operations, it also incorporates many of the features needed to ensure that test and evaluation (T&E) of weapons systems will be performed not only under ideal conditions, but also in settings which duplicate conditions experienced in the most prominent and likely theaters of operation worldwide. These features which are addressed in the Navy RDT&E efforts, address the highest CINPACFLT and CINCLANTFLT environmental support requirements, EM/EO propagation, and Tomahawk support. For example, the strong ducting conditions that occur in the Point Mugu area are precisely those experienced in the Northern Arabian Sea and Persian Gulf areas which challenge AEGIS and all threat detection system capabilities. The ability to test shipboard detection and Standard Missile capabilities in this environment not only enhances operational AEGIS "Shield of the Fleet" capabilities, but also provides a basis for mitigating the environmental (air-sea) ducting conditions. Testing in this environment now minimizes such uncertainties for future engagements. The Point Mugu atmosphere provides the vehicle for testing the various near-sea surface capabilities developed by or for the Navy to measure, model and forecast radar propagation in the shipboard boundary layer environment where the threat from sea-skimming missiles is greatest. The Navy-sponsored RDT&E performed within this laboratory addresses these operational problems.

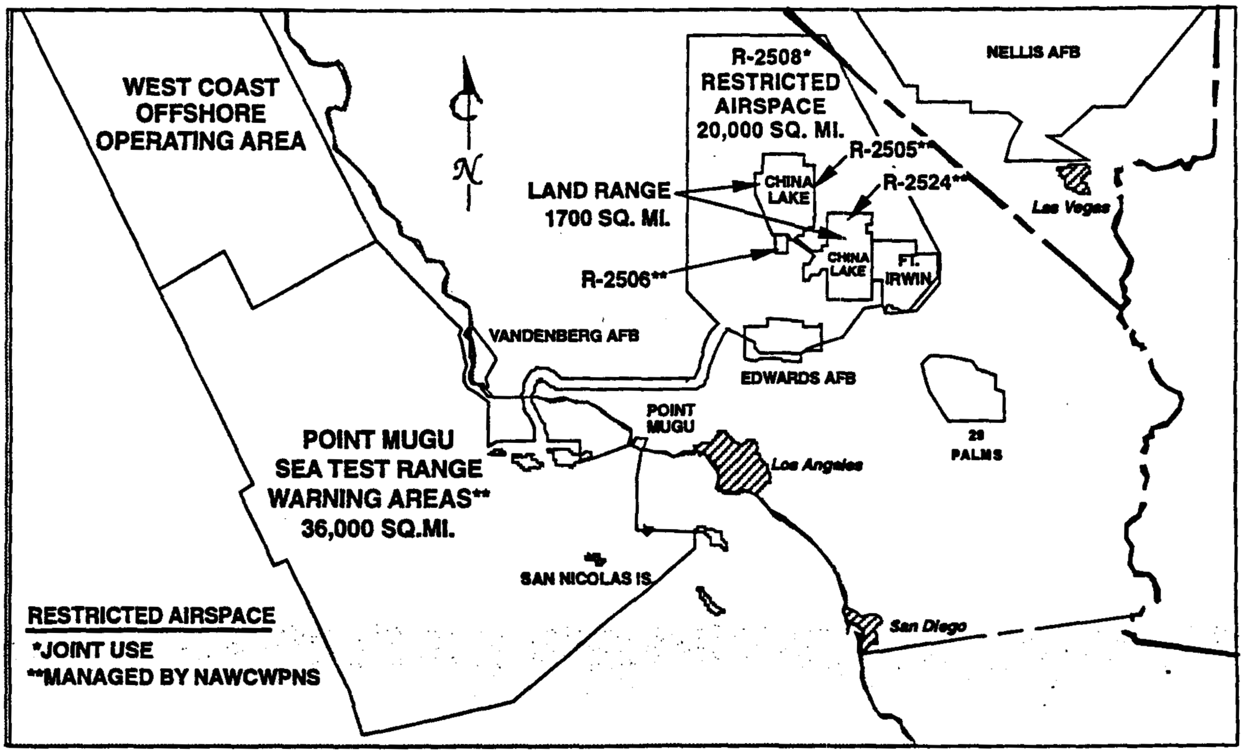


FIGURE 2. NAWCWPNS Air/Land/Sea Ranges.

The following CSFs require each of the unique Geographic/Climatological features described below to accomplish their mission:

AIR VEHICLES, FIXED WING, AVIONICS
AIR VEHICLES, ROTARY WING, AVIONICS
WEAPONS, CONVENTIONAL MISSILES/ROCKETS
WEAPONS, CRUISE MISSILE
WEAPONS, BOMBS
WEAPONS, GUNS and AMMUNITION
C4I, FIXED, GROUND-BASED
C4I, GROUND BASED, MOBILE

Point Mugu's unique Geographic/Climatological features are:

- SEA TEST RANGE
- R-2508 SPECIAL USE AIRSPACE COMPLEX
- AIR-SEA ENVIRONMENT
- SAN NICOLAS ISLAND
- LAGUNA PEAK
- FAA CORRIDORS

Sea Test Range

The NAWCWPNS Point Mugu Sea Test Range provides an irreplaceable operationally realistic environment that combines open ocean, islands, coastal air and sea influences, and adjacent mountains and desert. The NAWCWPNS Point Mugu site provides precisely the combination of factors needed to satisfy DOD's emphasis on precision guided munitions and smart stand-off weapons. It provides the realistic test and evaluation setting required to address the needs of strike, littoral, anti-surface, anti-aircraft, and Joint Special Warfare requirements as described in "From The Sea", and in so doing provides the knowledge-base for laboratory efforts to develop techniques to exploit the environment in Navy operations by capitalizing on range operations and the activities in the Sea Range.

R-2508 Special Use Airspace Complex

Additionally, Point Mugu uses the R-2508 special use airspace complex. This airspace complex is relatively unencroached by commercial and general aviation traffic and is used extensively by numerous other military activities, including Edwards AFB, California; NAWCWPNS China Lake, California; NAS Lemoore, California; Naval Strike Warfare Center, Fallon, Nevada; Fresno Air National Guard, California; Nellis AFB, Nevada' NAS Miramar, California; and MCAS Yuma, Arizona.

The NAWCWPNS complex provides a unique capability to exercise long-range, multi-platform weapon systems that require complementary capabilities of neighboring facilities . As an example (Figure 2) the Tomahawk cruise missile can be launched from Sea Test Range at Point Mugu, from ship or submarine' fly over water to the desired distance; make a landfall and fly hundreds of miles overland through a special corridor; and impact realistic targets at NAWCWPNS China Lake or at the Utah Test ad Training Range.

The Cruise Missile Program's Mission Planning Office has provided NAWCWPNS Point Mugu with an upgraded Mission Distribution System (MDS) in BMIC so that its capability for including meaningful environmental inputs from TESS(3), from the Navy Integrated Tactical Environmental Sub-System (NITES) and other planned sources can be successfully incorporated and tested to enhance the strike/mission planning process. The basis of the MDS inputs will be previously described cruise missile developmental efforts at Point Mugu, with emphasis on the kinds of environmental data contrasts characteristic of the NAWCWPNS Point Mugu to fill this important void because of the ongoing work and experience with supporting Tomahawk in the NAWCWPNS air-sea environment. As capabilities are developed, they will be tested in concert with Tomahawk operational and developmental (OT/DT) tests to eliminate deficiencies and significant weather-related sensitivities encountered during Operation Desert Storm. A NITES system is being moved from a carrier to Point Mugu to support these development efforts. Some of the emerging concepts have been successfully implemented in support of Tomahawk OTLS on the Sea Range, wherein satellite display techniques have been used to move and locate submarines and surface launch ships to favorable areas in order to meet GO/NO-GO criteria. These applications save the Sea Range approximately $.5 million per year. Similar environmental support capabilities are leveraged for SLAM and many other major programs. Interfacing and testing TESS, NITES and Tactical Air Mission Planning System (TAMPS), connectivity is also underway.

Air and Sea Environment

The importance and uniqueness of the NAWCWPNS Point Mugu air-sea environment is also demonstrated by the role that it has played in supporting the Joint Target Signatures Program (TSP). TO provide a basis for making recommendations to Congress on potential investments and tradeoffs between radio frequency (RF) and electro-optical (EO) sensors, the TSP and EOMET programs conducted a nationwide site survey to locate an atmospheric transmission facility where sensor and weapons performance could be closely monitored in a marine environment over operationally-required, over-water path lengths, at the same time that the environment itself is monitored. San Nicolas Island in Point Mugu's Sea Range was selected as the best site in the nation because of its location within the air stream, its facilities, its weapons-oriented mission, its airfield, its control and security aspects, and the technical expertise that could be brought to bear on the problem. San Nicolas Island played host to Army, Navy, Air Force and laboratory/university personnel during a series of test which included scientific measurements coincident with flybys of operational aircraft, passing ships, and multi-spectral sensors in a varying marine atmosphere. The resulting data collected at the Marine Environment Test Range (METR) on the northern end of the island formed the basis of the Navy's Aerosol Model which was incorporated into the Air Force's LOWTRAN Code to predict EO sensor performance for DOD systems. One of the significant inputs for EO assessments is an "air mass" parameter that describes the continental or marine nature of air masses and greatly impacts the attenuation of propagated energy. NAWCWPNS Point Mugu is engaged in a Navy-sponsored RDT&E effort to develop and test a more practical approach to the air mass specification than is currently used operationally.

San Nicolas Island

The unique placement and facilities of San Nicolas Island also led to consideration of its use for directed energy studies should future versions of the technology mature. A variety of classified programs were also brought to the region to take advantage of the operationally-realistic air and sea conditions characteristic of the area. In further recognition of its unique location in a clean, marine environment most of the time, California Institute of Technology, under the auspices of the state of California and in a cooperative effort with the Navy, used San Nicolas Island for background pollution measurements to serve as the benchmark for unpolluted Pacific air reaching the mainland. This data was used for comparisons with air in the Los Angeles Basin, and for establishing air quality standards.

Laguna Peak

An unsurpassable geographic and climatological asset is Laguna Peak, a 1500 foot instrumented mountain peak on the perimeter of Point Mugu that provides realistic air-to-surface paths for testing EO sensors under very controlled conditions. A variety of targets including aircraft, runways, ships at sea, islands, buildings, tanks and various wet and dry vegetation cover can be looked at by actual weapon seekers (e.g., SLAM) in a variety of backgrounds that include sun,. moon, day and night scintillation , wave clutter, dust and sand, hazes, clear, cloudy and stormy conditions, etc. Data collected will provide a unique set of scenes and target contrasts in a coastal environment for those conditions where data is at present totally lacking, or is unreliable. Weather and scene backgrounds can be selected at will, "pick and choose", by operating the mountain-top ground site only when criteria are met, thus eliminating the need for costly and logistically complicated airborne platforms. The Joint Test Director for the Smart Weapons Operability Enhancement (SWOE) Program has expressed interest in the utilization of this capability and sponsored an initial measurement effort in FY93 to address the void in coastal data. The effort consisted of a set of multi-spectral IR measurements and a set of simultaneous meteorological measurements near the source and target to demonstrate the feasibility of the approach.

FAA Corridors (Five)

While there are five FAA corridors that cross the Sea Range from west to east, only two must remain open at any one time. Since the scheduling of these corridors is performed under a joint agreement with the FAA, the range has a significant amount of flexibility in planning and conducting operations.

In summary, Point Mugu's ocean, islands, mountains, weather, air and sea space make it a national treasure for its capacity, representativeness to worldwide operational conditions, and overall operational realism in the test and evaluation of the nation's weapon systems. Because of this representativeness, Point Mugu has been assigned tasks to develop practical procedures for exploiting or predicting these conditions for both the range and the Fleet.

3.1.2 Licenses and Permits: *Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)*

Permit/License Type	Description*	Why Required	CSF Impact
Environmental	1. Air Emissions permits: (8) Point Mugu (2) San Nicolas Island (3) Santa Cruz Island	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile
Environmental	2. Water Discharge permits: (2) Point Mugu (2) San Nicolas Island	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile
Environmental	3. Underground Storage Tank permits: (18)	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile

TABLE (Cont'd.)

Permit/License Type	Description*	Why Required	CSF Impact
Environmental	4. Solid Waste Landfill permits: (1) San Nicolas Island	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile
Environmental	5. Water Supply permits: (1) Point Mugu (1) San Nicolas Island (1) Santa Cruz Island	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile
Environmental	6. Industrial Storm Water Discharge permits: (1) Point Mugu (1) San Nicolas Island	See narrative below.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile
Environmental	1. Airfield Safety Waivers: (12) permanent waivers. Covering various buildings, radar and shore protection walls.	Structures and buildings within the clear zone and also penetrate the height restriction criteria.	Air Vehicles, Fixed, Avionics Air Vehicles, Rotary, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition C4I, Fixed, Ground Based C4I, Ground Based, Mobile

* Included in the description are waivers. Detailed lists of specific licenses, permits, and waivers can be provided on request. BRAC 93, Call #3 can also be reference for detailed data.

Air Emissions. The Point Mugu complex and the outlying landing facility on San Nicolas Island are under the air quality jurisdiction of the Ventura County Air Pollution Control District (VCAPCD). Santa Cruz Island, which supports Point Mugu for range functions, is regulated for air quality by the Santa Barbara County Air Pollution Control District (SBCAPCD).

Ventura County exceeds both the state and federal air quality standards for ozone and the state standard for fine particulate matter (PM10). Therefore, the area is subject to stringent air pollution control measures enforced as VCAPCD rules. Similar measures, though not as stringent as those of the VCAPCD, are in place for the SBCAPCD-controlled area.

Air quality permit programs exist in both SBCAPCD- and VCAPCD-controlled areas. The permit program gives permitted facilities the right to operate equipment which emits regulated pollutants. The pollutants currently regulated are the criteria pollutants; namely, reactive organic compounds, nitrogen oxides, sulfur oxides, carbon monoxide, and PM10. Certain solvents, such as 1,1,1-trichloroethane, methylene chloride, perchloroethylene, and various freons are also included on permits although these are not considered reactive organic compounds.

Each permit provides a pollution limit in tons per year and pounds per hour for each regulated pollutant. Additionally, throughput and/or usage limits are also stated on the permit. Examples of other permit conditions are limits on power generated or amount of solid waste incinerated. The permittee is given the opportunity to review the permit conditions, to negotiate changes, or to appeal to the Hearing Board (third party) for a change in permit conditions. Usually, permit conditions are based on data provided by the permittee. Therefore, a carefully prepared application should not have any permit conditions that a permittee would find difficult to comply with. However, record-keeping requirements for ensuring compliance with permit conditions are both difficult and time-consuming, particularly for untrained personnel.

The permit program in both Ventura and Santa Barbara counties is further impacted by the California Clean Air Act of 1988 which requires a permitting program designed to mitigate emission increases from new or modified permitted sources. This translates to installing Best Available Control Technology (BACT) and obtaining emission offsets if new emissions sources are to operate or an existing source is to be modified. BACT is negotiable for remote sources or for sources that have relatively small emissions. Emission offsets can be purchased through the market or obtained by reducing existing permitted sources throughput. These requirements do not unnecessarily limit or preclude growth in programs and projects.

Water Discharge Permits. The Point Mugu complex and the Outlying Landing Field on San Nicolas Island are under the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB). The RWQCB implements the permitting program (National Pollutant Discharge Elimination System (NPDES)) which is required under the Federal Clean Water Act. As a requirement of the Clean Water Act and the California Water Code Chapter 5.5, NAWS, Point Mugu has two NPDES permits for water treatment discharges located at each site.

As a requirement of the California Water Code, NAWS, Point Mugu has one Waste Discharge Permit for the discharge of treated sewage located at San Nicolas Island. The Waste Discharge Permit is issued by the RWQCB.

NAWS, Point Mugu, has one waste water permit which the local sewer authority. The local sewer authority issues waste water permits to comply with their NPDES permit. Pretreatment standards are established in the permit as a requirement of 40 CFR 414.65 and the local city code.

Underground Storage Tanks and Solid Waste Landfill Permits. Permits for 18 underground fuel storage tanks. The uses of the tanks are motor gasoline (8), standby generators (8), and furnaces (2). The permits are not required to allow tests, experiments, or other special capabilities at our location.

Permit for a closed landfill on San Nicolas Island. The permit is not required to allow tests, experiments, or other special capabilities at our location.

Water Supply. The California Department of Health Services, Office of Drinking water has authority from the U.S. Environmental Protection Agency to implement requirements of the Safe Drinking Water Act/ The

California Department of Health Services, Office of Drinking Water has issued three water supply permits to implement the requirements of the Federal Safe Drinking Water Act and the California Domestic Water Regulations (Title 22).

Industrial Storm Water. The Point Mugu complex and the Outlying Landing Field on San Nicolas Island are under the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB). The RWQCB implements the permitting program (National Pollutant Discharge Elimination System (NPDES)) which is required under the Federal Clean Water Act. General Industrial Storm Water NPDES permits were issued for Point Mugu and San Nicolas since these locations fall under the storm water permitting criteria. Storm water run off is discharged from both locations where industrial operations are conducted.

3.1.3 Environmental Constraints: *Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example—Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt) buildings. (BRAC Criteria II)*

The following Environmental Constraints pertain to the the CSFs for:

- Air Vehicle, Fixed, Avionics
- Air Vhicle, Rotary, Avionics
- Weapons, Conventional
- Weapons, Cruise
- Weapons, Guns and Ammunition
- Weapons, Bombs
- C4I, Fixed, Ground-based
- C4I, Ground-based, Mobile

Due to careful, continuous monitoring by the Environmental organization at NAWCWPNS, Point Mugu, CA, the following potential environmental constraints would have a minimum effect on the future expansion of work:

Installation Restoration Constraints. There are 11 restoration sites for the main base at Point Mugu covering a total of 1,390.82 acres. San Nicolas Island has 5 restoration sites covering a total of 11.02 acres in addition to some ravine areas. In general, no construction is allowed at restoration sites. However, much of the land designated as restoration sites is not considered to be buildable for other reasons such as proximity to the flight line, locations in wetlands, and areas with steep terrain. The goal of the restoration program is to cleanup the sites if necessary and return the land back for general use. Installation restoration/FS fieldwork for the main base was completed February 1994 and SI work for SNI was completed April 1993. Sites recommended for no further action or interim removal/remedial action account for 15 of the 16 sites listed for Point Mugu. Pending regulatory approval of these recommendations, these sites could be removed from the restoration program at an accelerated rate. This would free up the sites for future use.

Air Emissions. One area that does have constraints on certain aspects of mission requirements is air emissions permits. These constraints are based on the quantity and toxicity of the emissions. Conditions to receive these permits may include emission mitigation measures, which include emission offsets, purchase of emission credits, and utilization of BACT. The tempo and scope of operations at Point Mugu has not been limited by air emission requirements. A future increase in scope of operations is possible provided the resultant air emissions are mitigated.

Point Mugu is located in an area designated as non-attainment for the national Ambient Air Quality Standards for ozone and fine particulate matter. These designations impose requirements for emission reductions and attainment-planning on a regional scale. Point Mugu's environmental staff actively participates with local and state regulators in their attainment planning efforts through working groups and the public review process. As a result of these efforts, Point Mugu enjoys a solid reputation and productive relationship with local, state, and federal air quality regulators.

Natural and Cultural Resources. The entire Point Mugu complex is committed to the protection and conservation of our natural and cultural resources as we implement our mission. We have developed and implemented an extremely strong program with established guidelines that will protect our sensitive resources, while allowing the base to conduct operations and avoid or mitigate adverse impacts on protected resources. Our environmental staff works closely with project managers so resource issues are considered early in the planning process. This process minimizes the constraints imposed on mission requirements. Issues which require the most careful review are archaeological resources, wetlands, endangered species, marine mammals and migratory birds.

Archaeological Resources.

Point Mugu. There are several identified archaeological sites at Point Mugu, but they are not within areas which would constrain future increases in mission function.

San Nicolas Island. There are over 500 archaeological sites that have been identified on the island. The environmental staff has an extremely strong program in archaeological investigation, and project siting has not been a problem due to coordinated efforts between project managers and environmental staff. Archaeological resources should not pose a problem for substantial growth in mission requirements on San Nicolas Island, provided there is minor flexibility in siting requirements.

Wetlands. Approximately one-half of the main base at Point Mugu consists of salt marsh and lagoon habitat. This is a functional wetland that is extremely important due to its relatively pristine nature, the tremendous value to local flora and fauna, and the fact that it is one of the last remaining functional salt marshes in southern California. The environmental staff works closely with regulatory agencies, environmental groups and project managers to ensure protection of this vital ecosystem, while still allowing full accomplishment of mission requirements. Space is available at the main base for development. However, offsets will be required if future mission requirements involve peripheral marsh areas.

Endangered Species.

Point Mugu. Six endangered species occupy beach and wetland habitats. Although close coordination with U.S. Fish and Wildlife Service, project managers, and environmental staff is required for many new projects, there are few restrictions imposed upon all current activities, or future activities of a similar nature.

San Nicolas Island. Three species found on the island are listed by the federal Endangered Species Act, several more are currently proposed to be added to that list, and several species are on the California list. These species inhabit rugged cliff areas, undeveloped beaches, or are generally widespread throughout the island (e.g., peregrine falcons when present). There are no restrictions from future development in current operational areas due to endangered species conflicts.

Marine Mammals.

Point Mugu. A colony of approximately 100 harbor seals live near the mouth of the lagoon in the southeastern portion of the base complex. This colony is unique in Southern California, in that it is a totally resident population that breeds, bears young, and resides within a populous area. The Marine Mammal Protection Act requires that marine mammals be protected from harassment or disturbance. The colony occupies an area outside of the operational support function and also outside normal flight paths. Therefore, it is unlikely that future activities would be constrained by marine mammal issues.

San Nicolas Island. The island is noted as a unique habitat for thousands of marine mammals. Outside of San Miguel Island, San Nicolas harbors the widest and most diverse assemblage of pinnipeds (seals and sea lions) within the continental U.S. (south of Alaska). More than 25,000 sea lions, 15,000 elephant seals, 1,000 harbor seals, and an occasional southern fur seal populate the western and southern beaches and shorelines of the island. Seasonal breeding periods may affect the time schedules of some operational tests that may require low overflights or beach activity, but a proposed test has never needed to be canceled due to incompatibility with marine mammals. The environmental staff can usually site operations away from rookery areas so that schedules and flight scenarios do not affect marine mammals.

Migratory Birds.

Point Mugu. Mugu Lagoon provides food and shelter seasonally to tens of thousands of migratory shore birds and waterfowl. The lagoon also is essential habitat for several endangered birds which breed there. There are few current issues involving migratory birds and operations from the main base installation. Future development will not adversely impact these species provided the lagoon habitat is protected.

San Nicolas Island. The island is a critical rookery area for Brandt's cormorants and western gulls. Both rookeries occur in the extreme western portion of the island. Human ingress into the areas are controlled, and operational testing is sited away from these sites or at times when the sites are not biologically active. Some tests have been sited in other areas of the island, especially launch operations, but testing on the island has never needed to be canceled due to migratory bird concerns. A large increase in future operations may require alternate siting within the island, or must follow schedules when bird areas are not active. However, with close coordination among the regulatory agencies, the environmental staff, and program managers, there should be no insurmountable constraints.

3.1.4 Special Support Infrastructure: *List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)*

	AIRSPACE	SEA RANGE	ELECTRICAL	POTABLE WATER	SEWAGE TREATMENT	POLICE, FIRE, EMERGENCY	COMMUNICATION	MEDICAL & DENTAL
AIR VEHICLES, FIXED WING, Avionics	XX	XX	X	X	X	X	X	X
AIR VEHICLES, ROTARY WING, Avionics	XX	XX	X	X	X	X	X	X
WEAPONS, CONV'L MISSILES/ROCKETS	XX	XX	X	X	X	X	X	X
WEAPONS, CRUISE MISSILES	XX	XX	X	X	X	X	X	X
WEAPONS, BOMBS	XX	XX	X	X	X	X	X	X
WEAPONS, GUNS and AMMUNITION	XX	XX	X	X	X	X	X	X
C4I, FIXED, GROUND BASED	XX	XX	X	X	X	X	X	X
C4I, GROUND BASED, MOBILE	XX	XX	X	X	X	X	X	X

X = These infrastructure features are necessary to support this CSF.

XX = These infrastructure features are uniquely suited to enable this CSF to be performed specifically at the Point Mugu site.

Summary

Electric power, water, sewage processing, and gas supplies that are provided by external agencies can be increased to a pratically unlimited supply. The existing plant and distribution infrastructure at main base at Point Mugu is not only capable of handling the current demand but has sufficient reserves to handle expansion of mission. At least a ten-fold base expansion can be accommodated with the current utility supply or processing capability. Future expansion and growth within the Station can be accommodated without large expenditures of funds on the utility infrastructure.

Electrical. Electrical services have been provided to Point Mugu by Southern California Edison (SCE) at 16,500 volts. During FY94, SCE will be converting to a 66,000-volt transmission service. This new service will reduce SCE's operating costs and will provide a million dollar savings to the Navy each year.

SCE's capacity is presently greater than 125% of existing demand. In order to meet expansion of mission at Point Mugu, SCE would be able to deliver that excess capacity to Point Mugu. Currently SCE has an excess capacity of 4,500,000 kW while Point Mugu has a peak demand of only 13,000 kW.

Natural Gas. Natural gas is provided to the Station through contract with The Gas Company for housing core services and transportation of gas purchased through Defense Fuel Supply Center

(DFSC) for commercial use. The gas distribution systems to and throughout Point Mugu have sufficient capacity to accept additional growth with minimum expenditures. All gas mains and distribution lines at Point Mugu are owned by the Navy. The Gas Company would be able to provide transmission in excess of 260,000 CFH. Point Mugu's existing peak demand is only 26,000 CFH.

Potable Water. Potable water is furnished to Point Mugu from United Water Conservation District (United) via a 14" pipeline. The contract includes no limits on delivery rates. United can provide three times the existing peak demand via their existing infrastructure. Additionally, six wells at Point Mugu can provide potable water for mixing and emergency services. Point Mugu will also be receiving additional state water supplies through a subregional project. The existing water distribution system is in good condition with capacity available to accept additional water consumption and growth.

Sewage Treatment. The sanitary sewer system collects and treats the wastewater which is generated by the facilities at main base and three integral housing areas. Approximately 100,000 linear feet of gravity sewer lines, 30 lift stations and appurtenant force mains comprise the system. The effluent receives pre-treatment in tow Imhoff tanks, then transfers to four stepped oxidation ponds. The "clear" effluent is then transferred to the Oxnard Wastewater Treatment Plant via a 12" PVC force main for final processing. Final processing is very inexpensive due to the pre-treatment provided at Point Mugu. The existing system processes a normal load of 260,000 GPD and is capable of processing 12 times the existing daily processed amount.

Police and Fire Protection. The Point Mugu site provides support to local, state, and federal law enforcement agencies where joint investigations are required. In addition, the Point Mugu site provides training facilities for local, state and federal agencies on an as-needed basis. The site also maintains a military working dog division in support of explosive and narcotic detection for local military as well as other government agencies upon request. The site provides local law enforcement agencies with range master/range safety officers for the Small Bore pistol range. We also provide ordnance storage services for the FBI.

Point Mugu participates in a "mutual aid" agreement with the City of Oxnard as well as the Ventura County Fire Protection services. Point Mugu participates as the front line response for the portion of the city and county adjacent to the base.

San Nicolas Island Electrical. The island provides it's own power generation with five engine-generators. The combined capacity of the units is 3,500 kW. Current peak demand is only 1,050 kW. Additionally, demand-side management could be provided (changing pump operating schedules, etc. to non-peak times) to increase the capacity to well over three times existing demand.

San Nicolas Island Potable Water. Potable water is a mixed blend of water produced from the Reverse Osmosis Plant, wells, and various natural springs. There are numerous pumping stations and storage tanks throughout the island. The potable water generated supports the island population, operations, and activities performed on the island. Full operation of both the fresh water system and salt water reverse osmosis plant more than doubles the normal steady state load.

San Nicolas Island Sewage Treatment. The wastewater generated by the various facilities on San Nicolas Island is either collected by a sanitary sewer system and treated at the wastewater treatment facility or disposed of by using septic tanks and leach fields. Approximately 4,700 linear feet of gravity sewer lines, appurtenant manholes, and three settling ponds comprise the collection system. The operation and function of the wastewater handling, conveying and treatment/disposal facilities are satisfactory, and the quality of the treated wastewater meets the criteria in force for spray disposal. The system is in good physical and operating condition and is capable of processing 10 times the 9,500 GPD normally processed.

3.1.5. Proximity to Mission-Related Organizations: *List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)*

NAWCWPNS Point Mugu is located in a complex of military activities in the western United States, all of which are important to the NAWCWPNS mission. The Naval Strike Warfare Center, Fallon, Nevada; NAWCWPNS, China Lake; NAS Lemoore; the Naval Surface Warfare Center (NSWC), Port Hueneme; the Fleet operating base at San Diego; MCAS, Yuma, Arizona; Edwards AFB; and Nellis AFB, Nevada form the complex. Regular interactions and interchanges take place with all these organizations. In addition, the proximity to the complex of aerospace industries, colleges, and universities in the Los Angeles, Phoenix, and Tucson areas facilitates coordination and cooperative efforts with industry and academia.

The NAWCWPNS Training Center brings technical and business classes to Point Mugu from several universities. This makes it possible to obtain both BS and MS degrees on site. In addition, a fellowship program sponsors 8 to 10 personnel each year to attend on-campus advanced degree programs at universities.

On site degree programs are offered by the University of Southern California, the University of Southern Illinois, and the University of LaVerne, California. Nearby major universities offering four-year technical programs and graduate programs include the University of California at Los Angeles, the University of California at Santa Barbara, California State University at Northridge, and Pepperdine University as shown on the map of Southern California in Figure 3, below.

Colleges and universities which offer courses or degree/external degree programs at regional campus facilities or educational centers within 30 miles of NAWCWPNS Point Mugu include:

Institution:	Location:
California Lutheran	Oxnard
California Lutheran	Thousand Oaks
California State University at Northridge	C.A.T.E. Newbury Park
California State University at Northridge	Ventura Campus
Oxnard College	Oxnard
Pepperdine University	Malibu
University of California at Santa Barbara	Ventura Center
University of Southern California	C.A.T.E. Newbury Park
University of LaVerne	Ventura Center
Ventura College	Ventura
West Coast University	Ventura

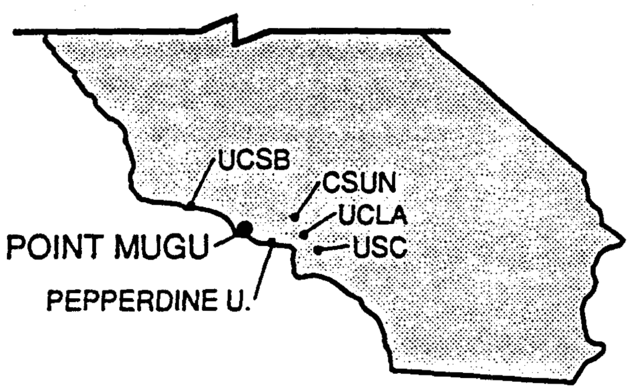


FIGURE 3. Major Universities Near Point Mugu.

The following table indicates the five (5) highest-priority relationships with other organizations that interact continuously with NAWCWPNS, Point Mugu so that it can perform it's mission and provide support for the following CSFs:

AIR VEHICLES, FIXED WING, AVIONICS
AIR VEHICLES, ROTARY WING, AVIONICS
WEAPONS, CONVENTIONAL MISSILES/ROCKETS
WEAPONS, CRUISE MISSILES
WEAPONS, BOMBS
WEAPONS, GUNS and AMMUNITION
C4I, FIXED, GROUND BASED
C4I, GROUND-BASED, MOBILE

Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
Edwards AFB	USAF Flight Test Center	80 mi NE	As required by program sponsors	As required by program sponsors
NAWCWPNS China Lake	Navy RDT&E center, land test range complex	150 mi NE	N/A; part of NAWCWPNS organization	N/A; part of NAWCWPNS organization
WTR Vandenberg	USAF T&E Center	110 mi NW	As required by program sponsors	As required by program sponsors
NSWC Port Hueneme	Navy in-service eng. activity for surface-launched missiles	5 mi NW	As required by program sponsors	As required by program sponsors
NAS Miramar	Tactics and training	150 mi SE	As required by program sponsors	As required by program sponsors

Figure 4 shows the geographical relationship of NAWCWPNS Point Mugu to other major military installations and urban areas.

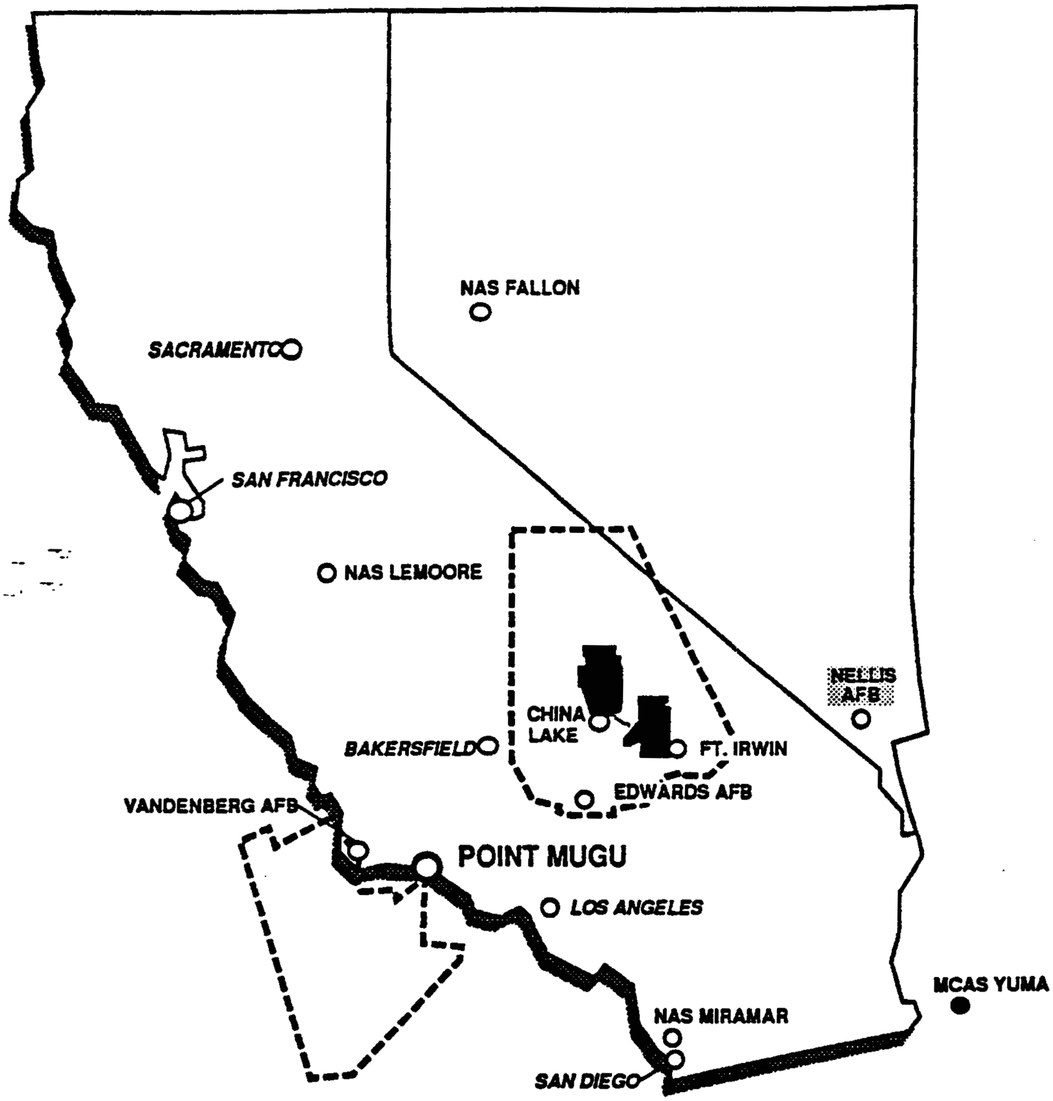


FIGURE 4. Point Mugu's Proximity to Other Military Installations and Urban Areas.

3.2 Personnel:

3.2.1 Total Personnel: *What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)*

NAWCWPNS operates as an integrated military/civilian/contractor team, as can be seen from the following table. Also, as can be seen, approximately 60% of the total technical work force at the Point Mugu site is contractor. There is no collocated FFRDC.

The data below for civilians are from the Personnel Data Access System (PDAS) database, which originates as a download from the Defense Civilian Personnel Data System (DCPDS) and is end of FY93. Civilians are Full Time Permanent. On-Site SETA data include part-time.

Military data are from on-board-counts as of 30 September 1993. Navy Chiefs and above were designated "Management(Supv)."

The SETA data were provided by the respective contractors. The "Technical" category includes part-time and consultant personnel, in addition to Full Time Permanent. Subcontractor personnel are included in the "Technical" category but not in "Management" or "Other."

CSF: AIR VEHICLES, FIXED WING, AVIONICS

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	387	17	0	488
Management (Supv)	61	3	0	38
Other	69	6	0	38

CSF: AIR VEHICLES, ROTARY WING, AVIONICS

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	6	1	0	5
Management (Supv)	1	0	0	0
Other	1	0	0	0

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	177	4	0	351
Management (Supv)	38	0	0	4
Other	163	0	0	4

CSF: WEAPONS, CRUISE MISSILES

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	9	0	0	18
Management (Supv)	2	0	0	0
Other	8	0	0	0

CSF: WEAPONS, BOMBS

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	26	1	0	50
Management (Supv)	5	0	0	0
Other	23	0	0	0

CSF: WEAPONS, GUNS AND AMMUNITION

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	10	0	0	21
Management (Supv)	2	0	0	0
Other	10	0	0	0

CSF: C4I SYSTEMS, FIXED GROUND-BASED C4I

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	14	3	0	60
Management (Supv)	2	0	0	0
Other	1	0	0	0

CSF: C4I SYSTEMS, GROUND-BASED MOBILE C4I

Types of personnel	Number Of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	13	3	0	41
Management (Supv)	3	1	0	0
Other	1	0	0	0

3.2.2 Education: *What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)*

Point Mugu is one of three NAWCWPNS sites that operate under the Demonstration Project. Under Title VI of the Civil Service Reform Act (CSRA) of 1978, and as confirmed by the National Performance Review, there are provisions for Federal agencies to conduct personnel management demonstration projects. Such projects permit the removal of unnecessary constraints and changes to personnel regulations to increase effectiveness and efficiency in the workforce. The first project approved was the Department of Navy's Personnel Demonstration Project initiated in July 1980 at the then-Naval Weapons Center, China Lake, and Naval Ocean Systems Center, San Diego. This system is a revised personnel management system providing simplified position classification, performance-linked pay, and performance-based retention.

In addition to Point Mugu and China Lake, the Demonstration Project is the operating civilian personnel system at the White Sands site. The system at the three sites currently covers all non-bargaining unit employees at these three sites. A general description of the Project and an evaluation of its results are summarized below.

This Project allows line-management control of major personnel-related decisions, such as recruitment, compensation, performance appraisal, and rewards, which have important effects upon motivation and organizational effectiveness. To accomplish these changes, the Demonstration Project includes

1. A more flexible, manageable, and understandable classification system that aggregates several GS grade levels into broad pay bands
2. A performance-appraisal system that links performance goals, compensation, and organizational effectiveness
3. An expanded application of the merit pay concept for both supervisory and non-supervisory employees
4. A primary emphasis on performance as a criterion in the retention process

Evaluation of the Project, by law, is performed by an independent external evaluator, in this case the Office of Personnel Management (OPM). Factors such as recruitment success, turnover, pay and job satisfaction, line management's and the personnel function's effectiveness, and retention of high performers are used to evaluate the success of the Project. OPM has published 15 management reports on the Project pointing to its success in achieving the above objectives. The data below are from the PDAS database which originates as a download from DCPDS dated end of FY93. These tables refer only to Full Time Permanent civilian personnel.

CSF: AIR VEHICLES, FIXED WING, AVIONICS

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	55	9	89
Associates	14	3	18
Bachelor	215	27	17
Masters	48	17	3
Doctorate (include Med/Vet/etc.)	4	0	0

CSF: AIR VEHICLES, ROTARY WING, AVIONICS

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	1	0	1
Associates	0	0	0
Bachelor	3	0	0
Masters	1	0	0
Doctorate (include Med/Vet/etc.)	0	0	0

CSF: WEAPONS, CONVENTIONAL MISSILE AND ROCKETS

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	40	7	65
Associates	11	2	13
Bachelor	157	20	13
Masters	35	13	3
Doctorate (include Med/Vet/etc.)	3	0	0

CSF: WEAPONS, CRUISE MISSILES

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	3
Associates	1	0	1
Bachelor	8	1	1
Masters	2	1	0
Doctorate (include Med/Vet/etc.)	0	0	0

CSF: WEAPONS, BOMBS

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	6	1	9
Associates	2	0	2
Bachelor	22	3	2
Masters	5	2	0
Doctorate (include Med/Vet/etc.)	0	0	0

CSF: WEAPONS, GUNS AND AMMUNITION

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	4
Associates	1	0	1
Bachelor	9	1	1
Masters	2	1	0
Doctorate (include Med/Vet/etc.)	0	0	0

CSF: C4I, FIXED GROUND BASED

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	3
Associates	0	0	1
Bachelor	7	1	1
Masters	2	1	0
Doctorate (include Med/Vet/etc.)	0	0	0

CSF: C4I, GROUND BASED MOBILE

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	3	0	5
Associates	1	0	1
Bachelor	11	1	1
Masters	2	1	0
Doctorate (include Med/Vet/etc.)	0	0	0

3.2.3 Experience: *What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)*

Point Mugu's participation in the pay-for-performance Demonstration Project, coupled with broad pay-banding (replacing the normal GS/GM system), has aided in the retention of qualified technical personnel, as shown in the following table.

The data below for civilians are from the PDAS database, which originates as a download from DCPDS and is end of FY93. Civilians are Full Time Permanent.

Data in these tables refer only to civilian employees.

NAWCWPNS, POINT MUGU, ALL CSFs

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	1	327	123	58	168
Management (Supv)	0	6	21	12	77
Total	1	333	144	70	245

CSF: AIR VEHICLES, FIXED WING, AVIONICS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	1	164	62	29	84
Management (Supv)	0	3	11	6	39
Total	1	167	73	35	123

CSF: AIR VEHICLES, ROTARY WING, AVIONICS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	3	1	0	1
Management (Supv)	0	0	0	0	1
Total	0	3	1	0	2

CSF: WEAPONS, CONVENTIONAL MISSILE AND ROCKETS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	116	44	22	60
Management (Supv)	0	2	7	4	27
Total	0	118	51	26	87

CSF: WEAPONS, CRUISE MISSILES

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	6	2	1	3
Management (Supv)	0	0	0	0	1
Total	0	6	2	1	4

CSF: WEAPONS, BOMBS

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	17	6	3	9
Management (Supv)	0	0	1	1	4
Total	0	17	7	4	13

CSF: WEAPONS, GUNS AND AMMUNITION

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	7	3	1	3
Management (Supv)	0	0	0	0	2
Total	0	7	3	1	5

CSF: C4I, FIXED GROUND BASED

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	6	2	1	3
Management (Supv)	0	0	0	0	1
Total	0	6	2	1	4

CSF: C4I, GROUND BASED MOBILE

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	9	4	2	5
Management (Supv)	0	0	1	0	2
Total	0	9	5	2	7

3.2.4 Accomplishments During FY91-93: *For government personnel answer the following questions.*

Important Accomplishments by Point Mugu Personnel Since FY91. Decision aid concepts and advanced software and documentation were developed for cruise missile applications. For the Tomahawk Land-Attack Missile (TLAM), a Time-On-Target Wind and Temperature Compensation Module (TOTWIN) was developed to provide an automated, accurate and displayable method of incorporating realistic wind and temperature variations along a missile flight path to calculate the incremental and cumulative impact on time-on-target for use in TLAM-TACAIR coordinated strikes.

This module will become part of the TESS(3) and will reside in a modified form also in the NITES which is part of the tactical Joint Maritime (JMCIS) architecture. In addition, TOTWIN may also be incorporated into the operational Tomahawk MDS which will give the Navy an afloat mission planning capability in which real-time weather inputs are essential.

Also developed since FY91 is another module for the Tomahawk Anti-Ship Missile (TASM) which allows for the calculation and inclusion of more realistic wind conditions to provide an improved wind input into the fire control system (Tomahawk Weapon Control System (TWCS)) to get the missile to the intended missile search point. The module called Tomahawk Effective Wind (TEFWIN) has been prototyped and is being converted under a SPAWAR advanced development effort into 'C' language. Like TOTWIN, TEFWIN is also planned for integration into TESS(3) and NITES, and potentially into strike/mission planning systems.

Separate versions of these modules are being planned in concert with the JSOW Class Desk to provide an environmental support structure for JSOW when developed and fielded.

In addition, concepts have been developed for computing the effects of rain on the attenuation of energy from the TASM seeker, and these are being developed to integrate a short-term 6- to 24-hour prediction capability using satellite data for strike planning.

Tailoring of products and concepts for the Tactical Aircraft Missile Planning Systems (TAMPS) Program Office is also being explored with NAVAIR personnel.

In the Electromagnetic Propagation area, several significant accomplishments have been made since FY91. NAWCWPNS Point Mugu techniques for using conventional weather map and satellite imagery data to infer the occurrence, height, and intensity of ducts have been refined to the point where they are now being integrated and converted into an Expert System for worldwide operational use. Based on manual techniques developed earlier by Point Mugu and implemented operationally at Pearl Harbor by the Navy Meteorology and Oceanography Command, the first "EXPERDUCT" has been developed for the Eastern Pacific Ocean using software assistance from NRL. The next EXPERDUCT will be for the Persian Gulf area, and will incorporate Point Mugu guidance on expected radar performance that was previously praised by COMSEVENTHFLT and distributed to virtually every ship in the Navy, particularly those deployed to the Northern Arabian Sea, following the attack on the U.S.S. *Stark*.

Other important accomplishments include development of numerical "Equivalent Altitude" techniques of inferring duct height from digital numerical weather prediction fields output at several levels from numerical forecast centers; refinement of another Point Mugu-automated technique of estimating duct height from satellite data over large cloud-covered ocean regions based on conversion of information on cloud top temperature. When fully implemented, this technique will estimate duct characteristics over a Battlegroup-size area using a quick interactive technique.

Also developed was a preliminary version of a 2-layer "Mixed Layer" model that gives realistic depictions of wind, marine layer depth, and coastal eddies in the Sea Range area off Point Mugu.

In the measurement area, a technique was developed to allow balloon rawinsondes to rise, detach and return to the surface, while taking two soundings, one up, one down, instead of the conventional on-the-way-up-only sounding. This technique was used during project VOCAR which incorporated planning, data analysis and many of the previously-mentioned techniques in a Navy multi-laboratory effort at Point Mugu, San Diego and San Nicolas Island. This effort was conducted to determine appropriate methods of characterizing the propagation environment and inputting data to range-dependent models. One of the basic questions to be answered is how often, and in what manner, the Navy needs to sample the atmosphere to adequately describe and predict radar performance.

Several papers have been presented and more are in preparation describing these developments to NATO AGARD (Turkey), NATO AGARD (Germany), S.P.I.E. and the IEEE IGARS (International Geoscience and Remote Sensing Symposium).

In addition, Point Mugu is participating in and serving as a principal test site for a new environmental prediction system under development to help in threat detection by NAVCENT forces.

In the EO and other spectrum areas, Point Mugu has developed the basis of an improved air mass parameter and input for the LOWTRAN model; has conducted an EO sensor test in the Point Mugu coastal environment for the Joint Test Director of the SWOE program; and is currently conducting an investigation into the measurement and application of ULF/ELF spectral signatures from the background environment and airfield operations for use in target detection and simulation.

3.2.4.1 Patents and Disclosures: *How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)*

CSF	Total	Disclosures	Awarded	Patent Titles (List)
Air Vehicles, Fixed Wing Avionics	6	72640	Issued	An Auxiliary Target Area Chaff Container (ATACC)
		73821	Issued*	Space Shuttle Wheel Acceleration System (SSWAS)
		74033	Issued	Portable Radar Simulator (PRS)
		74738		Slave Controller with Block Transfer Capability
		5097265	Issued	Triangular Target Boat Reflector
		5150127	Issued	Portable Radar Simulator
Air Vehicles, Rotary Wing Avionics	2	75222		RBS-70 Laser Beamrider CM Technology (Aerosol Approach)
		75222		RBS-70 Laser Beamrider CM Technology (Pebbles Approach)
Air Vehicles, Fixed Wing Avionics; Air Vehicles, Rotary Wing Avionics	2	5307505	Issued	RRT (Rapid Reprogramming Terminal)
		74535		VME Slave Controller
C4I Systems, Fixed Ground-Based C4I	4	72564	Issued	Stand Alone Multiple Unit Tracking System
		73378	Issued	Remotely Controlled C-Band Signal Generator
		74319		Rebound Hammer
		75648		Global Positioning Satellite Antenna Mounting Bracket
C4I Systems, Ground-Based Mobile C4I	2	73358	Issued	Portable Automatic Radar Simulator (PARS II)
		74699		Diver Navigation System
Air Vehicles, Fixed Wing Avionics; Air Vehicles, Rotary Wing Avionics Weapons, Conventional Missiles/Rockets Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammo C4I, Fixed Ground-Based C4I, Ground-Based Mobile	21	72472		Design of a Nonvolatile Memory System
		73380	Issued	Wall Outlet Lock Apparatus
		73822	Issued	Rapid Reprogramming Terminal
		74235		MS-1553 Bus Interface Utilizing A TMS320C30 Digital Signal Processor
		74900		Protocol Converter
		75124		Digital Circuit for the Introduction and Later Removal of Dither From an Analog Signal
		75204		Digital Interface Circuit
		75352		Doubling Valve Mechanism for an Acoustic Modulator
		75378		Gray Code Counter
		73336	Issued	Binary Decision Apparatus

* Issued = Patents/Sirs/D-10/D-11 in FY91, FY92, and FY93

TABLE (Cont'd.)

CSF	Total	Disclosures	Awarded	Patent Titles (List)
(Cont'd.)		72119	Issued	Biodegradation of 2,4,6-Trinitrotoluene By White Rot Fungus
		71514	Issued	Circulation Enhancing Apparatus
		73574		Foot Cast Toe Shield - Adjustable and Removable
		74737	Issued	Universal Protective Shield for the Foot
		73481		Photonic Electromagnet Field Sensor
		74095		Photonic Radar Receiver
		74837	Issued	Photonic Electromagnetic Field Sensor Apparatus
		74901	Issued	Photonic Electromagnetic Field Sensor
		69327	Issued	Tactical Overboard Acoustic Decoy (TOAD)
		73225	Issued	Triangular Target Boat Reflector (TTBR)
		73554	Secrecy	Optical Clutter Rejection Technique Using Anti-Coincidence Detection of Reflected Optically Augmented Laser Pulses (U)
Weapons, Conventional Missiles/Rockets	2	68382	Issued	Low Observability Aperture Design for Expendable Countermeasures Device
		72848	Issued	Dual-Modular Launcher
Air Vehicles, Fixed Wing Avionics; Air Vehicles, Rotary Wing Avionics Weapons, Conventional Missiles/Rockets	1	73958	Issued	Method of Phased Magnitude Correlation Using Binary Sequences
Total		40	22	

3.2.4.2 Papers Published: *How many papers were published in peer reviewed journals?*

CSF		
Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition	1	• "Radar Imaging" Published in International Journal of Imaging Systems & Technology, February 1992
C4I Systems, Fixed Ground-Based	1	• "Electronic Warfare Basics" - an Electronic Warfare course presented at the Naval Post Graduate School, Monterey, CA.
Air Vehicles, Fixed Wing, Avionics Weapons, Conventional Weapons, Cruise Weapons, Bombs Weapons, Guns & Ammunition	1	• "Minimum Time for RCS Measurements" published for the Antenna Measurements Techniques Assoc. Journal, August 1993.
TOTAL	3	

WC

NAWCHQ Change
NAWC-21
9/19/94

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Workyear and Lifecycle: *Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)*

The NAWCWPNS laboratory function at Point Mugu is spread across nine CSFs: Air Vehicles (both Fixed- and Rotary-Wing Avionics), Weapons (Conventional and Cruise Missiles, Bombs, and Guns and Ammunition), C4I (Fixed and Mobile Ground-based C4I), and Training Systems. The Aircraft Weapons Integration Department provides lifecycle support to tactical fighter aircraft, including aircraft weapons integration and tactical system software upgrades. The Information and Electronic Warfare Directorate provides R&D, development and ISE support for tactical and electronic warfare avionics systems as well as C4I systems. The Weapons Systems Evaluation Directorate and the Weapons and Engineering Logistics Department provide weapons development, production support and in-service engineering.

CSF: AIR VEHICLES, FIXED WING, AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	302	7	0	101
In-Service Engineering	215	19	0	463

CSF: AIR VEHICLES, ROTARY WING, AVIONICS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	4	1	0	2
In-Service Engineering	4	0	0	3

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	6	0	0	5
In-Service Engineering	372	4	0	354

CSF: WEAPONS, CRUISE MISSILES

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	6	0	0	6
In-Service Engineering	13	0	0	12

CSF: WEAPONS, BOMBS

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	54	1	0	50

CSF: WEAPONS, GUNS AND AMMUNITION

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	22	0	0	21

CSF: C4I SYSTEMS, FIXED GROUND-BASED C4I

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	17	3	0	60
In-Service Engineering	0	0	0	0

CSF: C4I SYSTEMS, GROUND-BASED MOBILE C4I

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	13	3	0	36
In-Service Engineering	4	1	0	5

3.3.1.2 Engineering Development By ACAT: *For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:*

- *For each ACAT IC, ID, and II program (as defined in DODI 5000.2):*
  - *The name of the program*
  - *A brief program description*

- *For each ACAT III and IV programs:*
  - *The number of such programs*
  - *A list of program names*

- *For each program not an ACAT I, II, III, IV:*
  - *The number of such programs*
  - *A list of program names*

- *For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).*

NAWCWPNS Point Mugu typically plays at least one of the following roles while performing development engineering tasks.

1. Following development of requirements and specifications, in-house design of the system, with contractor participation for packaging, preparing technical documentation, and preparing for competitive production by industry.
2. Following development of requirements and specifications, cooperative development of the system with a major system contractor, along with contractor participation for packaging, preparing technical documentation, and preparing for competitive production by industry.
3. Development of requirements and specifications, analysis, design evaluation, and testing of a contractor design.
4. Monitoring of a contractor design program.

For CSFs in which NAWCWPNS is actively engaged but has no ACAT-level programs, no table is given for that CSF.

CSF: AIR VEHICLES, FIXED WING, AVIONICS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT ID	ASPJ	13.3	$1.6M	On-board advanced self-protection system that provides RF countermeasures for pulse CW, and pulse doppler radars.
ACAT II	EA-6B	238	$42.6M	Provides advanced development support for the EA-6B Tactical Jamming System. Serves as the primary technical agent and field activity in support of the PEO(T) and the Naval Air Systems Command's acquisition and support of the Navy's only tactical support jamming aircraft, the EA-6B.
	ALE-47	2.1	$1.45M	Advanced automated dispensing systems for tactical and assault platforms.
	IDECM	.9	$.9M	Integrated Electronic Warfare suite which provides RF countermeasures for advanced threats and optimally integrates Electronic Warfare sensors and radar and missile countermeasures.
ACAT III/IV	VARIOUS	126.6	$15.8M	AAR-47 APR-39A ALR-67 V (2) ALR-67 V (3) & (4) IDAP AAED/ALE-50/MPLC ESM (ALR-66)
Other	FMS	29.6	$9.4M	FMS - Non appropriated funds (Australia, Finland, Italy, Kuwait, Malaysia, Spain, Switzerland

CSF: AIR VEHICLES, ROTARY, AVIONICS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT ID	ASPJ	.7	$0.1M	On-board advanced self-protection system that provides RF countermeasures for pulse CW, and pulse doppler radars.
ACAT II	IDECM	.1	$0.1M	Integrated Electronic Warfare suite which provides RF countermeasures for advanced threats and optimally integrates Electronic Warfare sensors and radar and missile countermeasures.
ACAT III/IV	VARIOUS	6.7	$0.8M	AAR-47 APR-39A ALR-67 V (2) ALR-67 V (3) & (4) IDAP AAED/ALE-50/MPLC ESM (ALR-66)

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
Other	Classified Programs	11.4	$1,125k	Classified Program Development

CSF: WEAPONS, CRUISE MISSILES

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	TOMAHAWK HARPOON	1.4 5.0	$205K $670K	Provide flight test engineering support for all variants/versions of TOMAHAWK.
ACAT ID	SHORT/MED RANGE UAV	2.2	$300K	Provide flight test and evaluation of the Medium Range Unmanned Aerial Vehicle (UAV) System through limited rate production.
ACAT II	PIONEER (UAV)	2.0	$300K	Responsible for providing fleet support, payload integration and test, and T&E of system upgrades for the pioneer UAV system through phase-out.
ACAT III/IV	TALD/ITALD	2.0	$300K	Responsible for the production reliability acceptance testing of TALD and the system level flight test evaluation of the ITALD variant.

CSF: C4I, FIXED GROUND-BASED C4I

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT III/IV	Fixed Ground-Based C4I	80.1	$10.4M	TERPES TAMPS

CSF: C4I, GROUND-BASED MOBILE C4I

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT III/IV	Ground- Based Mobile C4I	52.3	$6.9M	TERPES TAMPS

3.3.1.3 In-Service Engineering: *For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)*

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority) $M	Workyears	
AIR VEHICLES:				
Fixed, Avionics	Performance Enhancements, Training Systems Development, Fleet Problem Resolution, Integration Of New Capabilities, Software Maintenance	140.5	696.8	F-14 ALL T/M/S 46JC Spares/Repair 482 ECP Support A-6 COUPLER A-6 Training Device A-6E BLOCK 1A AAR-47/EO Warning Rec AIM-268/ALR-67(V)2 AIM-7M QA Program ALARMS & ATIMS III ALE-47 ALE-50 ALQ-126B ALQ-162 EA-6B EA-6B ADV S/W EA-6B ADVCAP H/W EA-6B ADVCAP SDS JTAMS EO/IR Modeling KOREA FMS AN/ALR-66B(V)3 UDF/P-3 KUWAIT E2 Eng Supt SINGAPORE FMS USM-482 Test Set SMART SPANISH EF-18 SPANISH FMS ALR-67 F-14D APG-71 F-14D EW System Integ F-14D O-LVL F-16 ECIPS FCT F-22 PROGRAM CDRS F/A-18 EW Supt Integ F/A-18 OEWTPS FINLAND FMS MALAYSIA FMS TERPES System IAW TERPES System Upgrade
Rotary, Avionics		1.4	6.6	AH-1W COBRA NTS

TABLE (contd.)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority) $M	Workyears	
WEAPONS:				
Conventional Missile	Life Cycle Integrated Logistics, Reliability Engineering, Environmental Engineering, On-Site Fleet Support, Fleet Training	94.9	729.8	AMRAAM HARM Hellfire JSOW Launcher Systems Maverick Penguin Phoenix Sidewinder Sparrow Tow UAV/Pioneer F-14 Wpns Integration
Cruise Missile	Life Cycle Integrated Logistics, Reliability Engineering, Environmental Engineering, On-Site Fleet Support, Fleet Training	4.6	24.2	Harpoon, SLAM, Tomahawk
Bombs	Production Engineering Support, Life Cycle Integrated Logistics, Reliability Engineering, Environmental Engineering, PIP, On-Site Fleet Support, Fleet Training, BDE	13.5	104.5	Navy Bombs Including General Purpose Bombs, Gator And Other Cluster Weapons
Guns and Ammunition	Production Engineering Support, Life Cycle Integrated Logistics, Reliability Engineering, Environmental Engineering, PIP, On-Site Fleet Support, Fleet Training, BDE	12.3	43.4	Navy Guns and Ammunition For Aircraft

TABLE (Cont'd.)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority) $M	Workyears	
C4I:				
Ground-Based Mobile C4I	Performance Enhancements, Training Systems Development, Fleet Problem Resolution, Integration Of New Capabilities, Software Maintenance	.9	9.6	Information Warfare Sys.

3.3.2 Projected Funding

3.3.2.1 Direct Funding: *For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)*

$M				
CSF	FY94	FY95	FY96	FY97
N/A	N/A	N/A	N/A	N/A

3.3.2.2 Other Obligation Authority: *For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)*

$M				
CSF	FY94	FY95	FY96	FY97
Air Vehicles, Fixed Wing, Avionics	190	190	188	185
Air Vehicles, Rotary Wing, Avionics	2	2	2	2
Weapons, Coventional Missiles/Rockets	86	86	85	84
Weapons, Cruise Missiles	6	6	6	6
Weapons, Bombs	13	12	12	12
Weapons, Guns and Ammunition	11	11	11	11
C4I, Fixed Ground-Based C4I	9	9	9	9
C4I, Ground-Based Mobile C4I	7	7	7	7

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: *Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the U.S., describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)*

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
90% Air Vehicle, Fixed, Avionics 10% Weapons Conventional Missiles/Rockets	F-14 Installed Systems Test Facility	Y	Y	Y	200,400
90% Air Vehicle, Fixed, Avionics 10% Air Vehicle, Rotary, Avionics	Electronic Warfare Countermeasures Systems Capability	N	N	N	900
100% Air Vehicle, Fixed, Avionics	Electronic Warfare and Radar Support Equipment	Y	Y	Y	11,653
100% Air Vehicle, Fixed, Avionics	EA-6B Systems Facility	Y	Y	Y	63,000
60% C4I Fixed Ground 40% C4I Ground Mobile	Information Warfare Systems Laboratory Complex	Y	Y	Y	7,433
80% Air Vehicle, Fixed, Avionics 20% Air Vehicle, Rotary, Avionics	Warning and Surveillance Systems Capability	Y	Y	Y	5,465
100% Air Vehicle, Fixed, Avionics	Laser and Stabilized Optics	N	N	N	7,665
100% Air Vehicle, Fixed, Avionics	Electronic Combat Simulation and Evaluation Laboratory	Y	Y	Y	62,000
100% Air Vehicle, Fixed, Avionics	Airborne Infrared Measurements Capability	Y	Y	Y	19,025
2% Air Vehicle, Fixed, Avionics 3% Weapons, Guns & Ammunition	*Sea Level Climatic Chamber	N	N	N	16,000
3% Weapons Conventional Missiles/Rockets 2% Weapons, Bombs	*Reliability Test Facilities	Y	Y	Y	4,000
3% Weapons Conventional Missiles/Rockets 2% Weapons, Bombs	*Ready Missile Test Facility	Y	Y	Y	12,500
20% Weapons, Cruise	*Strike Weapons Evaluation Facility	Y	Y	Y	5,000
5% Air Vehicles, Fixed, Avionics 2% Weapons, Conventional Missiles/Rockets 5% Weapons, Cruise 0% Air Vehicle, Rotary Wing, Avionics; Weapons, Bombs; Weapons, Guns & Ammun.; C4I, Fixed, Ground-based; C4I, Ground-based, Mobile	*Sea Test Range	Y	Y	Y	684,300 (The facilities and equip. involved with providing this capability are interrelated and function as a system when supporting each CSF.)

TABLE (cont'd.)

20% Weapons Conventional Missiles/Rockets 20% Weapons, Cruise	*Bistatic Radar Reflectivity Lab	Y	Y	Y	17,600
20% Weapons Conventional Missiles/Rockets 20% Weapons, Cruise	*Monostatic Radar Reflectivity Lab	Y	Y	Y	10,950
10% Weapons Conventional Missiles/Rockets	*Missile Hardware-in-the-Loop Lab	N	N	N	51,800
20% Weapons Conventional Missiles/Rockets	*Simulation & Effectiveness Center	N	N	N	2,700
Air Vehicles, Fixed, Avionics Weapons Conventional, Missiles/Rockets; Weapons, Cruise (Due to the sensitivity of this function, and the classification for this BRAC data call, the percentages for each CSF cannot be listed. However, the space utilization of the Special Projects Facilities are shown in the following table.)	Special Project Facilities	N	N	N	10,754

*Major Facilities with CSFs totaling less than 100% perform the remaining percentage in T&E.

SPECIAL PROJECT FACILITIES

	Space Utilization in Square Feet					
Common Support Function	Engineering Labs	Classified Storage Facilities	Ordnance Assembly Building	Secure Hangar	Secure Data Reduction & Analysis	Computer Facilities
Air Vehicles, Fixed, Avionics	2350	0	0	0	0	0
Weapons Conventional Missiles/Rockets	16435	100	4000	5600	8125	2000
Weapons, Cruise Missiles	6000	0	2400	16000	4700	0

WC

F-14 WEAPONS SYSTEM SUPPORT ACTIVITY. The F-14 Weapons System Support Activity (WSSA) provides the tools and facilities needed to develop, integrate, test, verify and maintain the F-14 weapon systems software. This includes weapons system software and subsystems integration for the F-14A/B, and F-14 trainers. The facility provides individual hardware-in-the-loop (HWIL) laboratories for the real-time evaluation of engineering changes and for the investigation of problems encountered during flight tests. It is an ideal facility for radar performance verification and the integration and evaluation of EO sensors for new/improved subsystems under controlled and repeated test conditions. The dynamics of the HWIL allow the direct evaluation of system/subsystem interaction and augment complement actual flight tests.

ELECTRONIC WARFARE COUNTERMEASURES SYSTEMS CAPABILITY. The NAWCWPNS Electronic Warfare Avionics Organization, Code P234, is NAVAIR's technical agent for the development and production of multi-spectral self-protection electronic warfare countermeasures systems. The organization provides threat assessments and develops and/or improves countermeasures techniques for on-board/off-board countermeasures systems; integrates electronic warfare responses to provide optimum utilization of aircraft sensors and tactics; produces and delivers software user data files for deployed countermeasures systems that reflect changes in the threat; incorporates countermeasures techniques that are effective, increase aircraft survivability, and improve the probability of mission success; increases the survivability of fixed and rotary wing aircraft which use light weight electronic warfare systems; and maintains the engineering expertise and facilities for analyses and exploitation of foreign electronic warfare and weapon systems. The organization performs the full spectrum of project and business management support including financial, acquisition, facilities, and equipment management; general administrative and clerical assistance in support of the technical mission; and project planning, control, scheduling, tasking, and coordination.

ELECTRONIC WARFARE AND RADAR SUPPORT EQUIPMENT. The NAWCWPNS Electronic Warfare Avionics Systems Support Organization, Code P235, is the Navy's technical agent for the acquisition of electronic warfare and radar support systems and serves as the designated commodity manager for Navy airborne electronic warfare and radar avionics automatic test equipment and test program software under authority from NAVAIR. The historic role of NAVAIR in the acquisition and support of these systems has changed as a result of decentralization. Full responsibility for the acquisition, management, engineering, and integrated logistics support of electronic warfare and radar support systems has been divested to Point Mugu. The Organization's mission also includes the maintenance of laboratory and computer facilities which support the acquisition, development, integration, test, and evaluation of cognizant support systems. The laboratory facilities contain installed avionics systems and actual aircraft platform radio frequency transmission lines which replicate real world aircraft platform installations.

The Integrated Support Station Laboratory is the only facility, with installed avionics systems and actual aircraft platform radio frequency transmission lines, available to perform support systems integration and T&E. The laboratory has been used for U.S. Air Force support systems development.

EA-6B SYSTEMS FACILITY. The mission of the EA-6B Systems Facility is to serve as a systems engineering center for the development and Fleet support of assigned Navy and Marine Corps Electronic Warfare and Intelligence support systems and to act as the WSSA for the EA-6B Tactical Jamming System. This facility uses advanced technologies and techniques to provide engineering services including the definition and specification of new and improved systems in response to user and sponsor requirements or intelligence updates; the development of both hardware and software systems for support jamming, mission planning, mission analysis and support, and intelligence support; and the production support, testing, quality assurance, and in-service engineering for these systems.

Currently, the EA-6B Weapons System Support Laboratory (WSSL) is the only facility which can support the EA-6B WSSA. The Electronic Warfare Data Support (EWDS) laboratory is the only facility which can support specific intelligence data engineering for the EA-6B Tactical Jamming System. These roles and capabilities are unique in DOD. In addition, the EA-6B laboratories are networked with the Information Warfare Support Laboratory Complex and share resources with the Electronic Combat Simulation and Evaluation Laboratory.

INFORMATION WARFARE SYSTEMS LABORATORY COMPLEX. The mission of the Information Warfare Systems Laboratory Complex is to conceive, develop, and deploy software and hardware products which result in the seamless integration of automated mission planning and intelligence systems in a common operating environment. The Complex provides for the design, development, integration, training, rapid prototyping, and life cycle support of the new fully open architecture Tactical Aircraft Mission Planning System (TAMPS) version 6.0 and beyond and the Tactical Electronic Reconnaissance Processing and Evaluation System (TERPES). Complex personnel define and specify new and improved systems in response to fleet requirements and intelligence data. The Complex is comprised of approximately 11,000 square feet of laboratory and office space which are electronically interconnected to a number of key facilities, and houses over $2.3 million of computer resources including several open architecture mainframe multi-user assets with significant computing power (2000 MIPS). The Complex is capable of conducting modeling and simulation and performing planning efforts at the force and unit levels in support of development and test and evaluation efforts.

The Information Warfare Systems Laboratory Complex is the only facility providing development, production, and in-service engineering support to TERPES. The Complex is unique in that it is the only facility currently integrating development efforts on intelligence processing systems with mission planning systems in an open architecture environment. Further, this complex is unique in the fact that it is collocated and interconnected to the EA-6B WSSA and the NAWCWPNS BMIC.

WARNING AND SURVEILLANCE SYSTEMS CAPABILITY. NAWCWPNS Code P238 is NAVAIR's principal technical systems engineering agent for the development, test, and support of multi-spectral electronic warfare warning and surveillance systems and suites for tactical Navy aircraft, Foreign Military Sales customers, and Joint Service programs. The organization provides life cycle support which encompasses the design, development, systems engineering, test, verification, validation, integration, production support, acceptance, quality assurance, Fleet introduction, configuration management, distribution, control, modification, post deployment software support, and Fleet support of assigned systems and related software. The organization provides quick reaction and rapid reprogramming capability to deployed Fleet systems.

The overall capability, including expertise and laboratory support, to perform the services for the multi-spectral systems previously described is unique and not available elsewhere.

LASER AND STABILIZED OPTICS. NAWCWPNS Code P2385 provides mission support capabilities to the Fleet in the area of laser-guided weapons training, imaging weapons training, multi-spectral training, and long focal length imaging and intelligence collection. The organization supports this capability in conjunction with the other DOD components to facilitate integrated planning and operations and provides support to other government agencies on a "non-interference" basis which allows them to benefit from DOD's investment in technology and experience.

ELECTRONIC COMBAT SIMULATION AND EVALUATION LABORATORY (ECSEL). The ECSEL is the Navy's principal laboratory complex for research, development, and in-service engineering support of naval airborne electronic warfare equipment. A modern secure laboratory facility, the ECSEL develops, operates, and maintains simulations that replicate the functional characteristics and performance of threat weapon systems. The ECSEL's Advanced Multiple Environment Simulator family of open-loop simulations provide a dense electromagnetic environment of land-based, naval, and airborne threat weapon systems and frequency coverage from 100 kHz to 96 GHz. Specific closed-loop simulators include a modem threat surface-to-air missile system, the Radar Equipment Simulator, the Semi-Active Test System, and the Early Warning/Acquisition system. The electronic warfare systems' workstations provide prime power, avionics, computer, and simulator interfaces for naval aircraft radar warning receivers and jammers. Research and development testing of developmental electronic warfare equipment, software support for systems currently in the Fleet, integration support, and techniques development and optimization are routinely accomplished in the ECSEL.

The magnitude of the naval threat open loop simulation capability is not available anywhere else.

AIRBORNE INFRARED MEASUREMENTS CAPABILITY. The Support Systems and Measurements facilities test the effectiveness of decoy flares in protecting U.S. aircraft from IR-guided missiles, conduct lot-acceptance testing of Navy flares, provide aircraft store separation photo analysis, and execute the test and evaluation of ground support equipment and software for aircraft electronic warfare systems.

Airborne system is unique in its capability to collect simultaneous data from three IR instruments and four captive IR missiles and in its capability to perform tests at supersonic speeds.

SEA LEVEL CLIMATIC CHAMBER. The Sea Level Chamber provides the capability to generate and control various combinations of temperature, humidity, rain, snow, and wind environments. Vehicles, including the largest military fighter aircraft or ground combat vehicle, can be tested to climatic extremes from arid desert, to monsoon rains, to Arctic chill. Systems may be fully operational while testing is underway to validate their operation during exposure to various climatic extremes. Sliding walls permit the Sea Level Chamber to be compartmented and operated as three independent chambers: one chamber at 63' x 60' or as two chambers at 30' x 60'; and an additional chamber at 20' x 25', all with a 24-foot ceiling height. Thus, various parts or components of a system may be subjected simultaneously to entirely different climatic environments.

RELIABILITY TEST FACILITIES. The Reliability Test Facility provides the capability to conduct functional testing, acoustic/dynamic testing, thermal conditioning, and assembly/disassembly of missiles or components which do not contain explosives. This facility consists of four vibro-acoustic test cells capable of combining shaped acoustics to 157+dB and mechanical shakers which cover a frequency range of 5Hz to 2000Hz. The thermal capacity of each cell ranges from -70°F to +170°F with LN2 boost for high cooling ramps. These cells also allow a complete functional check-out of each missile during the test. This capability was designed to meet the requirements of MIL-STD-810D/E method 523 and to support the reliability measurements of MIL-STD-781 on new production, as well as, in-service weapons.

This is the only facility that can reproduce the stresses of captive flight environments, dynamically (acoustics and shakers), thermally, and functionally.

READY MISSILE TEST FACILITY. The Ready Missile Test Facility (RMTF) provides the capability to conduct functional testing, acoustic/dynamic testing, thermal conditioning, real time radiography, and assembly/disassembly of all-up-round weapons containing explosive loaded warheads and live rocket motors. This facility consists of four vibro-acoustic test cells rated at 650 lbs or more of class A explosives. These cells are capable of combining shaped acoustics to 457+dB and mechanical shakers which cover a frequency range of 5 to 2000 Hz. The thermal capacity of each cell ranges from -70°F to +170°F with LN2 boost for high cooling ramps. The four functional test cells located on site provide the complete functional check-out of each missile in a live all-up-round configuration. There is also a real time x-ray capability to provide an evaluation of missile rocket motor integrity before and after being subjected to test environments. This facility also provides an assembly/disassembly capability.

These are the only ordnance approved test facilities that allow the combined environments testing on all-up-round tactical missiles.

STRIKE WEAPONS EVALUATION FACILITY. The Strike Weapons Evaluation Facility consists of knowledgeable workers and physical laboratories focused on the complete test and evaluation of weapons and weapon control systems associated with the strike mission. Individual laboratories focus on radar seekers, weapon data link pods, missile flight computers, and analytical simulation and analysis. The facility's capabilities are used to support full spectrum evaluation work consisting of simulation, hardware testing, test planning and execution, data analysis and display, missile performance prediction and evaluation, missile flight control and mission logic evaluation, and pre- and post-flight data comparisons.

Laboratory assets include fixed site labs, a mobile lab, and a remote laboratory on Santa Cruz Island which is located approximately 20 miles from Point Mugu. The multiple labs allow subsystem testing with a variety of targets, backgrounds, and environmental conditions that are unavailable at a fixed site location. Computational assets provide multiprocessing services for users simultaneously running any mix of simulation, flight test analysis, database management, or program development applications. Laboratories and personnel are capable of fully supporting projects requiring TOP SECRET Special Access constraints. A TEMPEST shielded secure computing and analysis environment is available.

There is no other facility with the unique set of target generation equipment and instrumentation in proximity to a real test environment representative of the operational need. Proximity to other technical assets, such as RCS measurement chambers and the sea and land test range assets, provides an unmatched evaluation capability.

SEA TEST RANGE. The Sea Test Range at Point Mugu is DOD's largest and most heavily instrumented sea/air range, encompassing 125,000 square miles of instrumented test space with 36,000 square-nautical miles of controlled airspace. The range has the unique feature of geographic location combined with a highly-instrumented coastal region and offshore islands. The Point Mugu Sea Test Range has the capability of providing and supporting true at-sea and littoral scenarios. Facilities that are located at Point Mugu, Laguna Peak, and on the outlying islands of San Nicolas, Santa Cruz, Santa Rosa, and San Clemente, as well as up the coast to Tassajera Peak and as far south as San Diego, provide capability for precision metric tracking of up to 35 objects, target control for up to 10 airborne and surface targets, and telemetry for up to 20 sources. The Point Mugu site offers the advantage of laboratories collocated with operational air and sea test range capabilities. The combination of location, extensive instrumentation capacity, over-the-horizon command and control, unique test capabilities, and a highly-skilled, experienced technical work force provides a realistic sea/air environment for conducting large integrated, joint test and evaluation, and training exercises with integrated subsurface, surface, and air coverage. Finally, Laguna Peak supports command-and-destruct capabilities for ICBM and Polar satellite launches.

Unique Sea Test Range Capabilities :
- Complex multiparticipant, multiple warfare area operations
- Coordinated air, surface, and submarine operations
- Submarine, surface, and air-launched cruise weapons testing
- Long-range, large-hazard-pattern weapons testing
- Ballistic missile operations support
- ICBM and Polar-orbit satellite launch operations support

- Sea-environment special access program support
- Classified target development and testing
- Joint engagement zone scenarios
- Simulated regional conflict operations
- Multiple participant live-fire exercises
- Theater missile defense
- Radar-cross-section measurement of sea and air platforms

BISTATIC RADAR REFLECTIVITY LAB. Provides near field and far field bistatic measurements of radar signatures of full scale missiles and other aerial targets up to 30 feet in length. The laboratory supports measurements of horizontal bistatic angles from 0 to 180 degrees and vertical bistatic angles from 0 to 90 degrees within the VHF through W-band frequency range. The facility provides definition and diagnostic analyses of electromagnetic scattering and radiation measurements. Supports the development, planning, and analysis of flight test operations and engagement/encounter simulations. Provides survivability analysis and development and test of low observable vehicles.

MONOSTATIC RADAR REFLECTIVITY LAB. Provides near and far field monostatic measurements of radar signatures of full scale missiles and other aerial targets up to 16 feet in length. The laboratory supports measurements within the "S" through "W" band frequency range. The facility provides definition and diagnostic analyses of electromagnetic scattering and radiation measurements. Supports the development, planning and analysis of flight test operations and engagement/encounter simulations. Provides survivability analysis and development and test of low observable vehicles.

MISSILE HARDWARE-IN-THE-LOOP. Provides missile system performance evaluation from launch to intercept against single or multiple targets in clear, clutter, or electronic countermeasures environments through open- and closed-loop testing. The missile performance is assessed against maneuvering or non-maneuvering targets with glint and scintillation RF signatures. Dual spectrum(i.e., RF and IR) testing is performed in one of the facility's test laboratories. The facility supports weapon system acquisition milestone decisions and is used to conduct technical baseline performance evaluation of tactical missile software. Pre- and Post-Flight simulations are conducted for air-to-air and surface-to-air missile development and operational tests. Aircraft to missile interfaces are tested for various air-to-air missile systems.

SIMULATION AND EFFECTIVENESS CENTER. The Simulation and Effectiveness Center (SEC) consists of computational facilities that provide missile performance assessments through the use of digital models and simulations. Data gathered from live missile flights, captive flights, and Hardware-in-the-Loop (HWIL) operations are used to predict weapon system guidance accuracy, fuze detection ranges, warhead effectiveness, and probability of kill. This facility is used for developing, maintaining, and operating missile all digital six degrees-of-freedom flyout and lethality simulations. Warhead, fuze, target vulnerability, and N-point radar cross section models are also developed, supported and used at this site. The SEC has developed tri-service models such as JSEMS that are distributed by the Joint Technical Coordinating Group on Munitions Effectiveness (JTCG/ME). The SEC personnel analyze six degrees-of-freedom and lethality simulation data; flight test guidance and endgame performance data; and, using in-house developed analysis tools, generate preflight weapon system risk assessments, missile kinematics assessments, detailed baseline performance matrix analyses, and fuze software and hardware evaluation. The results of these complex digital simulations are used to assess overall weapons system performance for a variety of different tactical situations and flight parameters.

The Integrated Radar and Infrared Analysis and Modeling System (IRIAM) is a Point Mugu FY93/94 Defense Modeling and Simulation Organization (DMSO) project to develop a standard testbed for the integrated interactive display of multi-spectral sensor measurement and simulation data for comparison of modeling with the actual weapon systems test data. This laboratory serves as a testbed for EO and IR signature databases and models, supports the development of a Virtual Reality Presentation Engine (VRPE), and is used to demonstrate the interoperability of T&E support databases with modeling and simulation.

WEAPONS SUPPORT FACILITY. The combined laboratories perform three separate functions within the In-Service phase of a weapon life cycle. The Airborne Weapon Information System (AWIS) is a common communications network containing all maintenance production deficiency reporting data bases of all air-launched weapon systems including conventional missiles, bombs, and guns and ammunition. Components of the system are the Airborne Weapons Analysis and Reporting System (AWARS), Management Action and Reporting System (MARS), and the Configuration and Data Management and Support Structure (CADMSS) The Ship Installation Facility is used to validate prototype weapons and equipment configuration against ship configuration to eliminate loading and storage problems for weapons as they are introduced to the Fleet. The facility is used to support Ship Installation Assurance Tests (SIAT) and Consolidation Operability Tests for armament support equipment, container design, and shipboard integration requirements. The Maintenance Support Trainer Laboratory programs and installs Part Task Trainers and Computer Based Trainers that provide weapon/platform interface training to Fleet air crews and maintenance personnel. The trainers are used to provide simulated flight/weapons training for HARPOON, SLAM, MAVERICK, and HARM missile systems and the Airborne Multifunctional Electronic Warfare Trainer (AMEWT) that supports many weapons and airframes.

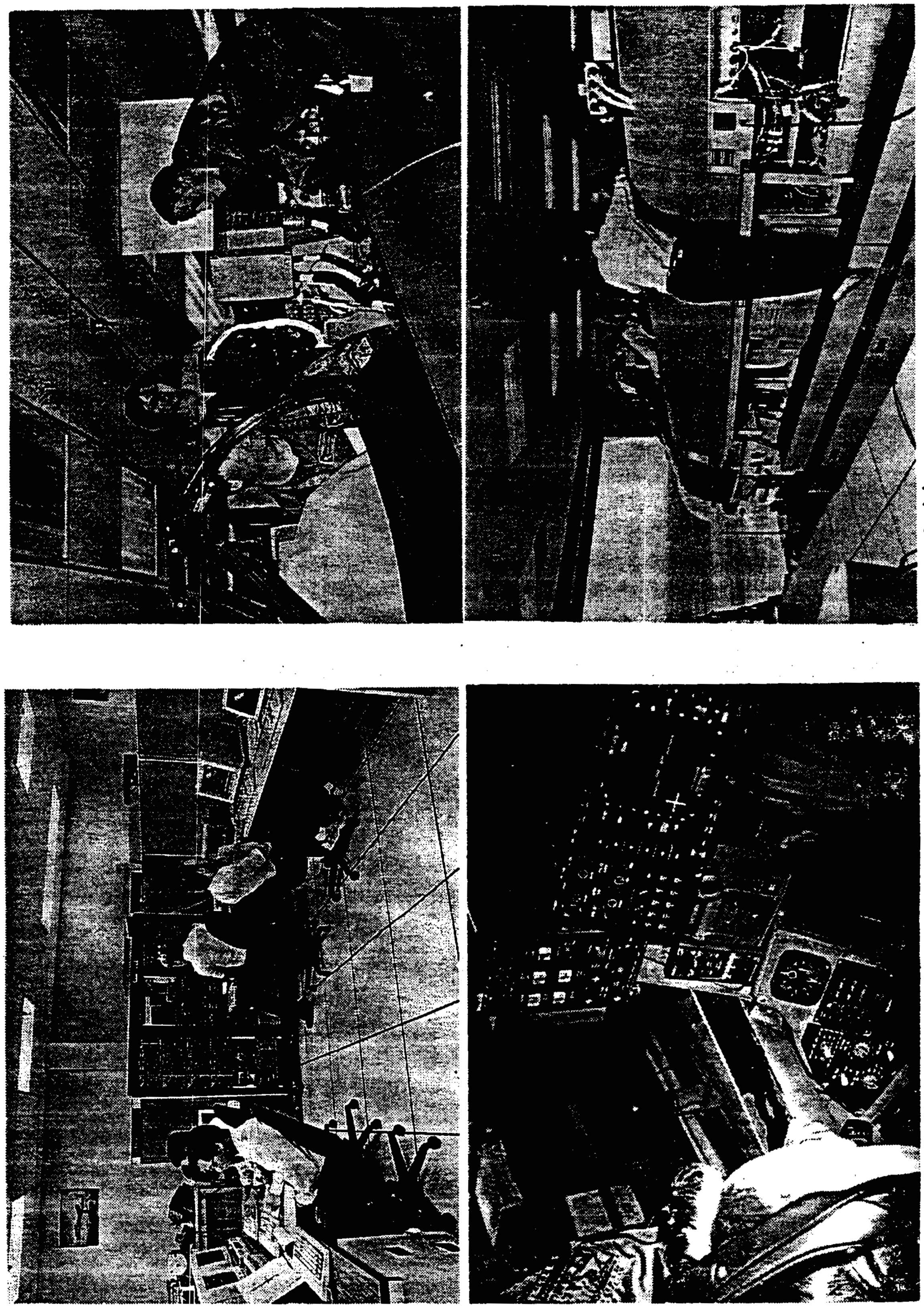
Interconnectivity/Multi-Use of T&E Facility: AWIS facility provides maintenance and readiness condition information for each Navy air-launched weapon to over 90 sites and 600+ users across the country. The Ship Installation Facility and the Maintenance Support Trainer Laboratory provide direct support to Fleet units.

Type of Test Supported: Laboratories support Ship Installation Assurance Tests and Consolidation Operability Tests, test hardware and software for various computer-based training systems, and provide life-cycle tracking and condition readiness for all air-launched Navy weapon systems.

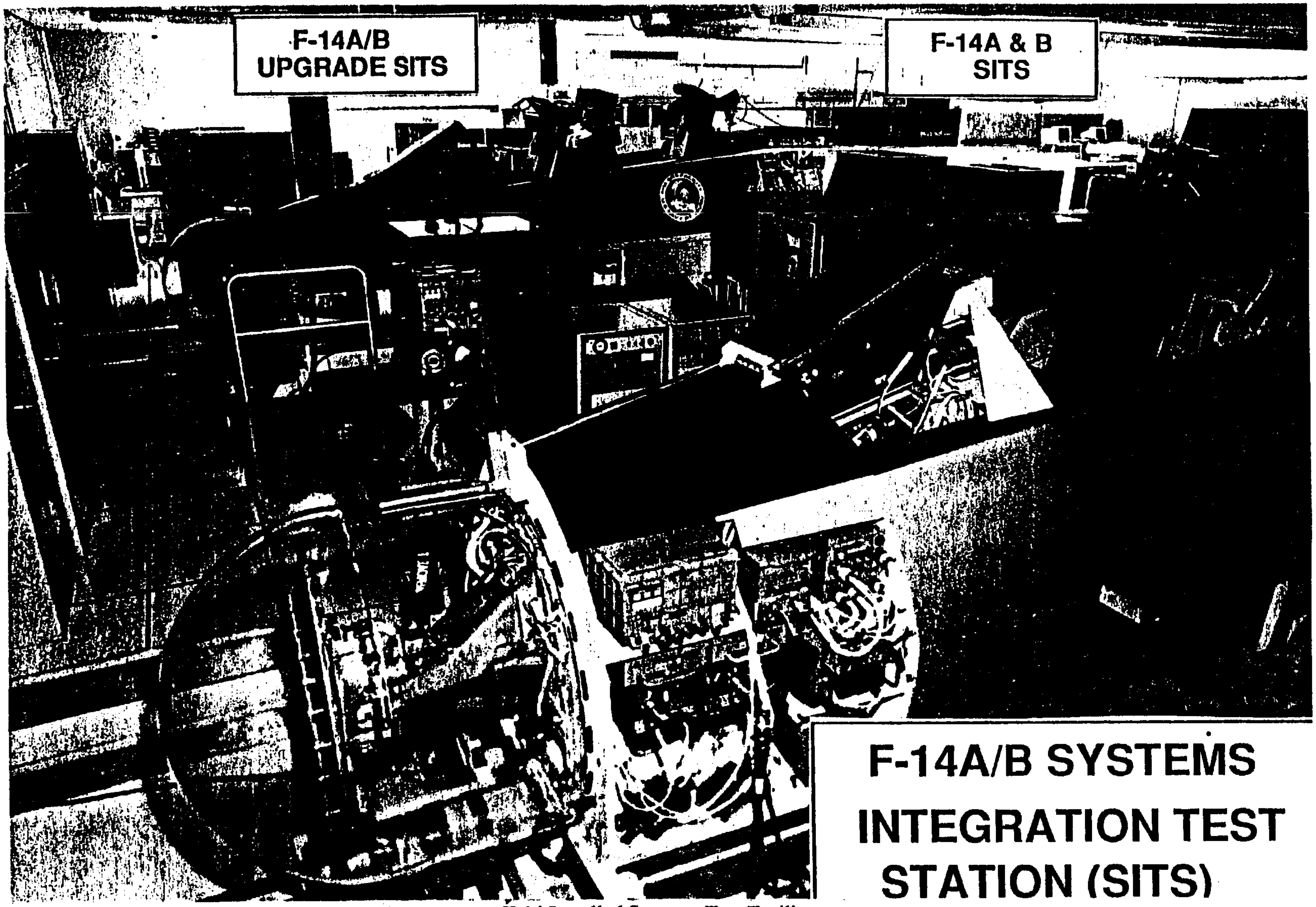
Summary of Technical Capabilities: AWIS has the capability to track each air-launched weapon through its entire life cycle, identifying all maintenance and repair to the system, any problems and the corrective action(s) taken, until the unit is expended. The Ship Installation facility has the capability to test prototype weapons and support equipment in a mock-up aircraft carrier environment to ensure the system can fit into carrier elevators along with other storage details. The Maintenance Support Trainer Laboratory has the capability to program, upgrade and update software to provide the Fleet with the most accurate simulation training on flying and using HARPOON/SLAM, MAVERICK, HARM, and Electronic Warfare systems.

SPECIAL PROJECT FACILITIES: The facilities and equipment provided RDT&E for projects involving highly classified technology. These projects which cannot be discussed here in detail for security reasons are composed of various tasks involving all Directorates at Point Mugu. Currently there are 19 facilities in which special projects are supported. These facilities were designed to meet DIAM 50-3 security requirements. These include engineering laboratories, classified storage facilities, ordnance assembly buildings, secure hangars, secure data reduction and analysis facilities, and computer facilities.

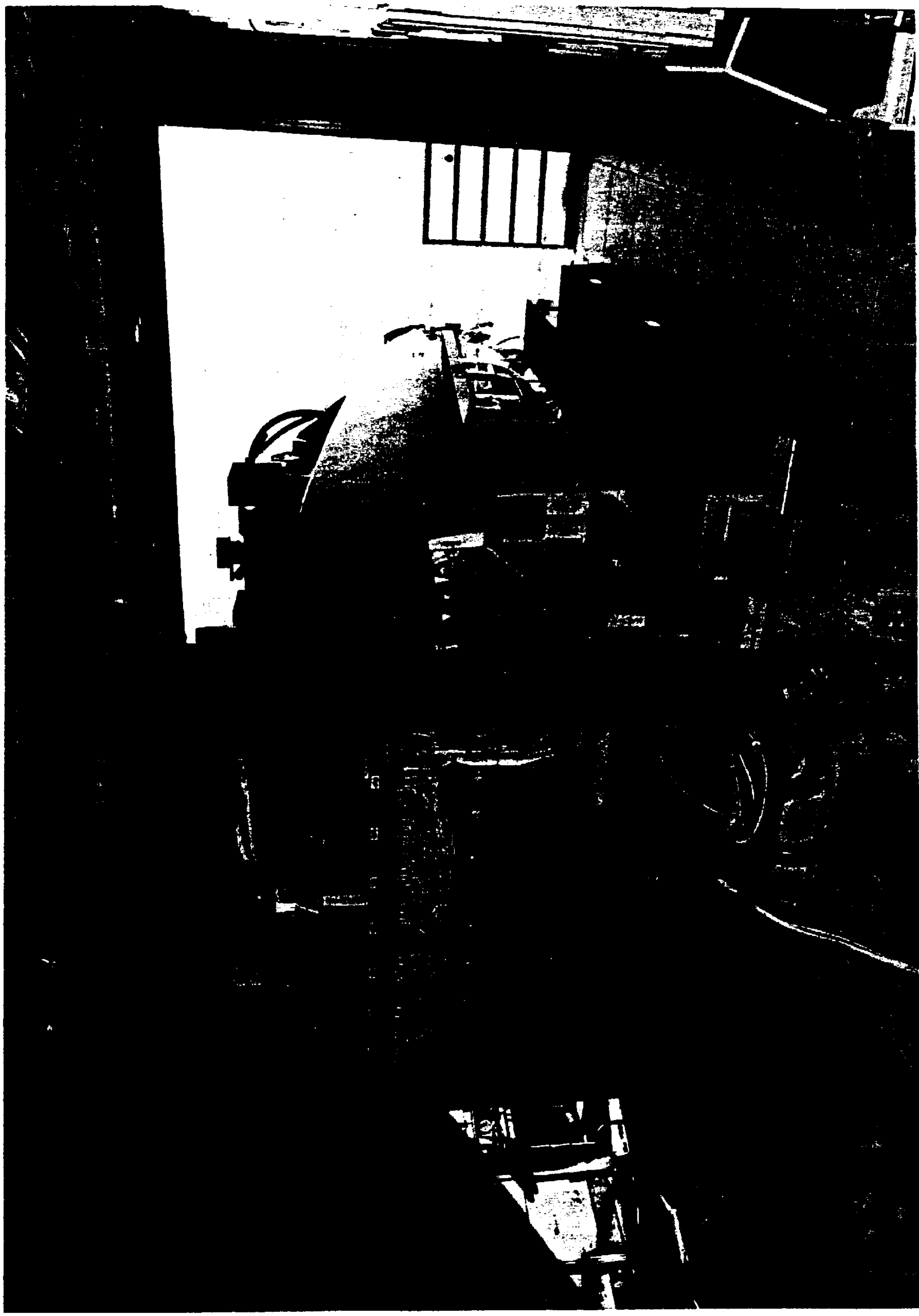
The following photographs illustrate many of Point Mugu's major equipment and facilities.



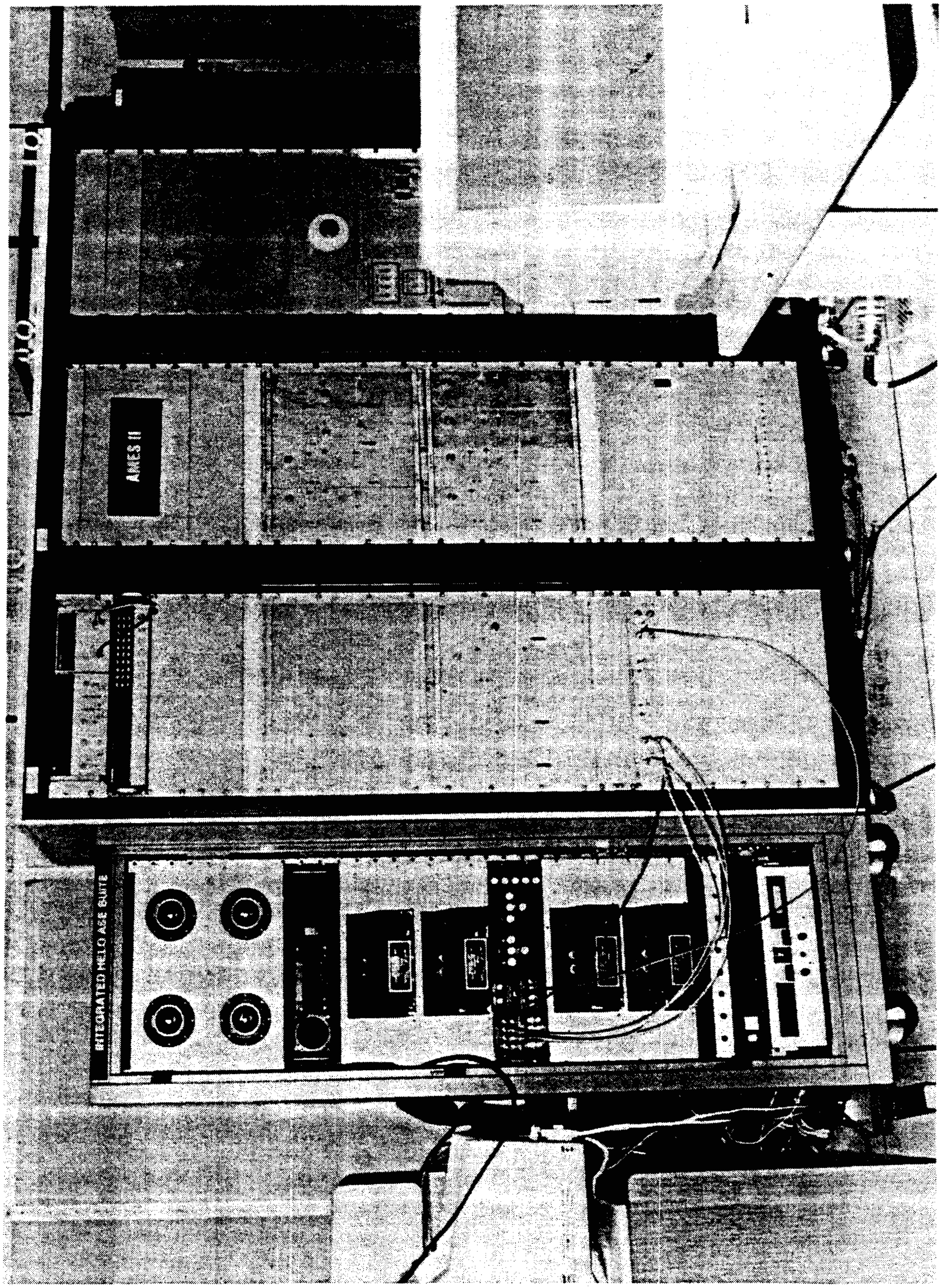
F-14 Weapons Systems Support Activity



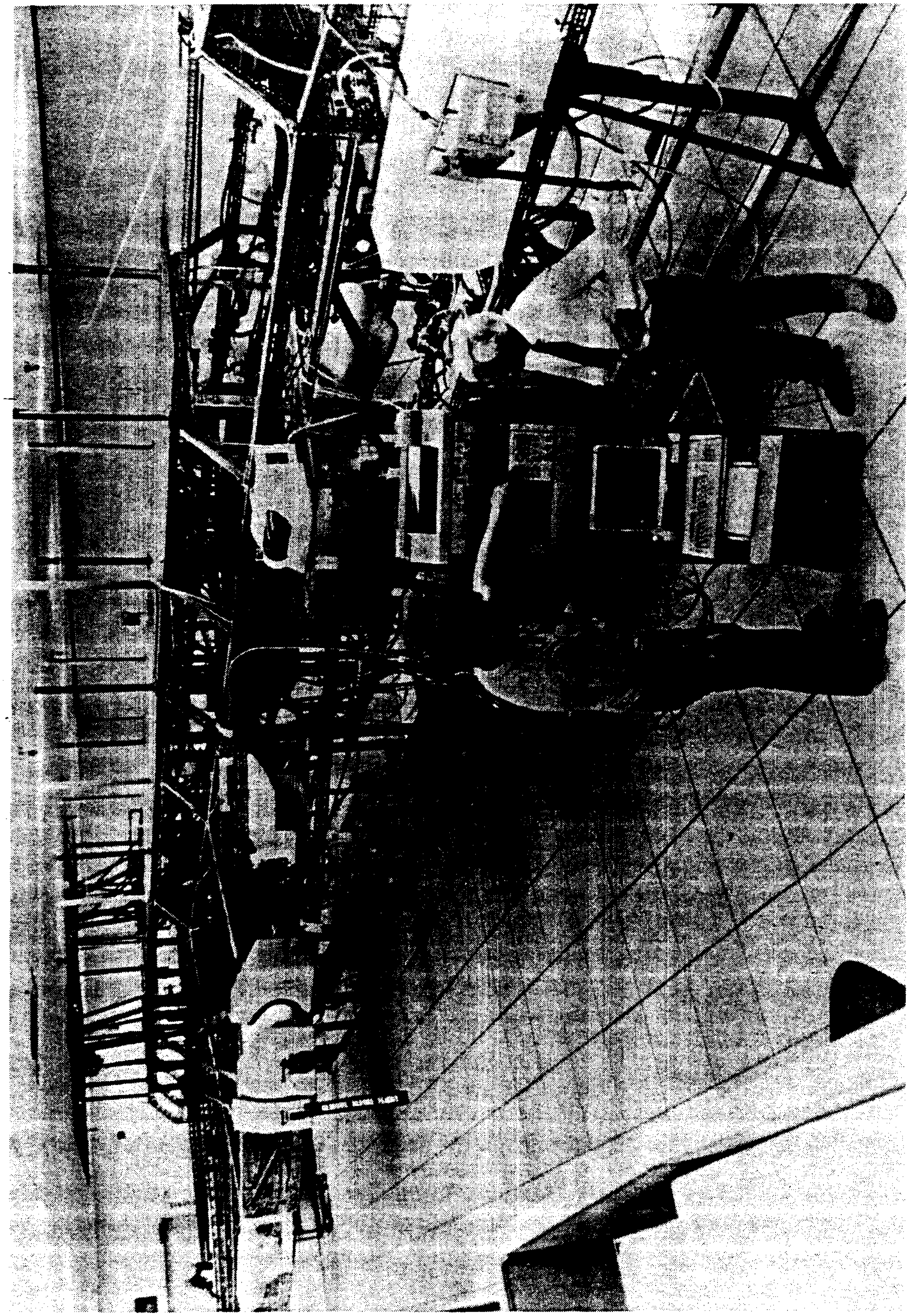
F-14 Installed Systems Test Facility



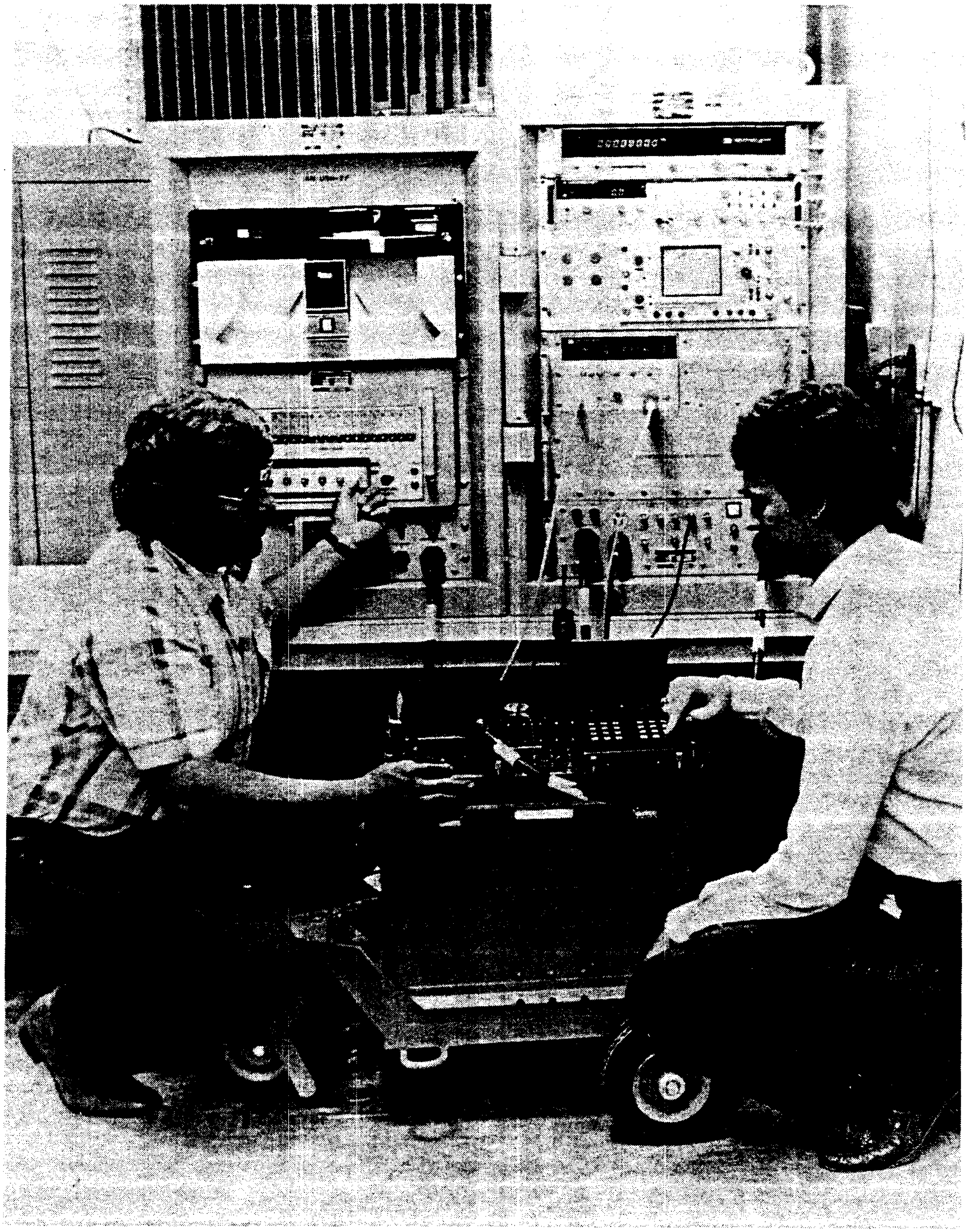
F-14 Installed Systems Test Facility



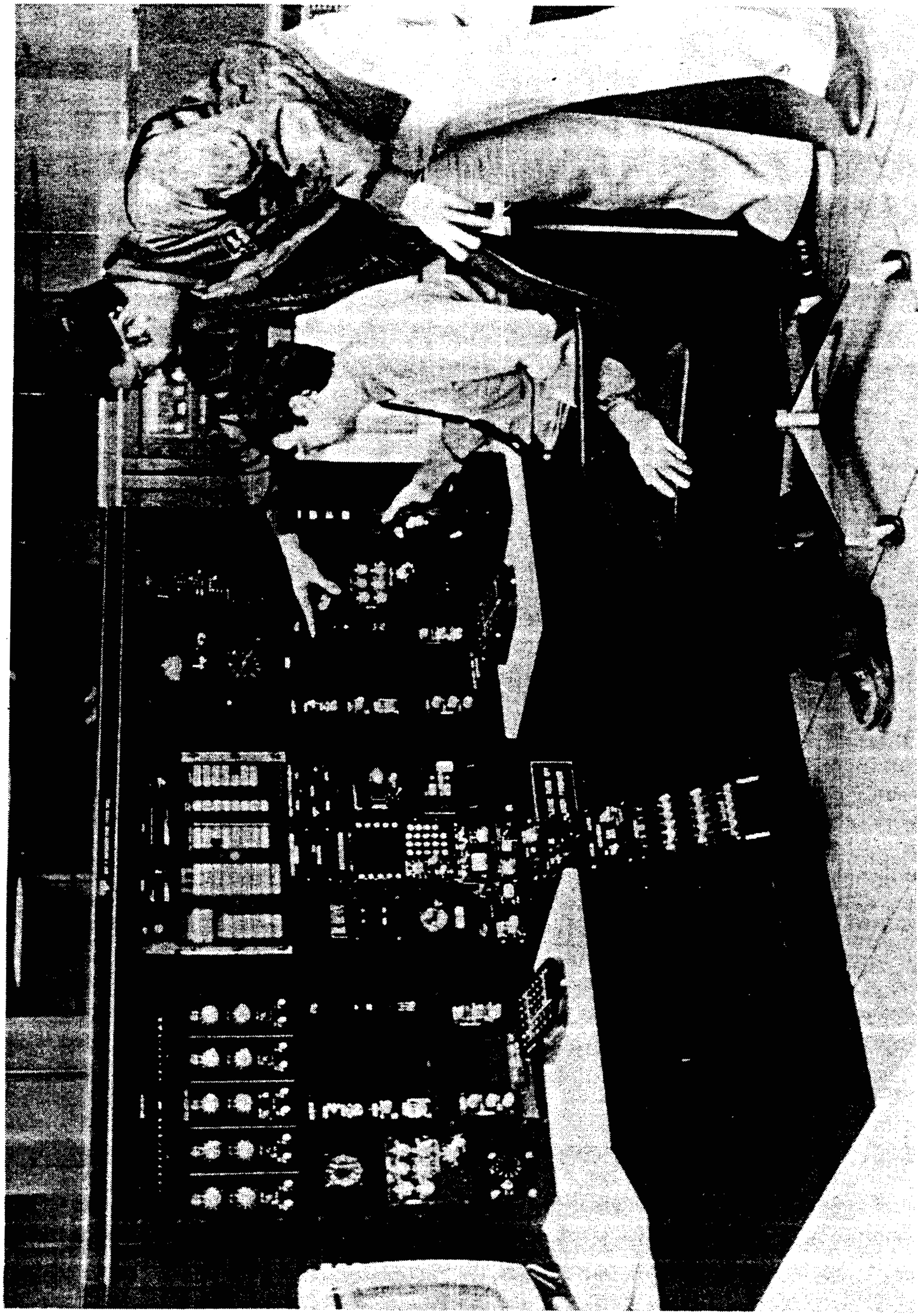
HH-60H EW Suite Integration Laboratory



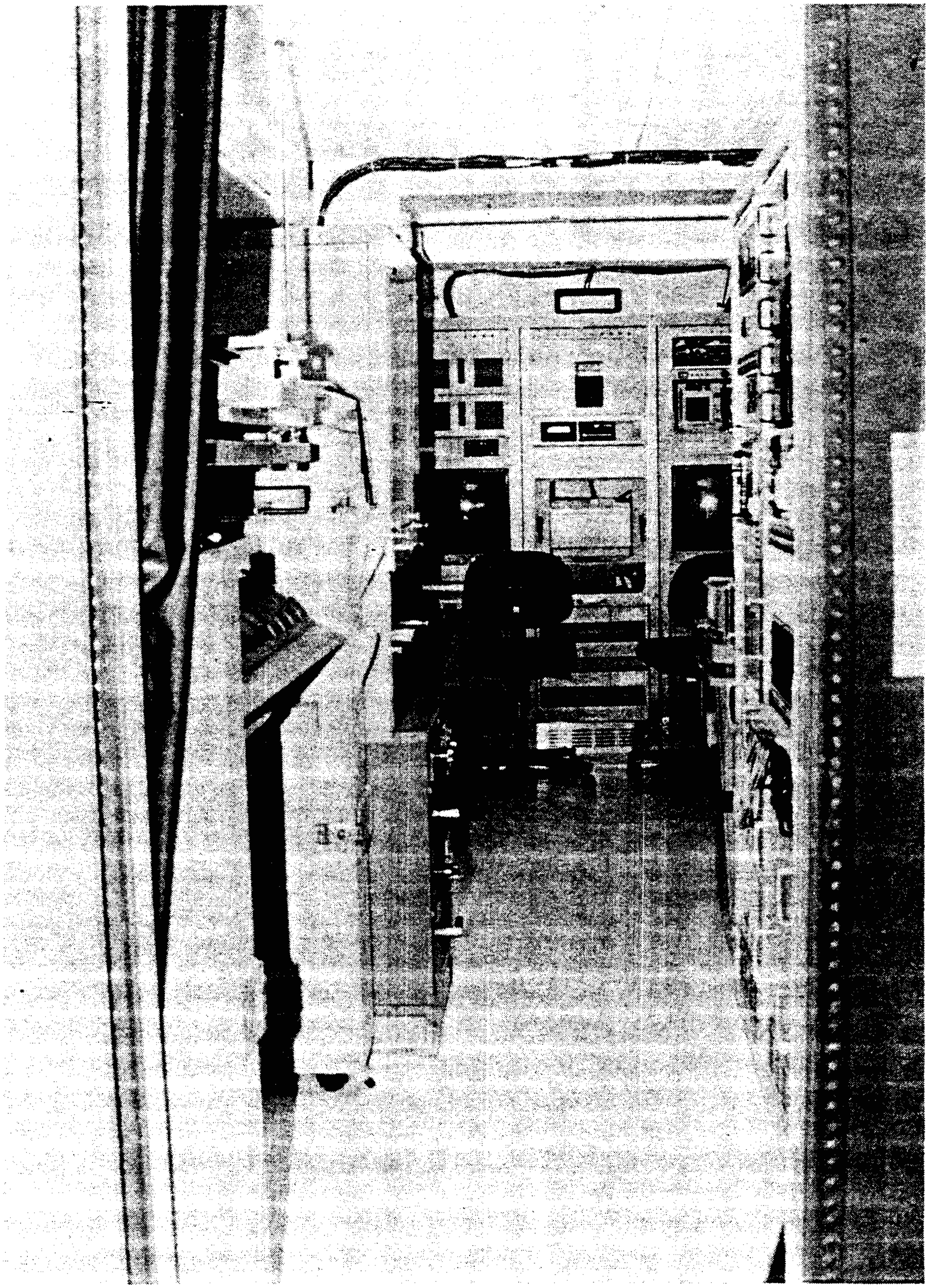
Integrated Systems Support Laboratory (ISSL)



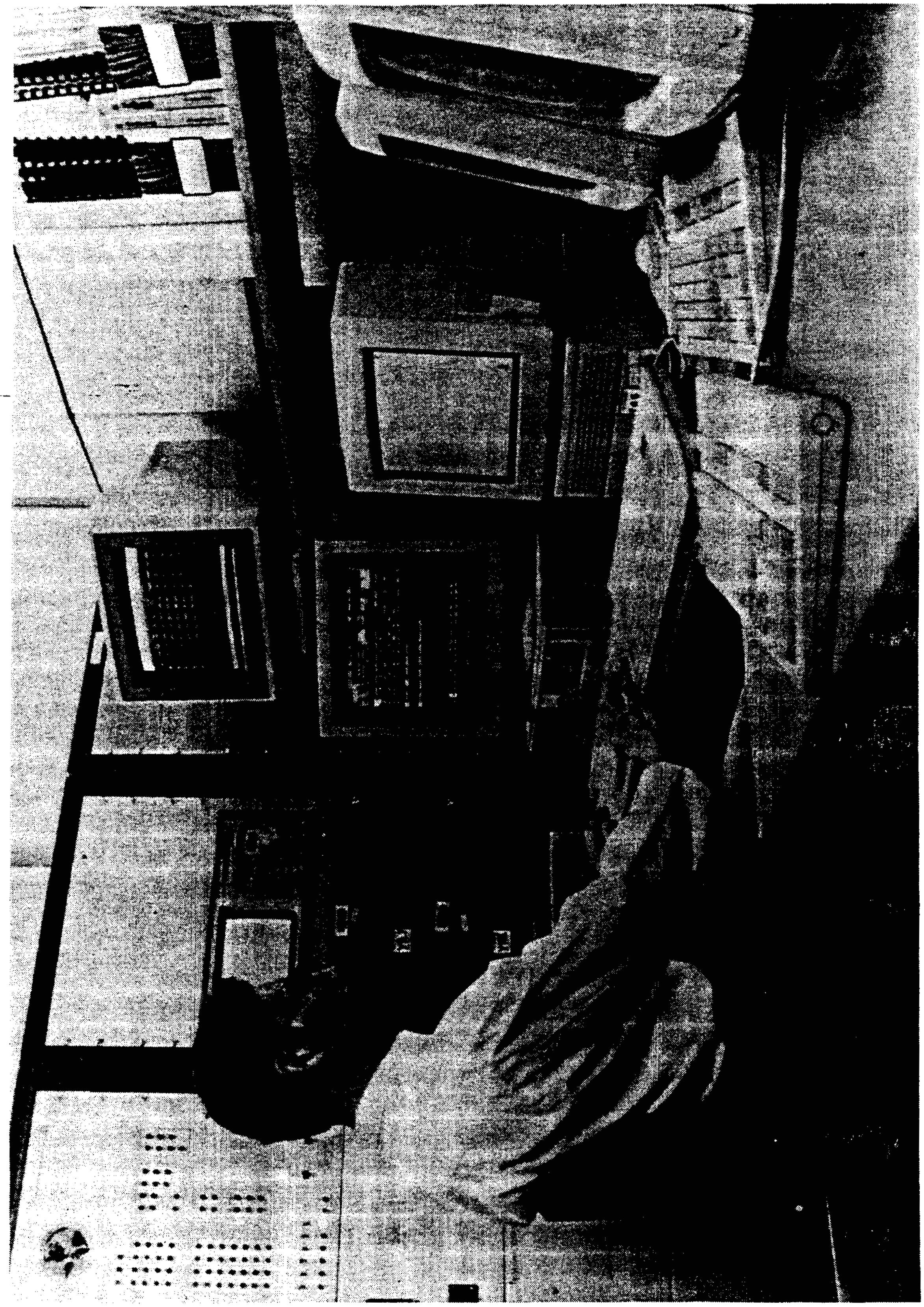
EW Support Equipment Development Station



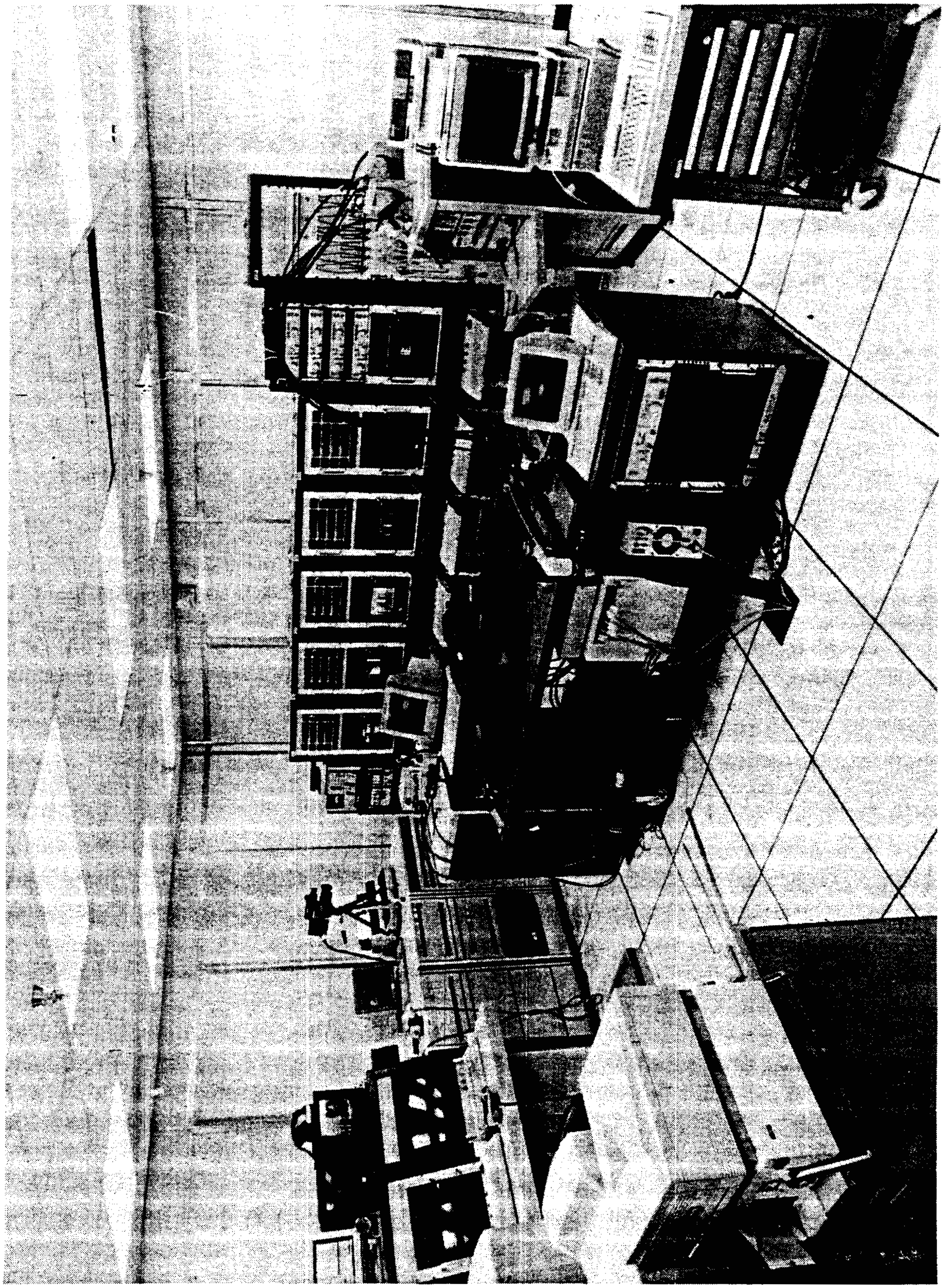
EA-6B Weapons System Support Laboratory (WSSL)



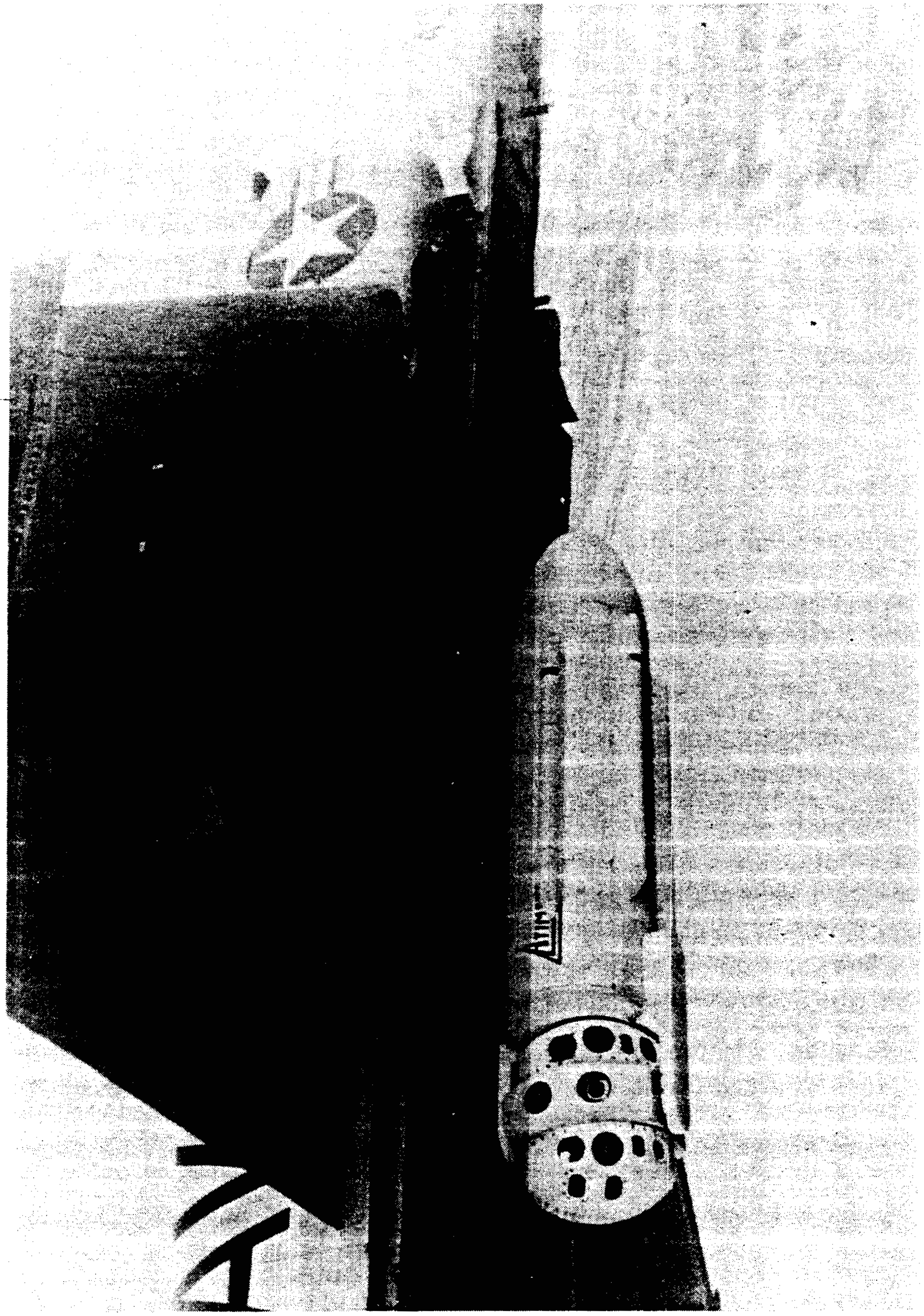
TERPES Integration Laboratory Facility



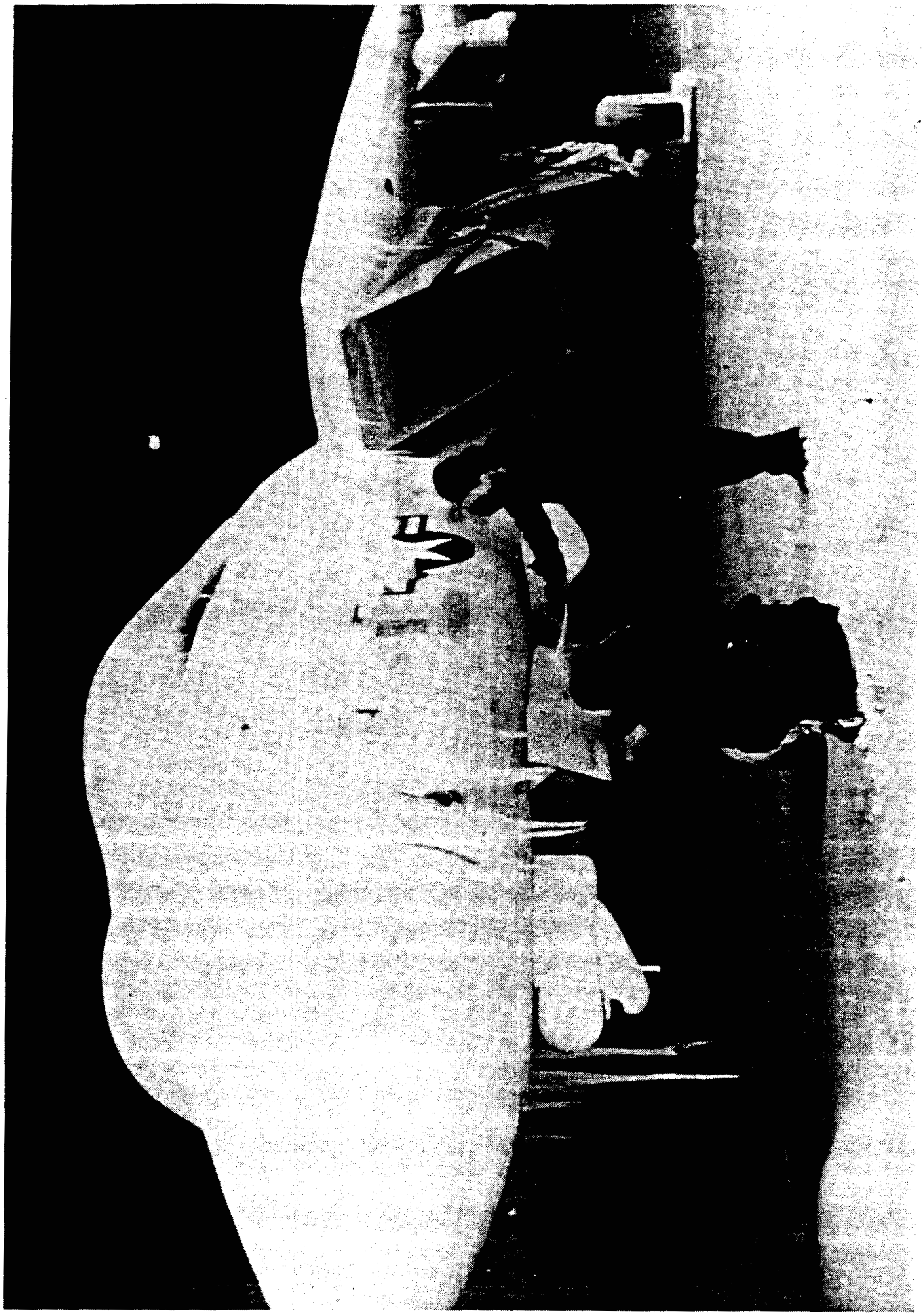
ALR-67 Software Development Laboratory



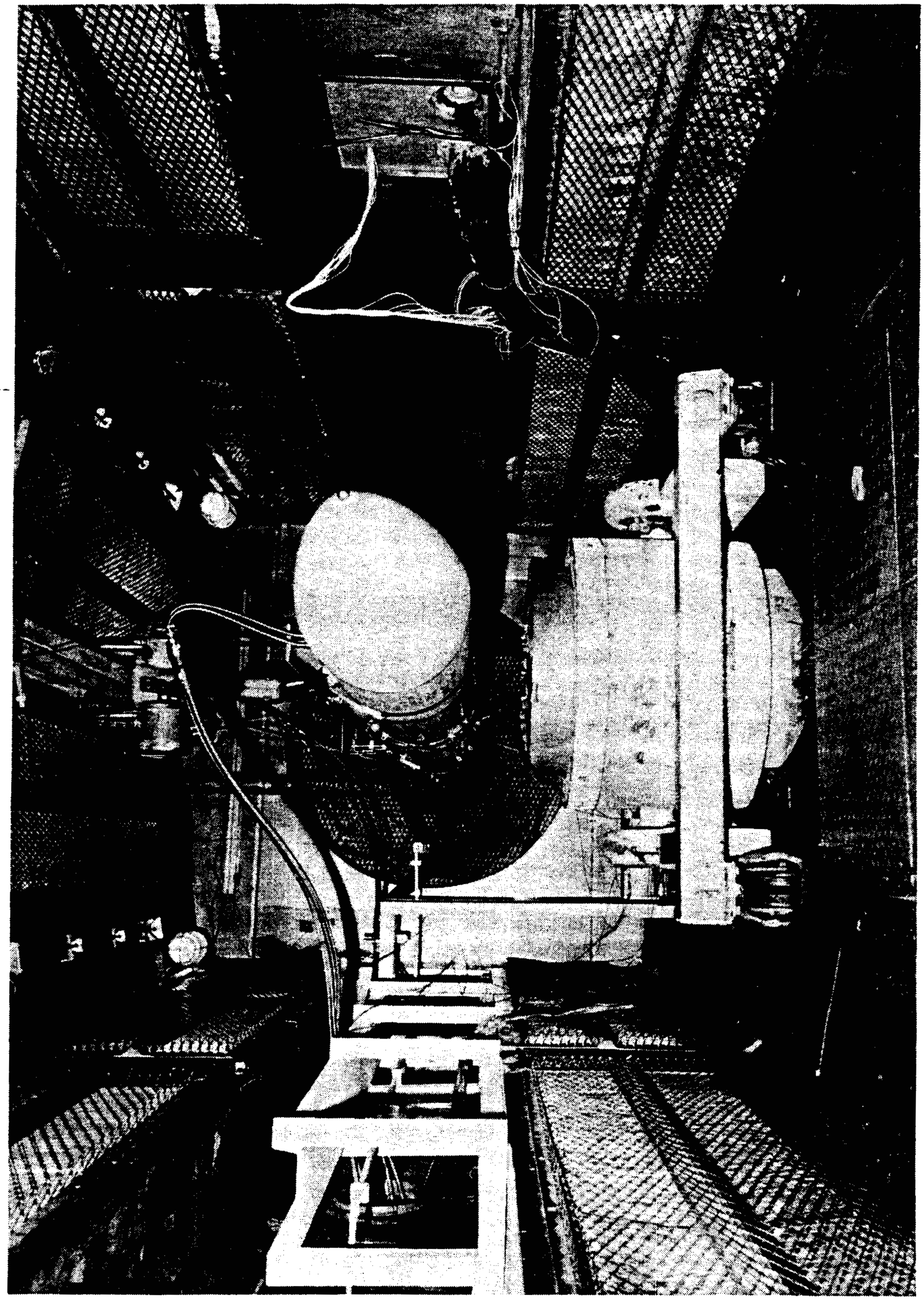
Electronic Combat Simulation Evaluation Laboratory (ECSEL)



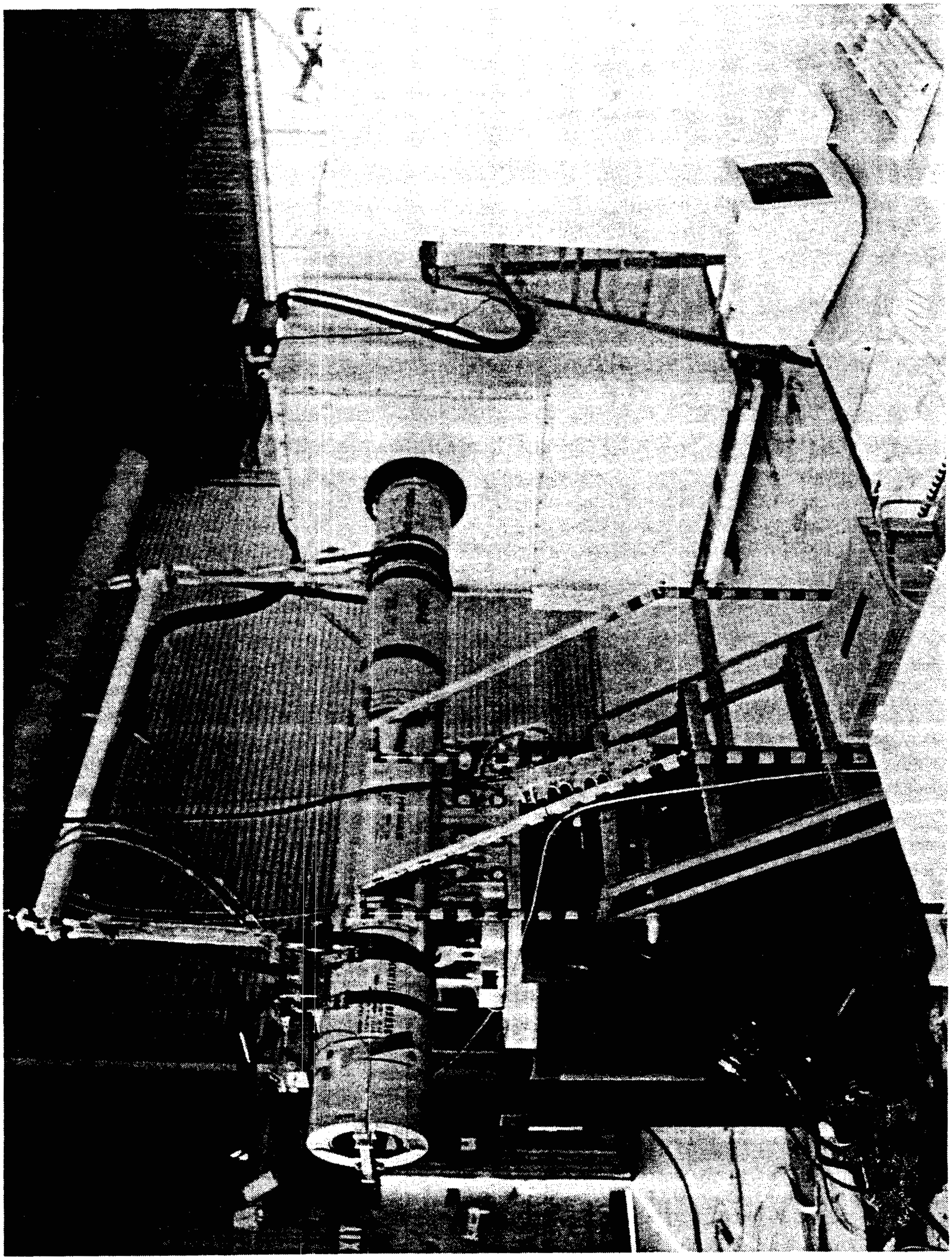
Airborne Turret Infrared Measurement System (ATIMS)



Sea Level Climatic Chamber



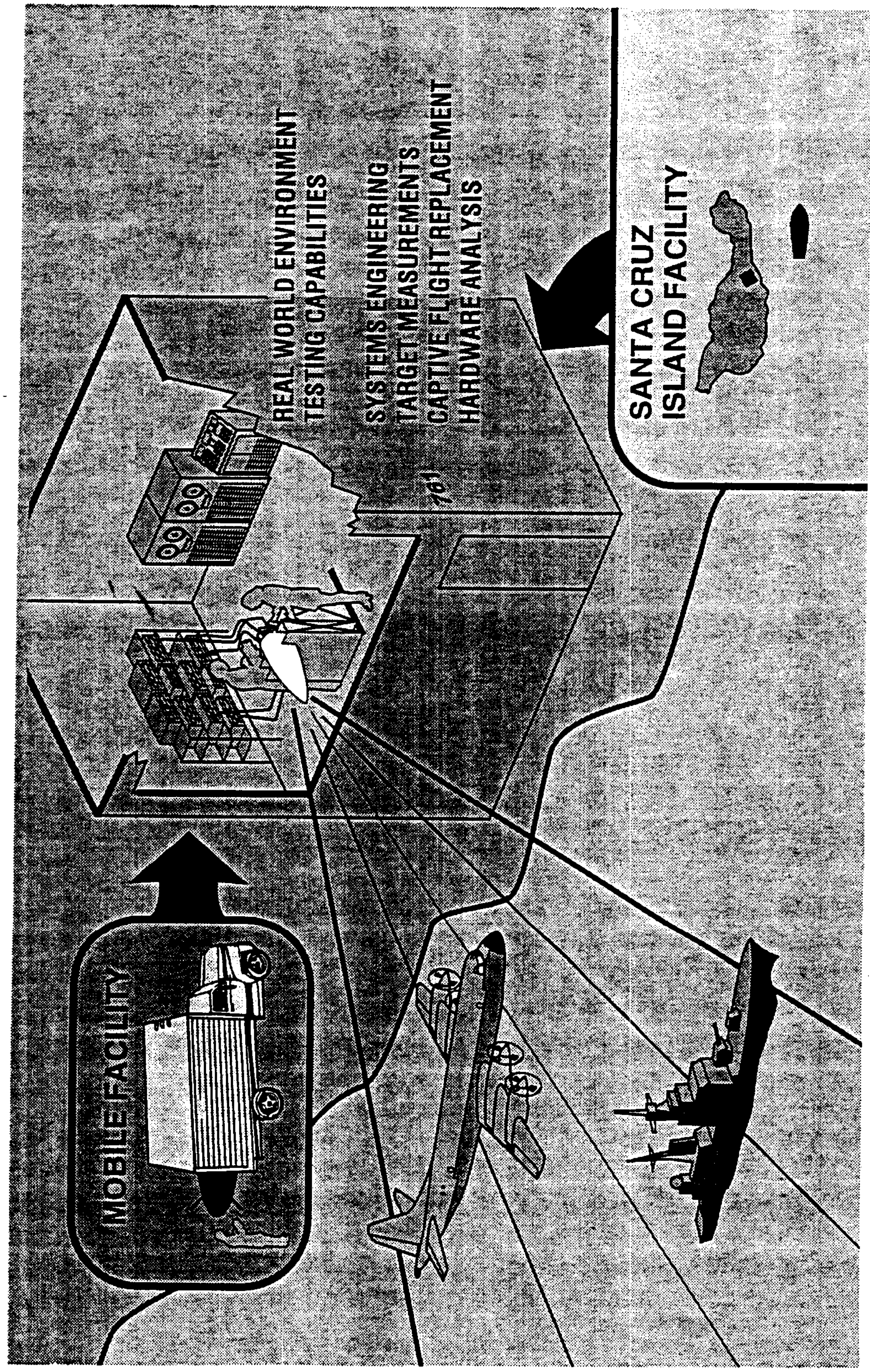
Reliability Test Facility



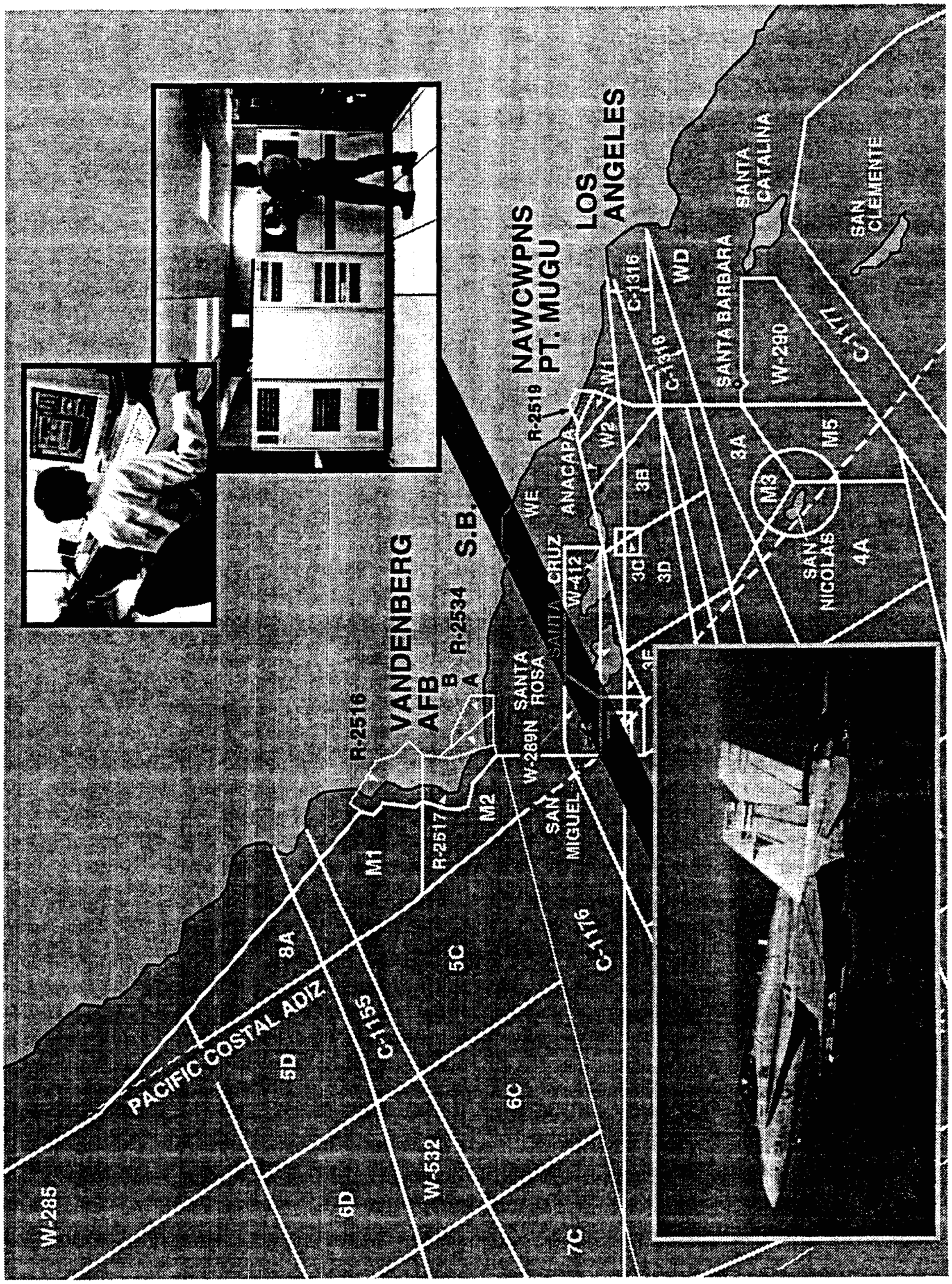
Environmental Test Facility

Electromagnetic Environment Effects Laboratory

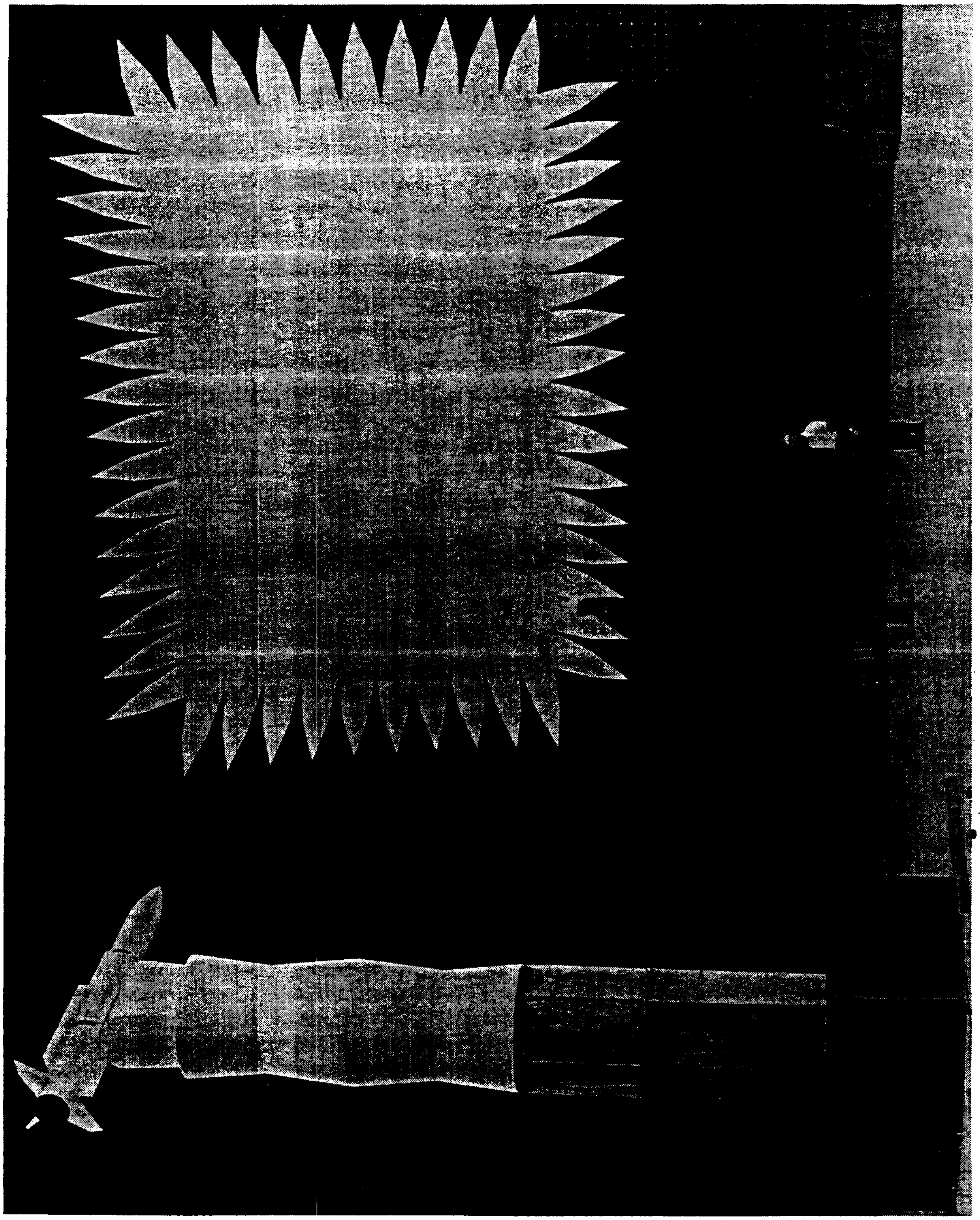
Ready Missile Test Facility



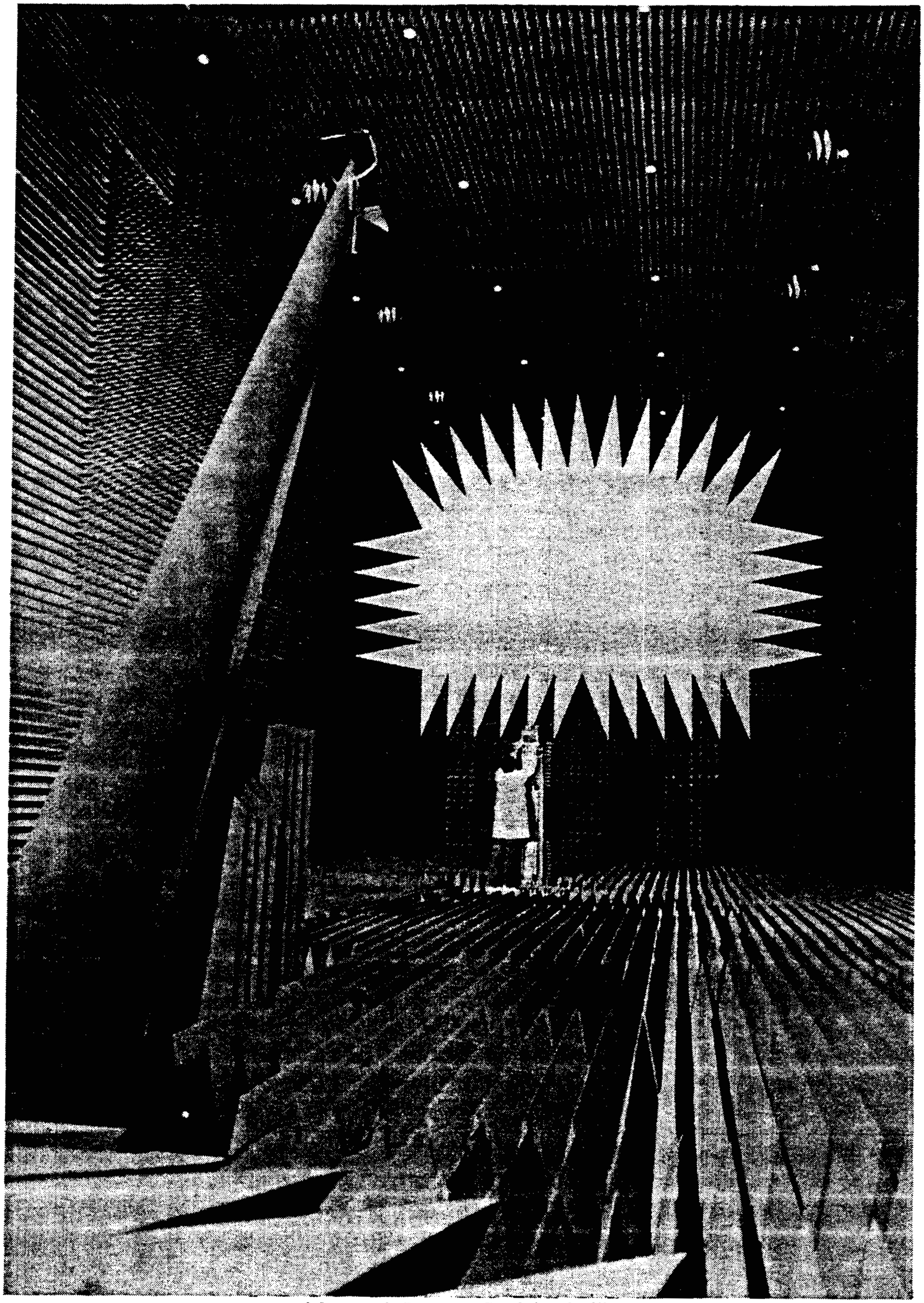
Strike Weapons Evaluation Facility



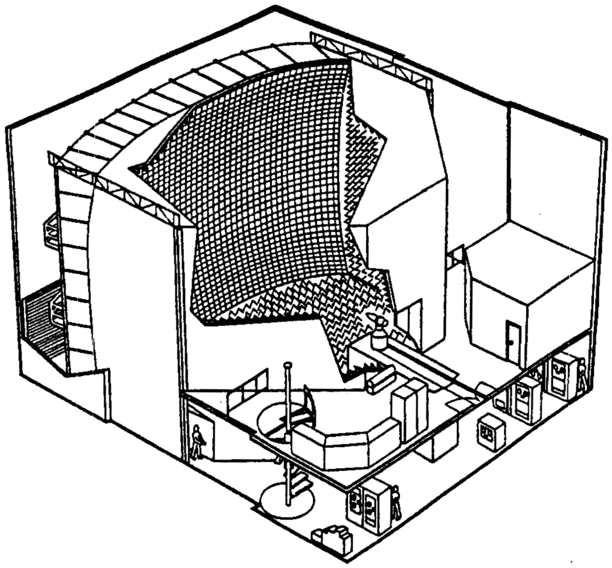
Sea Test Range

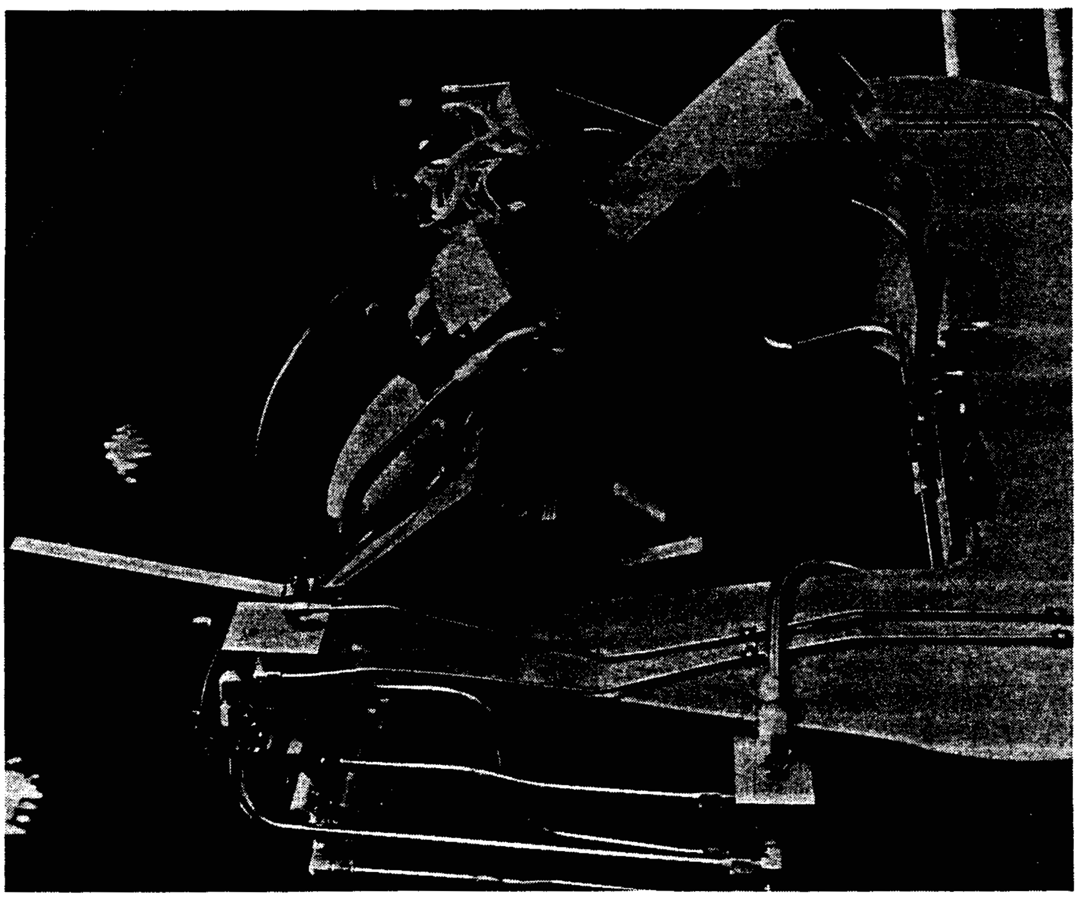


Bistatic Radar Reflectivity Laboratory



Monostatic Radar Reflectivity Facility





Missile Hardware-in-the-Loop.

3.5 Expansion Potential

3.5.1 Laboratory Facilities: *Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)*

The following table lists the available space used by the laboratory function at Point Mugu. While there is little excess space identified, there is a significant capability to absorb additional, similar workload. The detailed information for the Sea Range is not included here; however, the range is available to provide additional significant support.

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle, Fixed Wing, Avionics		Technical	296	296	0
Weapons, Conventional Missiles/Rockets		Technical	34	34	2
C4I, Fixed Ground-Based C4I		Technical	7	7	0
C4I, Ground-Based Mobile C4I		Technical	4	4	0

* Administrative, Technical, Storage, Utility

CSF: Air Vehicle, Rotary, Avionics - The space where this CSF is performed is within space that is also used to perform primary Air Vehicle, Fixed, Avionics.

CSF: Weapons, Cruise - The space where this CSF is performed is within space that is also used to perform primary T&E functions.

CSF: Weapons, Bombs - The space where this CSF is performed is within space that is also used to perform primary T&E functions.

CSF: Weapons, Guns and Ammunition - The space where this CSF is performed is within space that is also used to perform primary T&E functions.

3.5.1.1 Expansion Capacity: *Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)*

	Expansion Potential (Lab hours)	Number of Additional Workyear Shifts*	Personnel R'qrd to Run Lab	Workyears	Total FY97 Workyears Expansion
CSF: Air Vehicles, Fixed Wing, Avionics					498
F-14 WSSA	33	0.8	188	155	
EA-6B Wpns Syst Supp Lab	106	2.7	83	220	
Elect. Combat Sim & Eval Lab	120	3.0	22	66	
Integrated Supp Sys Lab (ISSL)	113	2.8	20	57	
CSF: Weapons, Conventional Missiles/Rockets					100
Missile HWILs (4 Labs)	500	3.1	32	100	
CSF: C4I, Fixed Ground-Based					9
Information Warfare Systems Lab Complex	68	1.6	4	9	
CSF: C4I, Ground-Based Mobile					6
Information Warfare Systems Lab Complex	45	1.2	3	6	

* 168 unconstrained Lab hours/week = 4.2 shifts maximum per lab.

CSF: AIR VEHICLES, FIXED WING, AVIONICS

Facility: F-14 WSSA:

Unconstrained Resources Capacity	168 hrs per week
Expected Usage (FY97)	120 hrs per week
Downtime	15 hrs per week
Expansion Potential (Lab Hours)	33 hrs per week

Modifications required: No Minor facility requirements. Modification would entail construction of system level test workstations and several subsystem workstations to accommodate installation of

Facility: EA-6B Weapons Systems Support Laboratory

Unconstrained Resources Capacity	168 hrs per week
Expected Usage (FY97)	50 hrs per week
Downtime	12 hrs per week
Expansion Potential (Lab Hours)	106 hrs per week

Modifications required: New Avionics Engineering Workstations and Threat Simulation Capability - Minor facilities modification required (increased power and cooling). Potentially extensive cost for non-EA-6B avionics suites due to high cost of avionics. Dedicated Platform Specific Facility.

Facility: Electronic Combat Simulation and Evaluation Laboratory

Unconstrained Resources Capacity	168 hrs per week
Expected Usage (FY97)	35 hrs per week
Downtime	13 hrs per week
Expansion Potential (Lab Hours)	120 hrs per week

Modifications required: Threat Simulator (equipment) upgrades for any threats outside of existing system capability. New avionics spread benches for systems not presently supported. Minor facility modifications potentially required for increased power and cooling. Full lab hours extension possible with little or no modification required, however, present facility size constraints limit number of new EW suites which could be simultaneously supported to less than 10.

Facility: Integrated Support Systems Laboratory (ISSL)

Unconstrained Resources Capacity	168 hrs per week
Expected Usage (FY97)	40 hrs per week
Downtime	15 hrs per week
Expansion Potential (Lab Hours)	113 hrs per week

Modifications required: New avionics and platform data bus integration only. No known facility modifications required. Highly modifiable facility due to its construction.

CSF: AIR VEHICLES, ROTARY, AVIONICS

This CSF exists in T&E oriented spaces. There is no S&T expansion potential identified.

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

Facility: Missile Hardware-in-the-Loop Lab

Unconstrained Resources Capacity	672 hrs per week
Expected Usage (FY97)	128 hrs per week
Downtime	44 hrs per week
Expansion Potential (Lab Hours)	500 hrs per week

Modifications required: Minor facility modifications required to install rail-system for 3-axis flight table and power conditioning system.

CSF: WEAPONS, CRUISE MISSILES

This CSF exists in T&E orintated spaces. There is no S&T expansion potential identified.

CSF: WEAPONS, BOMBS

This CSF exists in T&E oriented spaces. There is no S&T expansion potential identified.

CSF: WEAPONS, GUNS and AMMUNITION

This CSF exists in T&E oriented spaces. There is no S&T expansion potential identified.

**CSF: C4I, FIXED GROUND-BASED C4I (60%)
C4I, GROUND-BASED MOBILE C4I (40%)**

Facility: Information Warfare Systems Laboratory Complex

Unconstrained Resources Capacity	168 hrs per week
Expected Usage (FY97)	80 hrs per week
Downtime	5 hrs per week
Expansion Potential (Lab Hours)	83 hrs per week

Modifications required: Minimal. Laboratories in their present condition are limited only by number of hours and number of simultaneous users. Any project utilizing Open Systems Architecture approach to systems development could utilize the complex on a space available basis. Interconnection to other laboratories is in place and expandable for additional usage requirements. It is likely that changing projects in the middle of the day would cause additional (1-2 hours per day) downtime in order to reload software systems.

3.5.1.2 Additional Supportable Workyears: *If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)*

CSF: AIR VEHICLE, FIXED WING, AVIONICS

The space required to absorb the additional workyears is available in the immediate vicinity. The work years are estimated to be 358 workyears.

The F-14 WSSA has the office and laboratory space needed to absorb the additional workyears in the immediate vicinity. The work years are estimated to be 75 government and 80 contractor workyears.

CSF: AIR VEHICLE, ROTARY, AVIONICS

There is no S&T expansion potential proposed for this CSF.

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

Missile HWIL - The space required to absorb the additional workyears is available in the immediate vicinity. The work years estimated on an unconstrained capacity are 360 government workyears and 40 contractor workyears.

CSF: WEAPONS, CRUISE

There is no S&T expansion potential proposed for this CSF.

CSF: WEAPONS, BOMBS

There is no S&T expansion potential proposed for this CSF.

CSF: GUNS and AMMUNITIONS

There is no S&T expansion potential proposed for this CSF.

CSF: C4I, FIXED GROUND-BASED C4I

The space required to absorb the additional workyears is available in the immediate vicinity. The workyears are estimated to be 9 government workyears.

CSF: C4I, GROUND-BASED MOBILE C4I

The space required to absorb the additional workyears is available in the immediate vicinity. The workyears are estimated to be 6 government workyears.

3.5.1.3 Construction Projects: *For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)*

CSF: AIR VEHICLE, FIXED WING, AVIONICS

MILCON PROJECT:	P-031
TITLE:	RANGE OPERATIONS CENTER
MILCON PROJECT:	P-904
TITLE:	STORAGE TANK FOR FUEL FARM, San Nicolas Island
MILCON PROJECT:	P-061
TITLE:	SURFACE TARGETS DEVELOPMENT LAB, CBC SITE
MILCON PROJECT:	P-773
TITLE:	READY MISSILE MAGAZINE
MILCON PROJECT:	P-199
TITLE:	ADVANCED MULTIMODE MISSILE EVALUATION

CSF: AIR VEHICLE, ROTARY, AVIONICS

MILCON PROJECT:	P-031
TITLE:	RANGE OPERATIONS CENTER
MILCON PROJECT:	P-904
TITLE:	STORAGE TANK FOR FUEL FARM, San Nicolas Island
MILCON PROJECT:	P-061
TITLE:	SURFACE TARGETS DEVELOPMENT LAB, CBC SITE
MILCON PROJECT:	P-773
TITLE:	READY MISSILE MAGAZINE

CSF: WEAPONS, CONVENTIONAL MISSILES/ROCKETS

MILCON PROJECT:	P-031
TITLE:	RANGE OPERATIONS CENTER
MILCON PROJECT:	P-061
TITLE:	SURFACE TARGETS DEVELOPMENT LAB, CBC SITE
MILCON PROJECT:	P-773
TITLE:	READY MISSILE MAGAZINE
MILCON PROJECT:	P-199
TITLE:	ADVANCED MULTIMODE MISSILE EVALUATION

CSF: WEAPONS, CRUISE

MILCON PROJECT: P-031
TITLE: RANGE OPERATIONS CENTER

MILCON PROJECT: P-061
TITLE: SURFACE TARGETS DEVELOPMENT LAB, CBC SITE

MILCON PROJECT: P-773
TITLE: READY MISSILE MAGAZINE

MILCON PROJECT: P-199
TITLE: ADVANCED MULTIMODE MISSILE EVALUATION

CSF: WEAPONS, BOMBS

MILCON PROJECT: P-031
TITLE: RANGE OPERATIONS CENTER

MILCON PROJECT: P-773
TITLE: READY MISSILE MAGAZINE

MILCON PROJECT: P-199
TITLE: ADVANCED MULTIMODE MISSILE EVALUATION

CSF: GUNS and AMMUNITIONS

MILCON PROJECT: P-031
TITLE: RANGE OPERATIONS CENTER

MILCON PROJECT: P-061
TITLE: SURFACE TARGETS DEVELOPMENT LAB, CBC SITE

MILCON PROJECT: P-773
TITLE: READY MISSILE MAGAZINE

MILCON PROJECT: P-199
TITLE: ADVANCED MULTIMODE MISSILE EVALUATION

CSF: C4I, FIXED GROUND-BASED C4I

MILCON PROJECT: P-031
TITLE: RANGE OPERATIONS CENTER

CSF: C4I, GROUND-BASED MOBILE C4I

MILCON PROJECT: P-031
TITLE: RANGE OPERATIONS CENTER

MILCON PROJECT: P-031
SPONSOR/PROG. YR.: N091/FY98
TITLE: RANGE OPERATIONS CENTER
COST: $9.8M
SIZE: 32,920 SF
TYPE: NEW
BLDG./SQ FT
REPLACEMENT:
DESCRIPTION: This project will provide a 32,920 square feet addition to the existing range operations center building; upgrade 19,820 square feet of the operations centers; and upgrade heads, roof, and facilities of the remaining 91,366 square feet of the building. An overhead secure cable way will connect the new addition to the range communications building.

The facility will be an addition to provide adequate space to meet range operating and data analysis requirements. Upgrading of the existing building that was built in 1953 (and designed to accommodate functions and equipment of that period) is required to provide real-time information to customers, including Foreign Military Sales customers, using the Sea Test Range for weapons systems operations.

The additional 32,920 square feet of space in this project will provide space for engineering personnel now occupying a like amount of space in several buildings remote from the site. It will also provide post-operation briefing facilities not available in the existing buildings. The addition will also provide properly-configured space for modern computer equipment. The space in the existing building that is inadequate for such use will be converted to operations functions.
PLANNED BENEFICIAL OCCUPANCY DATE: 2000

MILCON PROJECT: P-904
SPONSOR/PROG. YR.: DLA-DFSC/FY96
TITLE: STORAGE TANK FOR FUEL FARM, San Nicolas Island
COST: $750,000
SIZE:
TYPE:
BLDG./SQ FT
REPLACEMENT:
DESCRIPTION: This project will provide one 10,000-barrel (420,000 gallon) fuel tank at the receipt facility at San Nicolas Island in support of air operations. One of the three existing 1,000-barrel (42,000 gallon) tanks will be demolished upon completion of this project. Fuel is delivered to San Nicolas Island by barge. This project will enable deliveries to be reduced from eight-to-ten per year, to one or two per year. This project will increase the usable capacity of the receipt facility from under 3,000 barrels to over 11,000 barrels.
PROJECT AWAITING FUNDS TO AWARD DESIGN CONTRACT.
PLANNED BENEFICIAL OCCUPANCY DATE: June 1996.

MILCON PROJECT: P-061
SPONSOR/PROG. YR.: N091/FY97
TITLE: SURFACE TARGETS DEVELOPMENT LAB, CBC SITE
COST: $3.5M
SIZE: 48,000 SF
TYPE: NEW
BLDG./SQ FT
REPLACEMENT:
DESCRIPTION: This project will provide 24,000 square feet of development laboratory, 7,945 square feet of engineering laboratory, 7,055 square feet of electronics shop space, and 9,000 square feet of RDT&E storage laboratory. The new facility will support the Sea Range mission of weapons systems evaluation, testing, and fleet training worldwide.

The identified installed equipment will be as follows: HVAC; fire control and sprinkler systems; vault/storage room; work benches and cabinets.
PLANNED BENEFICIAL OCCUPANCY DATE: 1999

MILCON PROJECT: P-773
SPONSOR/PROG. YR.: N091/FY99
TITLE: READY MISSILE MAGAZINE
COST: $1.3M
SIZE: 5,044 SF
TYPE: NEW
BLDG./SQ FT
REPLACEMENT:
DESCRIPTION: This project will provide one modified standard Type A reinforced concrete Ready-for-Issue (RFI) magazine complete with retaining walls, earth cover, loading area, security lighting, and alarms. This magazine will have oversize steel doors for ready ingress and egress of all-up missiles. The facility will provide storage for fully assembled weapons and targets awaiting launch for programs assigned to this activity.

The built-in equipment alarms and lighting is specified in item 1. This project will add 5,044 square feet to the high explosive site located between two existing high explosive magazines with minimum adaptation required. PLANNED BENEFICIAL OCCUPANCY DATE: 2000

MILCON PROJECT: P-199
SPONSOR/PROG. YR.: N88/FY97
TITLE: ADVANCED MULTIMODE MISSILE EVALUATION LABORATORY
COST: $9.0M
SIZE: 55,000 SF
TYPE: NEW
BLDG./SQ FT
REPLACEMENT: N/A
DESCRIPTION: This project will a provide secure, limited access, multi-story masonry building containing a HWIL simulation facility for evaluation of advanced missile systems. Facility will have an RF anechoic chamber, an EO/IR test laboratory, humidity control, energy control monitoring system, and an automatic fire suppression system. This facility will support weapons systems evaluation and testing using HWIL evaluation of modern dual mode missileswhich incorporate high frequency RF seekers. Many scenarios that are quite practical in the laboratory are often difficult or cost prohibitive to implement in a actual flight test.
EQUIPMENT OVER $500,000: Phased Array ($4.0M).
PLANNED BENEFICIAL OCCUPANCY DATE: 1999

3.5.2 Land Use: *Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)*

Main Base: There are 190 buildable unconstrained acres on the main base and an additional 900 acres of buildable land with extreme constraints from environmental issues such as wetlands and endangered species.

San Nicolas Island: There are 670 buildable unconstrained acres on San Nicolas Island and an additional 6000 acres with constraints ranging from archeological sites to endangered species and operational constraints. Note that an additional constraint to construction on San Nicolas Island is the remoteness and the lack of waterfront operations facilities required to support major construction.

There are 190 buildable acres of unconstrained land available at Point Mugu and 670 buildable acres of unconstrained land available at San Nicolas Island to support additional construction requirements for the following CSFs:

AIR VEHICLE, FIXED, AVIONICS
AIR VEHICLE, ROTARY, AVIONICS
WEAPONS, CONVENTIONAL
WEAPONS, CRUISE
WEAPONS, BOMBS
WEAPONS, GUNS and AMMUNITION
C4I, FIXED, GROUND-BASED
C4I, GROUND-BASED, MOBILE

3.5.3 Utilities: *Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)*

The utility systems at Point Mugu and San Nicolas Island are capable of handling the current load and have reserve capacity to handle expansion for the following CSFs:

AIR VEHICLE, FIXED, AVIONICS
AIR VEHICLE, ROTARY, AVIONICS
WEAPONS, CONVENTIONAL MISSILES/ROCKETS
WEAPONS, CRUISE MISSILES
WEAPONS, BOMBS
WEAPONS, GUNS and AMMUNITION
C4I, FIXED, GROUND-BASED
C4I, GROUND-BASED, MOBILE

Future expansion and growth can be accommodated without large expenditures of funds for major expansion of the utility systems. Point Mugu's investment in its infrastructure has allowed for excess capacity which can now be utilized to meet future demands.

Main Base

Electrical power is provided to Point Mugu by Southern California Edison (SCE). SCE's capacity is presently far greater than existing demand. In order to meet expansion of mission at Point Mugu, SCE would be able to deliver that excess capacity to Point Mugu. Currently SCE has excess capacity of 4,500,000 kW. This practically infinite supply would be provided at no additional cost to Point Mugu (simply pay the existing commercial rate for demand). Point Mugu's existing peak demand is only 13,000 kW. The on-base capacity is currently 44,000 kW. Point Mugu can easily quadruple the existing demand with some demand side management (for example, change pump operating schedules to non-peak times) at no additional cost.

Natural gas is provided to Point Mugu through contract with The Gas Company for housing core services and transportation of gas purchased through Defense Fuel Supply Center (DFSC) for commercial use. DFSC would simply contract for more gas supplies at the well head. The Gas Company would be able to provide transmission in excess of 260,000 CFH with their existing system. Point Mugu's existing peak demand is only 26,000 CFH. If a ten-fold increase in demand is required, we would be able to change out an existing meter, add regulators downstream, and distribute the 260,000 CFH with no significant changes to the infrastructure. The gas distribution systems to and throughout Point Mugu have sufficient capacity to accept significant additional growth.

Additionally, Point Mugu has been awarded numerous times for it's energy efficiency. Heating systems are typically energy efficient natural gas. Point Mugu has no efficiency losses due to steam boiler plants and steam distribution leakage. A mild climate at Point Mugu allows for minimal heating and cooling requirements, further reducing energy requirements for future expansion.

Potable water is furnished to Point Mugu from United Water Conservation District (United) at a normal rate of 700,000 GPD. The contract includes no limits on delivery rates, and United has the potential of furnishing 5,800,000 gallons per day to the base without any changes to the existing infrastructure. Additionally, six wells at Point Mugu can provide potable water for mixing and emergency services. Point Mugu will also be receiving additional State Water supplies through a sub regional project.

~~Sewage treatment in the domestic final processing of the base's sewage effluent is processed by the Oxnard Wastewater Treatment Plant at the normal rate of 650,000 GPD. The base is processing a "clear" effluent to Oxnard due to initial and secondary treatment processes on station. Oxnard is capable of processing 8 times the amount of effluent received from the base without any changes to the existing infrastructure.~~

Point Mugu provides primary and secondary treatment of it's sewage onboard the base. The "clear" effluent is sent via a force main to the Oxnard Wastewater Treatment plant at 260,000 GPD. Oxnard is capable of processing 12 times the amount of our sewage and our sewage treatment facility can also.

San Nicolas Island

San Nicolas Island provides it's own power generation with five engine-generators. The combined capacity of the units is 3,500 kW. Current peak demand is only 1,050 kW. Additionally, demand-side management could be provided (changing pump operating schedules, etc. to non-peak times) to increase the capacity to well over three times existing demand.

Potable water for San Nicolas Island is a mixed blend of water produced from the Reverse Osmosis Plant, wells, and various natural springs. The new reverse osmosis plant will double the present generating capacity from 30,000 GPD to an available production of 60,000 GPD.

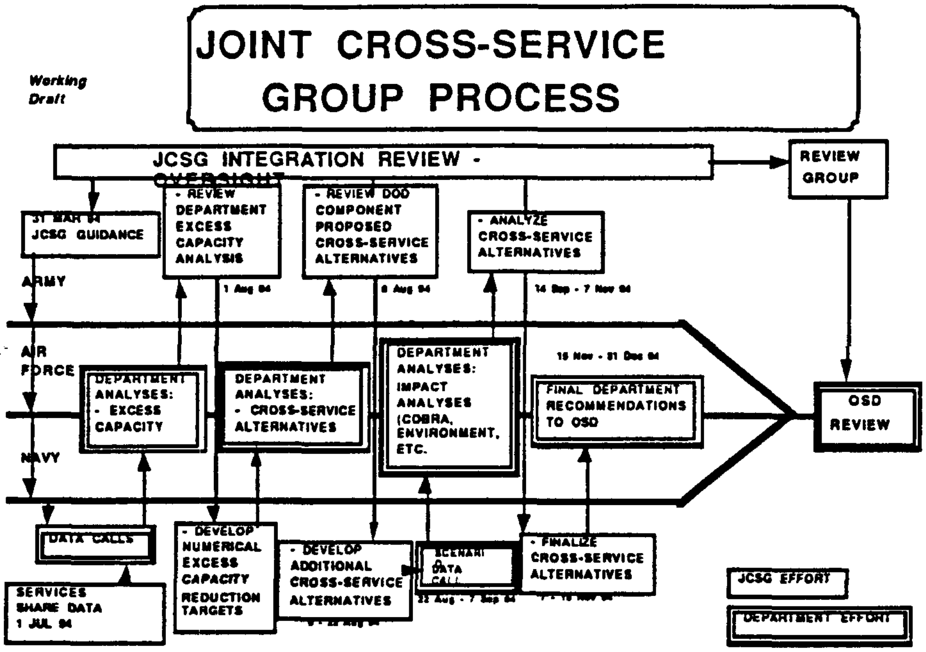
Domestic final processing of the station sewage effluent is collected by the stations sanitary sewer system and treated at the wastewater's treatment facility. The system is in good physical and operating condition and capable of processing 5 times the nominal 20,000 GPD processed with minor system modifications.

SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A

MACRO PROCESS/SCHEDULE



APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA
9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD

18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division
16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS
(DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems
   - Rotary
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices
2. Environmental Sciences
3. Infectious Diseases
4. Human Systems
5. Manpower and Personnel
6. Training Systems
7. Environmental Quality
8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. Air Vehicles. Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, Electro-Optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. Space. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. C4I. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

Pervasive Functions (6.1, 6.2, and 6.3)

1. **Electronic Devices.** Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. **Environmental Sciences.** Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. **Infectious Diseases.** Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. **Human Systems.** Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

5. **Manpower and Personnel.** Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. **Training Systems.** Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. **Environmental Quality.** Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. **Advanced Materials.** Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of

18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

8 Aug 94 Submission
POINT MUGU

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

W. E. NEWMAN, RADM, USN
NAME (Please type or print)

WE Newman
Signature

Commander
Title

8/22/94
Date

Naval Air Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

DONALD V. BOECKER, RADM USN
~~WxxxCxxxBOWESxxxRADMxxxUSN~~
NAME (Please type or print)

Donald V. Boecker
Signature

Commander (Acting)
Title

8/22/94
Date

Naval Air Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

WA Earner
Signature

Title

8/25/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in you activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

We have responded to the BRAC 95 Data Call #12 for Point Mugu per the instructions. However, it is essential to understand that the Naval Air Warfare Center Weapons Division (NAWCWPNS) is a full-spectrum research, development, test, evaluation, and in-service engineering center for weapon systems associated with air warfare; missiles and missile subsystems, aircraft weapons integration, and assigned airborne electronic warfare systems. Naval Air Warfare Center Weapons Division as a total entity represents the work of more than 8,000 civilian employees and 1,300 military personnel. It is the Navy's complete repository of scientific and technical knowledge for air warfare systems, guided missiles, and aircraft/weapon integration and it is the host for the Navy's Air Weapons Operational Testing Squadrons. Naval Air Warfare Center Weapons Division constitutes the Department of Defense's largest weapons research and development laboratory and air, land and sea test range capability.

The primary sites of NAWCWPNS are at China Lake and Point Mugu, California. A major detachment is operated as a tenant at the White Sands Missile Range. These sites operate with a truly integrated structure. Many organizational entities are spread across both sites. This organizational integration across sites and functional areas recognizes that research, development, test, evaluation, and in-service engineering of weapon systems, is a critical mass of technical talent focused on all life cycle phases of this mission. A single support organization serves both sites, resulting in the most cost effective infrastructure. Although BRAC '95 Data Call #12 is provided separately for China Lake and Point Mugu as requested, the capabilities of both NAWCWPNS sites must be considered as an integrated whole; and the commonalty and synergy of the research and development with test and evaluation facilities and people had to be artificially split in order to respond to the separate data calls.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief. This revision represents a complete rewrite of NAWCWPNS, China Lake BRAC '95 Data Call #12 which was submitted June 15, 1994 and should replace that document in its entirety.

ACTIVITY COMMANDER

D. B. McKinney, RADM, USN
Name (Please type or print)

Signature

Commander
Title

8/8/94
Date

Naval Air Warfare Center Weapons Division Point Mugu
Activity

POINT MUGU pg 4, 11, 12,

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

W. E. NEWMAN, RADM, USN
NAME (Please type or print)

Signature

Commander
Title

8/22/94
Date

Naval Air Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

DONALD V. BOECKER, RADM USN
~~WxxxGxxxBOWESxxxVADMxxxUSN~~
NAME (Please type or print)

Signature

Commander (Acting)
Title

8/22/94
Date

Naval Air Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

Title

8/25/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, Uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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ACTIVITY COMMANDER

D. B. McKinney, RADM, USN
Name (Please type or print)

Signature

Commander
Title

8/15/94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #12 Revision of 14 August 1994

DATA CALL #12
Revision of 21 Aug 94
Point Mugu

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

W. E. NEWMAN, RADM, USN	W E Newman
NAME (Please type or print)	Signature
COMMANDER	8/26/94
Title	Date
Naval Air Warfare Center	
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)	Signature
Title	Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN	W. Bowes
NAME (Please type or print)	Signature
COMMANDER	29AUG94
Title	Date
Naval Air Systems Command	
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER	W. Earner
NAME (Please type or print)	Signature
	9/1/94
Title	Date

94-09-12 11:44 RCVD

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

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ACTIVITY COMMANDER

D. B. McKinney, RADM, USN	[signature]
Name (Please type or print)	Signature
Commander	8/24/94
Title	Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #12 Revision of 21 August 1994

POINT MUGU
#12
8/18/94 REV

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG
NAME (Please type or print)

Signature

9/19/94
Date

ACTING COMMANDER
Title

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN
NAME (Please type or print)

Signature

COMMANDER
Title

20 Sep 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

9/21/94
Date

Title

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO
1000
Ser NAWC-21C/

SEP 16 1994

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W E Newman
W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN	R K Hull
Name (Please type or print)	Signature
Acting Commander	16 Sept 94
Title	Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #12 Revision of 18 August 1994

168

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print) Signature

Title Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print) Signature

Title Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

DONALD V. BOECKER, RADM USN — Donald V. Boecker

NAME (Please type or print) Signature

COMMANDER (ACTING) — 21 Sep 94

Title Date

NAVAL AIR SYSTEMS COMMAND

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER — W. Earner

NAME (Please type or print) Signature

9/21/94

Title Date

WC

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

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ACTIVITY COMMANDER

DONALD V. BOECKER, RADM USN
NAME (Please type or print)

Donald V. Boecker
Signature

COMMANDER (ACTING)
Title

21 Sep 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

Karrie Ciavattone
NAME (Please type or print)

Karrie Ciavattone
Signature

BRAC 95 Coordinator
Title

21 Sept 94
Date

AIR09B
Division

Base Realignment and Closure Program Office
Department

Naval Air Systems Command
Activity

Pen & Ink changes to POINT MUGU Data Call 12.

Enclosure (1)

POINTMUGU
#12
9/13/94 REV

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG	[signature]
NAME (Please type or print)	Signature
ACTING COMMANDER	9/19/94
Title	Date
NAVAL AIR WARFARE CENTER	
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)	Signature
Title	Date
Activity	

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN	[signature]
NAME (Please type or print)	Signature
COMMANDER	2 Sep 94
Title	Date
NAVAL AIR SYSTEMS COMMAND	
Activity	

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DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER	[signature]
NAME (Please type or print)	Signature
	9/21/94
Title	Date

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO
1000
Ser NAWC-21C/

SEP 16 1994

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W E Newman
W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

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I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Roger K. Hull, CAPT, USN
Name (Please type or print)

R. Hull
Signature

Acting Commander
Title

16 Sept '94
Date

Naval Air Warfare Center Weapons Division Point Mugu Site
Activity

Data Call #12 Revision of 13 September 1994

161

Complete Data Call Revision

94-09-12 12:46 RCVD

BRAC 95 DATA CALL #12 ACTIVITY UIC: 00163

"LAB" JOINT CROSS-SERVICE GROUP
DATA CALL #12

NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
INDIANAPOLIS

This Data Call is provided as a replacement for all previous submissions of Data Call #12. This submission supersedes all previous submissions and incorporates responses to questions raised by the BSAT on 1 August, 9 August, and 12 August 1994.

WC

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- Determine common support functions and bases to be addressed by LJCSG
- Establish guidelines, standards, assumptions, measures of merit, data elements and milestone schedules for DOD Component conduct of cross-service analysis of common support functions
- Review excess capacity analysis
- Develop closure or realignment alternatives
- Analyze cross-service trade-offs

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines

Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan -- FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.

- Reduction of "lab" infrastructure
- Return on investment (COBRA)
- Military value (BRAC criteria 1-4) -- the composite assessment of the quality of the remaining "lab" infrastructure

1.5 Activities

The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.

1.6 Common Support Functions

The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross serviced were not included.

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions <u>only include</u> those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 **Workload.** Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

The R&D, Engineering Development, and in-service engineering covered in the first table represents approximately 15% of the total NAWC Indianapolis workload.

Information Required	Fiscal Years											
	86*	87*	88*	89*	90*	91*	92*	93	94	95	96	97
Total Funds Programmed ($M)	23.9	23.0	36.0	29.4	39.0	53.3	47.3	50.4	48.6	46.2	46.3	46.3
Total Actual Funds ($M)	23.9	23.0	36.0	29.4	39.0	53.3	47.3	50.4				
Programmed Wkyrs	200	186	312	222	306	353	331	297	293	265	262	260
Actual Workyears	200	186	312	222	306	353	331	297				

*** Our accounting system does not isolate funding and workload for the categories requested (ISE, S&T, and ED). FY86 - 92 are estimates.**

NAWC IndianapolisÕ total funding and workyears is shown below:

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	203.7	124.5	225.0	276.9	258.8	253.3	310.5	320.9	275.0	289.0	303.0	299.0
Total Actual Funds ($M)	186.3	183.0	242.2	238.4	258.6	241.4	351.4	321.5				
Programmed Wkyrs	2,801	3,025	3,054	3,241	3,328	3,314	3,383	3,159	3,031	2,766	2,766	2,736
Actual Workyears	3,068	3,135	3,239	3,344	3,474	3,406	3,363	3,212				

(1) FY87 receipts exceeded budget due to unexpectedly high APN receipts. Ò Total funds programmed" was reduced by $20M due to NAVCOMPT required rebate.
(2) This is total funds programmed without direct cite.
Note: This information was extracted from Data Call #4

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department. Workyears = government personnel and on-site FFRDCs and SETAs

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
--Peak at each activity = Highest value between FY86 (since inception of organization) and Y93
--Projected at each activity = Estimated at FY97

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

The NAWC Indianapolis Mission covers a wide variety of functions throughout the life cycle. The R&D and in-service Engineering portions of the mission follow.

NAWC Indianapolis is DOD's only activity that has the capability, facilities, and knowledge-base to provide support over the full acquisition life cycle for Avionics, Electronic Systems, and selected equipment. In addition, our capabilities are totally integrated to support avionics and electronic systems engineering, acquisition, manufacturing, and supportability functions.

NAWC Indianapolis has specific major capabilities that support the following Common Product Support functions.

Air Vehicle Fixed Avionics
Air Vehicle Fixed Flight Subsystems
Air Vehicle Rotary Avionics
Weapons Bombs
Weapons Conventional Missiles/Rockets
Weapons Cruise Missiles
Weapons Guided Projectiles
Weapons ICBM/SLBM
C^4I, Fixed Ground Based
C^4I, Ground Mobile

The following list of capabilities applies in total to each of the previously listed CSF's.

_ Development Engineering of Avionics Electronic Systems Comprehensive design and prototyping capability unique within the government used to develop Avionics and Electronic solutions to satisfy Fleet Operational/Safety problems.

- **Multi-service development and life cycle support of avionics and electronic systems**
- **Research and development of avionics and electronic systems**
- **Manufacturing Science and Technology (MS&T) expertise for acquisition support and application of dual use and commercial technology transfer**
- **Rapid prototyping in support of avionics and electronics development.**

_ Avionics and Electronic Systems Program Acquisition Support

_ The integration of development, prototyping, and production knowledge to assurecost effective development and in-service engineering of fleet Avionics and Electronic Systems.

-In-service engineering for selected fielded Fleet equipment

In addition NAWC Indianapolis has the capability for research and development of avionics and electronics systems which relates to the Pervasive Function of Electronic Devices.

The relationship and interconnectivity with other functions (common or otherwise) in support of the overall NAWC Indianapolis mission is as follows:

While some of the capabilities at NAWC Indianapolis support previously mentioned CSF's, these capabilities are also an integral part of an overall integrated capability that supports a much broader mission than the "lab" activities of this data call. Therefore, even if there were no "lab" activities at NAWC Indianapolis, these totally integrated capabilities would still be needed to support the broader mission in the areas of engineering, acquisition, manufacturing and logistics.

3.1 Location

3.1.1 **Geographic/Climatological Features:** Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

NAWC Indianapolis is centrally located such that it can easily serve customers from both coasts. The Center is within 3-5 hours of travel to Navy activities on the west coast (such as China Lake) and the east coast (Pax River). NAWC Indianapolis' mission of engineering, development, and in-service engineering for avionics and electronic systems involves working with both platforms/aircraft systems at the Aircraft Division (AD) and weapons/ weapon system integration at the Weapons Divisions (WD).

This relates to the work that is conducted here under the following CSFs as well as our other workload.

CSF

Air Vehicle Fixed Avionics
Air Vehicle Fixed Flight Subsystems
Air Vehicle Rotary Avionics
C^4I Fixed Ground Based
C^4I Ground Mobile
Electronic Devices
Weapons Bombs
Weapons Conventional Missiles/Rockets
Weapons Cruise Missiles
Weapons Guided Projectiles
Weapons ICBM/SLBM

3.1.2 **Licenses & permits:** Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

Air Permits

0100-01	Nebraska Boiler 1 } Required for heating of the main building
0100-02	Nebraska Boiler 2 } complex and to provide steam for humidity
0100-03	Nebraska Boiler 3 } control and some industrial processes.
0100-04	Production Paint Booths (4) Required for ventilation of production painting processes.
0100-05	Public Works Paint Booth - Required for general support of all operations.
0100-06	Deburring - Required for ventilation of production deburring processes.
0100-07	Misc. Solvent Use - Required for most industrial operations and some labs (where prototype hardware is developed).

Wastewater Permit

36620101 **Covers metal finishing wastewater to the sanitary sewer. Currently effluent from the treatment plant (weekly samples) plus semi-annual samples from ancillary metal finishing processes not connected to the treatment plant: 1) water jet cutter, and 2) wave solder - Required for industrial operations which generate waste water that would be considered hazardous if drained to the sewer untreated.**

Underground Storage Tank Registration

011237 **Tank 16 Gasoline. Tank 18 Diesel fuel - Required for operation of motor pool vehicles in general support of all operations.**

These licenses and permits apply to the general facility and as such are utilized for the following CSFs.

CSF

Air Vehicle Fixed Avionics
Air Vehicle Fixed Flight Subsystems
Air Vehicle Rotary Avionics
C^4I Fixed Ground Based
C^4I Ground Mobile
Electronic Devices
Weapons Bombs
Weapons Conventional Missiles/Rockets
Weapons Cruise Missiles
Weapons Guided Projectiles
Weapons ICBM/SLBM

3.1.3 **Environmental constraints:** Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt) buildings. (BRAC Criteria II)

There are no environmental or land use constraints which would limit increased use for existing CFSs.

3.1.4 **Special Support Infrastructure:** List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

None

3.1.5. **Proximity to Mission-Related organizations:** List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

NSWC Crane - NAWC Indianapolis does not provide significant funding to NSWC Crane to support the portion of our mission defined in this data call. Our proximity, however, does enable us to pursue surface/air electronic system issues more effectively and provide efficient use of facilities and personnel to achieve cost effective solutions for our customers. While the performance of our mission would not be jeopardized by not having NSWC Crane, a certain synergy of technical resources does result.

EMPF - NAWC Indianapolis' functional expertise is enhanced by an important geographically oriented venture known as the Electronics Manufacturing Productivity Facility (EMPF). The EMPF's basic mission is to advance the state-of-the-art in electronics and increase the domestic productivity in electronics manufacturing. It is one of only four Navy Centers of Excellence that have been established. The EMPF, through a Cooperative Research And Development Agreement (CRADA) with Purdue University, Indiana University-Purdue University at Indianapolis (IUPUI), private industry, and the Navy, provides the mechanism to identify, develop, transfer, and implement innovative electronics manufacturing technologies, processes, and practices for domestic firms. At the same time, training is provided to University students to provide them with the multidisciplinary skills necessary to improve their job opportunities. This electronic manufacturing technology initiative is geographically linked to the Indianapolis area and the Navy.

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
Air Vehicle Fixed Avionics	NSWC, CRANE	Government	75	1.4	2
Electronic Devices	NSWC, CRANE	Government	75	18.8	2
Air Vehicle Fixed Avionics	EMPF	Consortium *	7	0	13
Air Vehicle Rotary Avionics	EMPF	Consortium *	7	0	12

*** Government, industry, academia**

3.2 Personnel:

3.2.1 **Total Personnel:** What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

Number of Civilian Personnel per CSF *											
Types of personnel	Air Vehicle Fixed Wing Avionics	Air Vehicle Fixed Wing Flight Subsystems	Air Vehicle Rotary Wing Avionics	Weapons ICMB	Weapons Conven	Weapons Cruise	Weapons Guided	Weapons Bombs	C^4I Systems Fixed Ground-Based C^4I	C^4I Systems Ground-Mobile C^4I	Pervasive Functions Electronic Devices
Technical	81	4	34	2	8	1	1	4	1	3	13
Management (Supv)	4	0	0	0	1	0	0	0	0	0	0
Other	80	5	31	2	7	0	0	6	0	3	11

*** Personnel records are not broken out by CSF. This information is based on best estimate.**

NAW INDIANAPOLIS /6/

WC

Enclosure (4)

NAWCHQ Change
VBG NAWC-21D
9/19/94

3.2.2 **Education:** What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Common Support Function	Type of Degree/Diploma *														
	High School or Less			Associates			Bachelor			Masters			Doctorate		
	Tech	Mgt	Other	Tech	Mgt	Other	Tech	Mgt	Other	Tech	Mgt	Other	Tech	Mgt	Other
Air Vehicle Fixed Avionics	6		26	10	1	21	57	2	29	7	1	4	1		
Air Vehicle Fixed Flight			2	1		1	3		1			1			
Air Vehicle Rotary	3		10	4		8	23		12	3		1	1		
Weapons ICBM			2				2								
Weapons Conventional	1		1	1		2	5	1	4	1					
Weapons Cruise							1								
Weapons Guided							1								
Weapons Bombs			2	1		1	3		2	1					
C^4I Fixed Ground Based C^4I							1								
C^4I Ground Mobile C^4I	1		1			1	2		1	1					
Electronic Devices	1		3	1		3	9		5	1		1			
TOTAL	12		47	18	1	37	107	3	54	13	1	7	2		

* Personnel records are not broken out by CSF. This information is based on best estimates.

NAWC HQ change
VBC NAWC-21D
9/19/94

3.2.3 **Experience:** What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Common Support Function	Years of Government and/or Military Service *									
	Less than 3 yrs		3 10 yrs		11 - 15 yrs		16 - 20 yrs		More than 20 yrs	
	Tech	Mgt	Tech	Mgt	Tech	Mgt	Tech	Mgt	Tech	Mgt
Air Vehicle Fixed Avionics	3		39		15	1	9	1	15	2
Air Vehicle Fixed Flight			1		1		1		1	
Air Vehicle Rotary	1		16		6		4		7	
Weapons ICBM			1		1		0		0	
Weapons Conventional	1		4		2		0		1	1
Weapons Cruise			1							
Weapons Guided					1					
Weapons Bombs			2		0		1		1	
C^4I Fixed			1							
C^4I Ground			2		0		0		1	
Electronic Devices	1		6		2		2		2	
TOTAL	6		73		28	1	17	1	28	3

* Personnel records are not broken out by CSF. This information is based on best estimates.

NAWCHQ Change
V3C, NAWC-21D
9/16/94

3.2.4 **Accomplishments During FY91-93:** For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued "sclosure numbers) were made? (BRAC Criteria I)

None

CSF	Disclosures	Awarded	Patent Titles (List)
None			
Total			

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

The papers listed relate to the entire NAWC Indianapolis Mission rather than limited to the R&D and in-service engineering functions.

R

CSF	Number Published	Paper Titles (List)
Weapons "ombs	1	"What is WAT? Wrap Around Test, Maximizing Avionics BIT Utilization to Minimize Flight Line Armament Systems Test Equipment Requirements" AERO Tech Sep 91
Air Vehicle Fixed Avionics	1	"Tri-Service Environmental Stress Screening Guidelines" Institute of Environmental Sciences, 93
Air Vehicle Fixed Avionics	1	"Non-Wetting Defect Detection Using Two Wetting Balance Techniques" ISHM, 1992
C^4I Fixed Ground Base	1	"Quicker Queries" International Tandem Users Group Journal, Best Paper 93
Air Vehicle Fixed Avionics	1	"The Programmer's New Clothes -- A Skeptic's View of Object-Oriented Programming" International Tandem Users Journal, 93
Weapons ICBM	1	"Loss Prevention Initiative Wins Award" Periodical, SENTRY, 92
TOTAL	6	

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NAWC-21D
9/19/94

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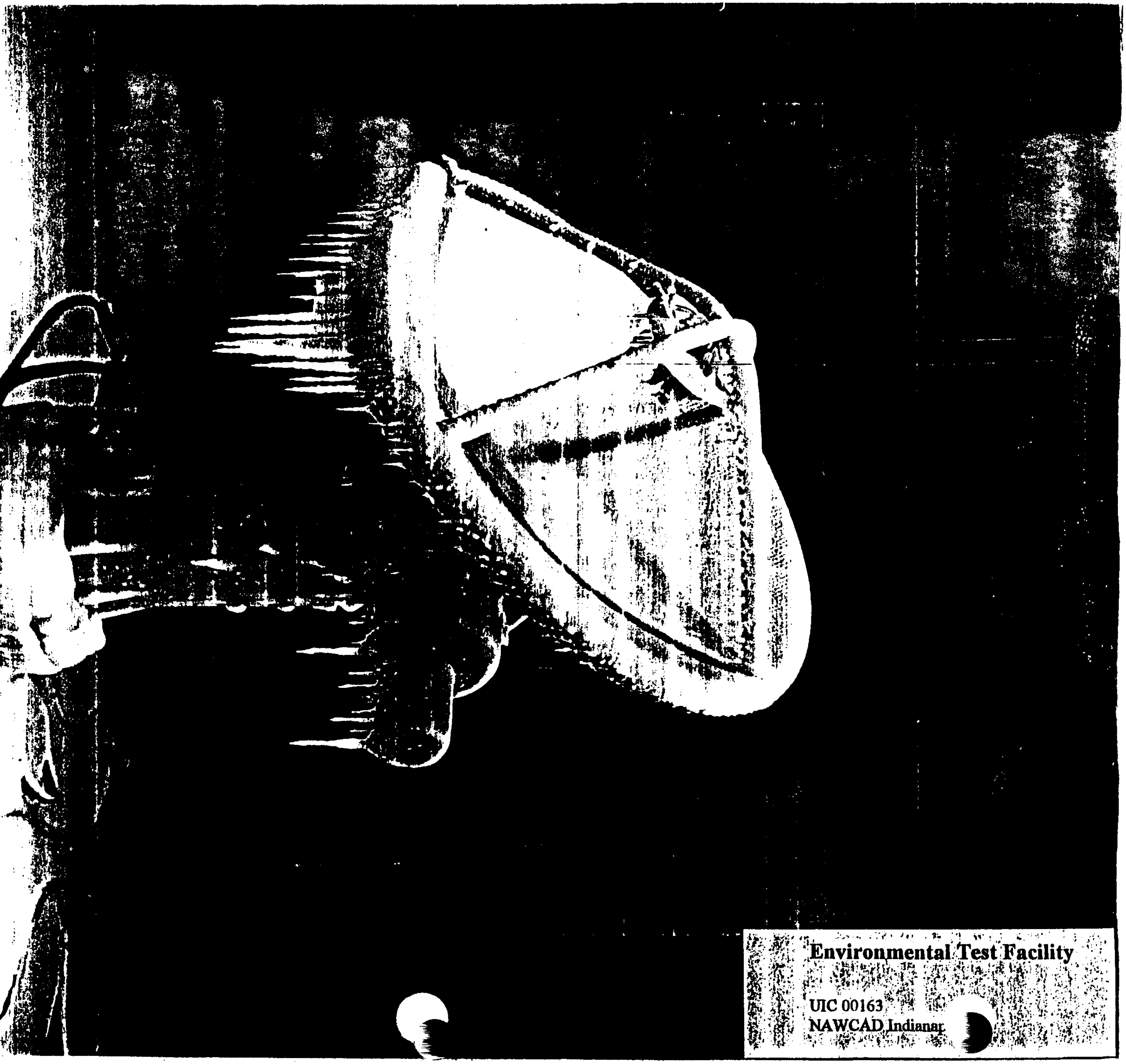
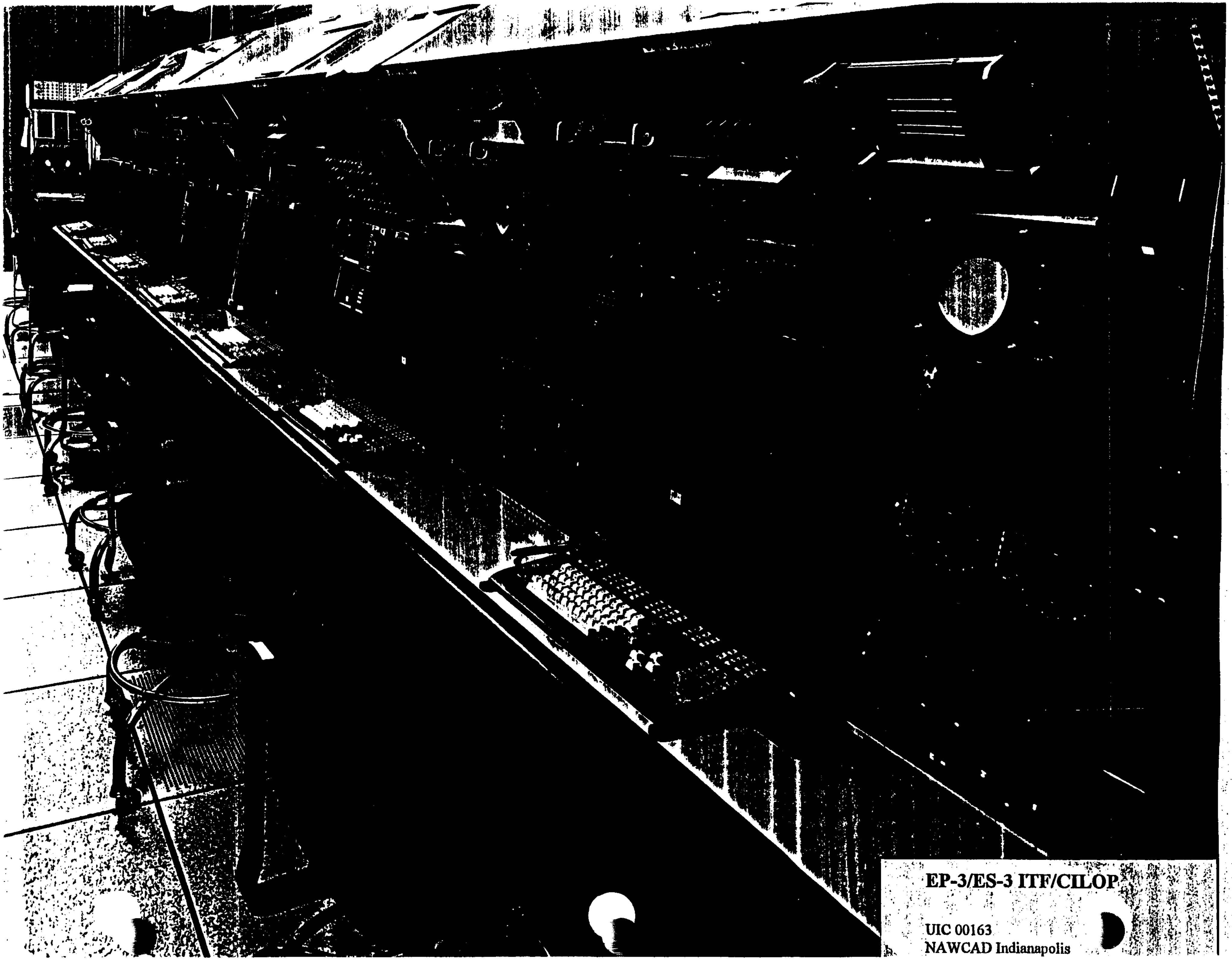
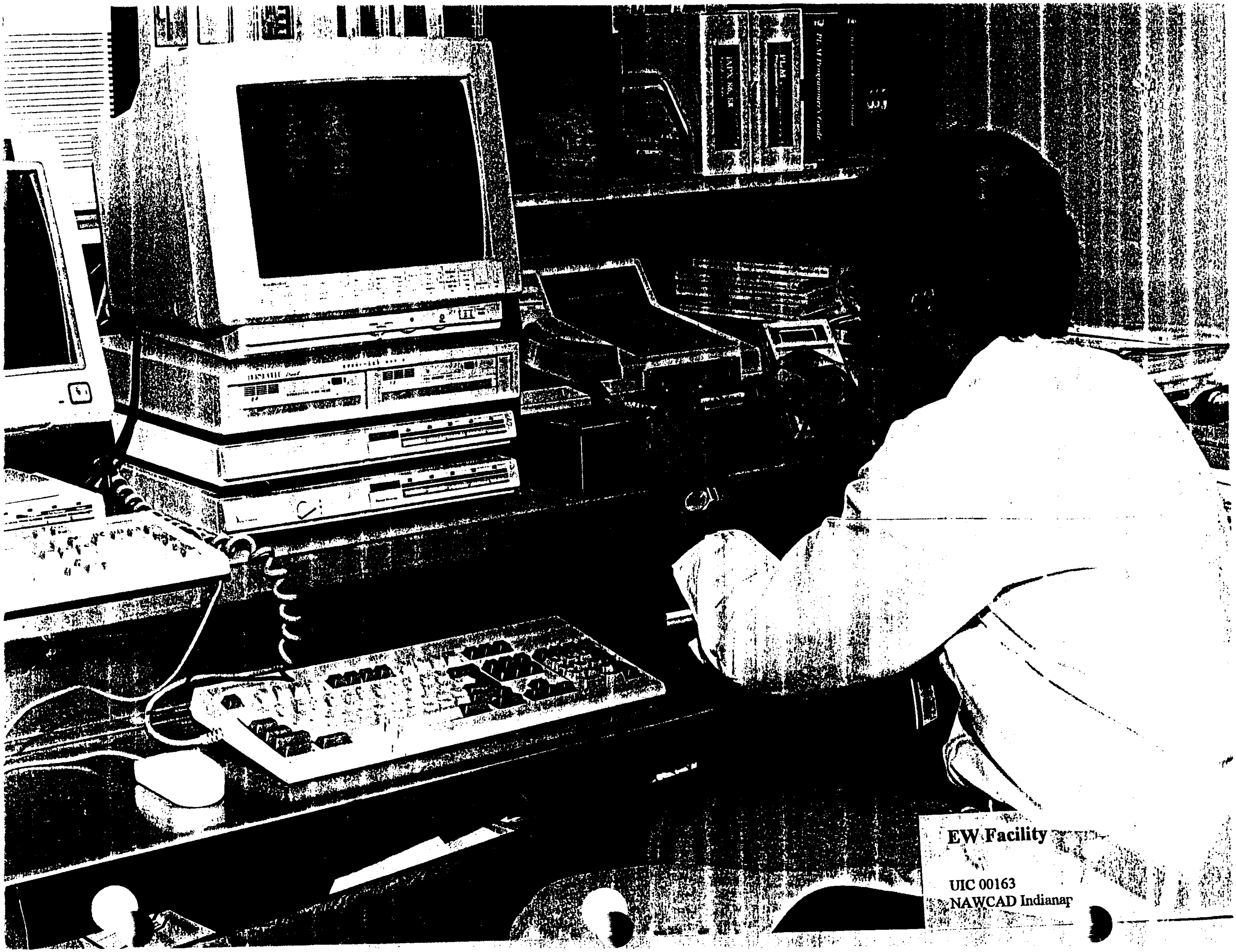

Environmental Test Facility
UIC 00163
NAWCAD Indianap



EP-3/ES-3 ITF/CILOP

UIC 00163
NAWCAD Indianapolis


EW Facility
UIC 00163
NAWCAD Indianap

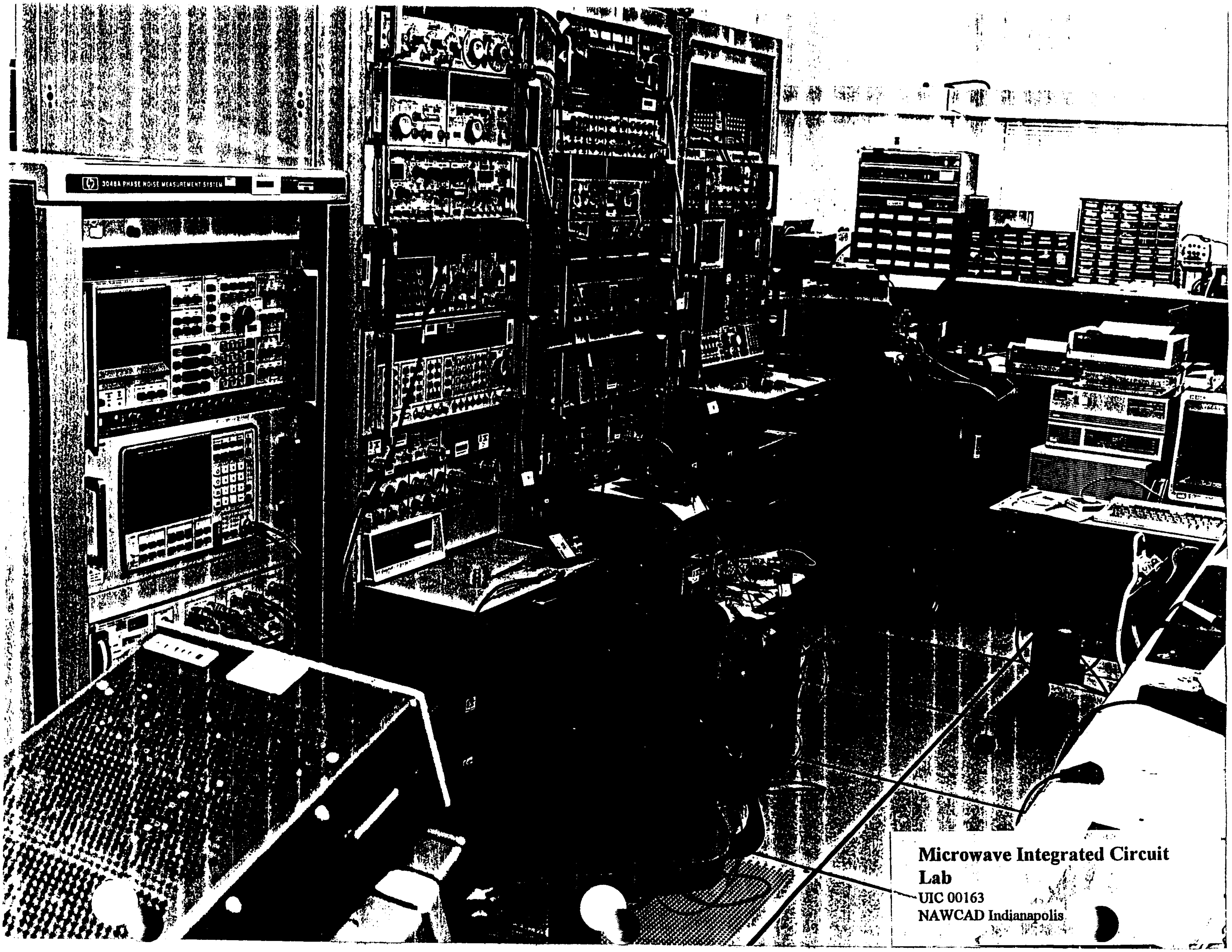

Failure Analysis Facility
UIC 00163
NAWCAD Indianapolis

Integrated Avionics Lab

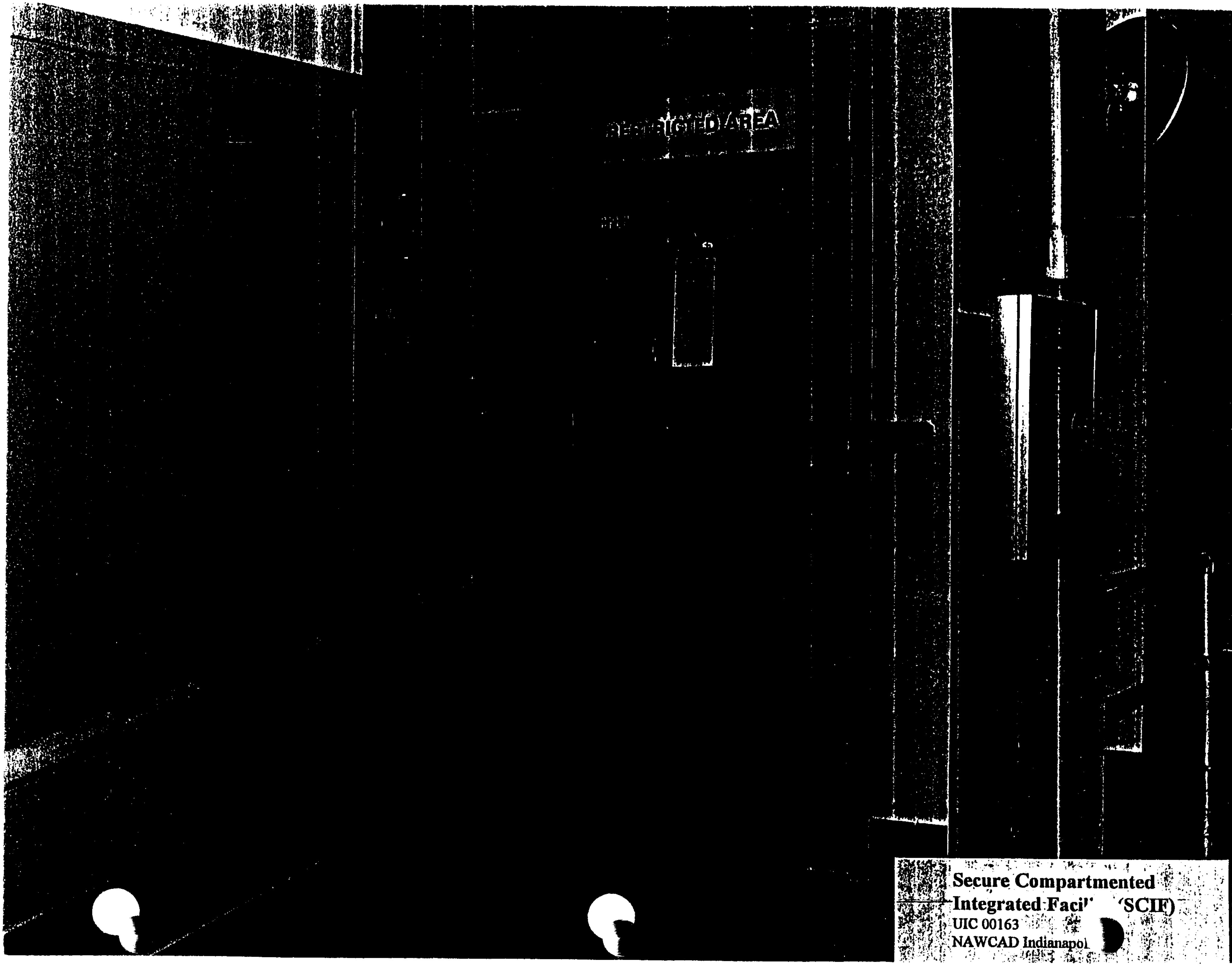
UIC 00163
NAWCAD Indianapolis

Material Lab

UIC 00163
NAWCAD Indianapolis



Microwave Integrated Circuit Lab
UIC 00163
NAWCAD Indianapolis



Secure Compartmented
Integrated Faci[illegible] (SCIF)
UIC 00163
NAWCAD Indianapo[illegible]

DATA CALL 12 REVISION 2
BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

BARTON D. STRONG
NAME (Please type or print)

Barton D Strong
Signature

COMMANDER
Title

5 August 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

WILLIAM E. NEWMAN
NAME (Please type or print)

WE Newman
Signature

COMMANDER
Title

8/18/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

WILLIAM C. BOWES
NAME (Please type or print)

WC Bowes
Signature

COMMANDER
Title

19 AUG 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W A Earner
Signature

Title

8/26/94
Date

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

DATA CALL NUMBER 12 - REVISION 2, 4 AUGUST 1994

ACTIVITY COMMANDER

Thomas R. Darnell	T. Darnell
(Name (Please type or print)	Signature
Commanding Officer	4 August 1994
Title	Date

Naval Air Warfare Center, Aircraft Div.
Activity

Enclosure (2)

IND4

DATA CALL #12 - REVISION 3, 14 SEPTEMBER 1994
BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

J. B. Patterson
Signature

ACTING COMMANDER
Title

SEP 16 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION PATUXENT RIVER, MD
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG
NAME (Please type or print)

Signature

ACTING COMMANDER
Title

9/19/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

WILLIAM C. BOWES
NAME (Please type or print)

W. Bowes
Signature

COMMANDER
Title

20 Sep 94
Date

NAVAL AIR SYSTEMS COMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W. A. Earner
Signature

Title

9/21/94
Date

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO
1000
Ser NAWC-21C/

SEP 16 1994

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W E Newman
W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

BRAC-95 CERTIFICATION

Reference: SECNAV NOTE 11000 dtd 8 Dec 93

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

Thomas R. Darnell
(Name (Please type or print)

Signature

Commanding Officer
Title

14 SEPTEMBER 1994
Date

Naval Air Warfare Center, Aircraft Div.
Activity

Enclosure (2)

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3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 **Work Year and Lifecycle:** Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

The R&D in-service engineering covered in this table represents approximately 15% of the total NAWC Indianapolis workload.

R

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	**23.3**	**0**	**0**	**0**
Engineering Development	**228.5**	**0**	**0**	**0**
In-Service Engineering	**40.3**	**0**	**0**	**0**

R

	Fiscal Year 1993 Actual Workyears per CSF		
	S&T	**Engr Devel**	**ISE**
Air Vehicle Fixed Avionics	**0**	**139.5**	**17.3**
Air Vehicle Fixed Flight Subsystems	**0**	**8.7**	**0.5**
Air Vehicle Rotary Avionics	**0**	**64.4**	**0**
C^4I Fixed Ground Based C^4I	**0**	**0**	**0.6**
C^4I Ground Mobile C^4I	**0**	**0**	**5.6**
Weapons Bombs	**0**	**0**	**10.9**

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Weapons Conventional. Missiles/Rockets	**0**	**12.9**	**2.4**
Weapons Cruise Missiles	**0**	**1.7**	**0**
Weapons Guided Projectiles	**0**	**0**	**0.9**
Weapons ICMBs/SLBMs	**0**	**1.3**	**2.1**
Electronic Devices	**23.3**	**0**	**0**

3.3.1.2 **Engineering Development By ACAT:** For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:
- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

CSF 1. AIR VEHICLES
FIXED AVIONICS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority) ($K)	Narrative
ACAT IC	0604777N	22.6	$3,253	Lead GPS Aircraft Integration activity. Performs GPS hardware and software integration for numerous platforms including CH-53E, P-3C, ES-3A, and C-130.
ACAT IC	0204229N	1.6	$199	In support of the Tactical Aircraft Mission Planning System, NAWCADI has developed and prototyped a "key manager" device for controlling crypto-key information.
ACAT ID FIXED	0204136N	0.5	$44	With the elimination of the F/A-18 tactical nuclear mission, NAWCADI, as the lead for AMAC systems, served a on select study group to generate a plan to reconstitute carrier nuclear mission capability.
ACAT II	0603100N	3.6	$478	Lead INEWS field activity (a multispectral approach warning system, Electronic Support Measures system, Radar Warning Receiver system, and defense Electronic Counter-Measures system).
ACAT II	0604221N	0.2	$39	Engineering and program management support of the P3 Update IV Avionics.
ACAT III	0604261N	1.0	$327	Sonobuoy - Mini Drifting
ACAT III	0604261N	1.1	$870	Sonobuoy (RDT) Development
ACAT IV	0604574	5.0	$813	AN/AYK- 14 Advanced Development

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority) ($K)	Narrative
ACAT IV	0604574	5.0	$813	AN/AYK- 14 Advanced Development
OTHER	29	0.8	$153	Radiant Snow
		7.5	$1,270	Project 7.5.9
		0.5	$78	TAMPS
		0.9	$129	ALS-ADA Support
		9.1	$1,372	Beartrap (ASW)
				R
		1.5	$482	Std Compass AHR
		7.0	$1,104	Computer - Next Generation
				R
		0.7	$64	Expendables - AC
		2.7	$349	EA-6B ADVCAP
		2.4	$150	EMPF
		4.9	$808	ES-3A GPS Integration
		0.7	$98	Chaff/Expendable
		1.4	$611	Avionics Standard
		1.7	$74	AC-8B Muxbus Data
		0.2	$30	AV-8B AMDS Logistics
		20.4	$3,472	EP-3E (ARIES II)
		0.9	$57	AN/ARN-138 MMR-M
		0.2	$28	AN/ALQ-149
		2.2	$431	ALFS FSED Tech Support
		10.6	$2,742	AIS
		0.5	$78	Advanced Avionics
		5.6	$774	A-X
		0.4	$29	CASS - Consolidated
		0.1	$17	NASA Power Supply
		7.0	$963	JIAWG Technical Support
		1.5	$321	Integrated Defense Electronics
		1.2	$167	Sonobuoy - Hass
		0.2	$72	Integrated Defense Electronics
		0.9	$164	FTRG RDT
				R

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9/19/94

CSF 1. AIR VEHICLES
ROTARY AVIONICS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority) ($K)	Narrative
ACAT ID ROTARY	0604262N	30.0	$5,839	Lead V22 system/software activity; provides avionics systems engineering/integration, avionics engineering system design, and acquisition support.
ACAT II ROTARY	0604212N	0.2	$47	Lead field activity that provides acquisition, and engineering support for the development, test and evaluation, and transition to production of avionics systems for the CV-Helo program.
OTHER		8.5	$1,087	V-22 Configuration
		5.9	$1,291	V-22 Aircraft Wiring
		3.3	$453	V-22 Mission Plan
		8.6	$71	GPWS CAT 3 (HELO)
		6.8	$981	MH-53 GPS Integration
		1.1	$151	Magic Lantern

CSF 1. AIR VEHICLES
FIXED FLIGHT SUBSYSTEMS

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority) ($K)	Narrative
OTHER		8.7	$1352	V/STOL Optical Landing

CSF	Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority) ($K)	Narrative
ICBM/SLBM	ACATIC	0101221N	1.3	$171	Provide producibility support and design/prototyping support equipment/handing devices for the next generation Trident II(d5) missile.
Conventional Missile	ACAT ID	0604727N	5.2	$911	Provide producibility inputs into design criteria to ensure design to cost goals are achieved in Joint Stand Off Weapon (JSOW) production phase.
	ACAT II	None			
	ACAT III/IV	None			
Cruise Missile	Other		1.7	$312	Weapon - GWSATP
Conventional Missile			0.1	$15	Target Subsonic
Conventional Missile			7.6	$579	UAV Common Electronics

3.3.1.3 **In-Service Engineering:** For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineer -ing support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority) ($K)	Workyears	
Air Vehicle Fixed Avionics	Cognizant Field Activity	$201	1.6	F-14 TARPS
	Product Support	$189	2.2	A-6 AN/APQ-156 Radar
	Production Support (Test Sets)	$161	0.8	Various Aircraft
	Test/Evaluation Supp (ASO)	$149	0.1	Various Aircraft
	Production Support (ASW Receivers)	$18	0.3	Various Aircraft
	Cognizant Field Activity (FTRG)	$1595	10.7	Various Aircraft
	Product Support (MSAS)	$239	1.6	Secure Communications
Air Vehicle Fixed Flight Subsystems	Aircraft Wiring - Engr Supp Services	$136	0.5	Various Aircraft
Weapons-ICBM/SLBM	Support Equipment	$77	0.6	FBM
Weapons-ICBM/SLBM	Logistics Support	$183	1.5	FBM - POSEIDON
Weapons-Conventional Missiles	Product Support (Missile BIT Test Set)	$466	2.4	HARM
Weapons-Guided Projectile	Integrated Logistics Support - Support Equipment	$85	0.7	WALLEYE
Weapons-Guided Projectile	Production Engineering	$62	0.2	AWW-13
Weapons Bombs	Cognizant Field Activity	$1496	10.9	Aircraft Armament Equipment (Racks and Launchers)

C^4I - Fixed Ground	Product Support	$69	0.6	AN/FPS-106 Met Radar
C^4I - Fixed Ground	Product Support	$785	5.6	SMQ-11 - Satellite Receiving System

3.3.2 **Projected Funding**

3.3.2.1 **Direct Funding:** For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

NAWC AD Indianapolis is an industrially funded activity operating under Defense Business Operation Fund (DBOF) regulations. All funding is received as reimbursable or direct cite from multiple sources, including all services, DoD, and other government agencies. No direct mission funding (MRTFB of BOS) is received in support of lab activities.

CSF	FY94	FY95	FY96	FY97
	N/A	N/A	N/A	N/A

3.3.2.2 **Other Obligation Authority:** For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

The R&D, Engineering Development, and in-service engineering covered in this table represents approximately 15% of the total NAWC Indianapolis workload.

CSF	FY94 ($K)	FY95 ($K)	FY96 ($K)	FY97 ($K)
Air Vehicles Fixed Avionics	**20,153**	**27,214**	**27,497**	**27,672**
Air Vehicle Rotary Avionics	**8,637**	**11,663**	**11,784**	**11,860**
C^4I Systems - Fixed-Ground Based C^4I	**14,068**	**1,316**	**1,105**	**1,073**
Weapons Bombs	**779**	**1,021**	**999**	**972**
Weapons Conventional. Missiles/Rockets	**1,094**	**1,435**	**1,403**	**1,365**
Weapons Cruise Missiles	**120**	**159**	**156**	**151**
Weapons Guided Projectiles	**64**	**84**	**82**	**80**
Weapons ICBMs/SLBMs	**243**	**318**	**311**	**303**
Electronic Devices	**3,447**	**3,036**	**2,969**	**2,889**

No projected workload for C^4I Ground Mobile C^4I for FY94 - FY97.

3.4 Facilities and Equipment

3.4.1 **Major Equipment and Facilities:** Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

The major facilities at NAWC Indianapolis that support the "lab" activities of this data call are listed below. These facilities are also a part of an overall integrated capability that supports a broader naval aviation mission at NAWC Indianapolis.

Therefore, even if there were no "lab" peculiar support functions at NAWC Indianapolis, these totally integrated capabilities and facilities are still needed to support NAWC Indianapolis mission in the areas of engineering, acquisition, manufacturing and logistics for avionics and electronic systems.

The replacement cost for each facility reflects the total cost to replicate the facility elsewhere even though less than 15% of the utilization of the facilities is for R&D, Engineering Development, and in-service engineering.

Common Support Function	% CSF Utilization of Facility	Major Facility or Equipment Description	Unique To DOD	Unique To Federal Gov't	Unique To U. S.	Replacement Cost ($K)
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	37 2 14 1 1 6 3 3 1 1 1	The **Advanced Electronics Facility** is a microelectronics facility that provides a broad spectrum of microelectronics design, development and evaluation of thick film hybrid and thin film microcircuits as well as surface acoustic wave and microwave integrated circuit stripline devices. These capabilities support avionics and electronic system projects from concept to final production implementation.	X			8,740
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	37 2 14 1 1 6 3 3 1 1 1	The **Avionics/Electronics Development Lab** is used during the design, development, and prototyping phases of electronic equipment. The development is facilitated by an unobstructed view for RF, microwave and infrared testing. The lab includes an electronic model shop that provides prototyping support.				20,740

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	11 1 4 1 1 1 1 1 1 1 1	The **Computer Aided Design/ Computer Aided Manufacturing CAD/CAM Facilities** support various ship-board and avionics systems by utilizing the CAD equipment to produce CAM data, tooling, schematics, and Printed Wiring Board (PWB) documentation for fabrication, assembly and testing of PWBs. This facility includes equipment for five stand alone systems, four Bravo Micro VAX's with seven stations.				36,440
Air Vehicle Fixed Avionics Air Vehicle Fixed Flt Systems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	8 1 3 1 1 1 1 1 1 1 1	The **Central Computing Facility** (CCF) is a secure site for the location of the central computers that serve as the main computer for all business computer functions and processing. The DEC VAX computer cluster is housed here. This facility holds all current business data on storage devices for immediate user access.				9,230

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	16 1 6 1 1 2 1 1 1 1 1	The **Centrifuge - Acceleration Test Facility** has the capability to conduct design, development, and manufacturing acceleration tests on electronic equipment and systems. This includes a fifteen foot centrifuge with 148 slip rings, 3 rotary coaxial joints, and rotary glands as well as a four foot centrifuge with 16 slip rings and a rotary joint. Video capability is used for monitoring special testing.	X			1,230
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	16 1 6 1 1 2 1 1 1 1 1	The **Electro-Magnetic Interference (EMI) Facility** conducts design, development and first article qualification tests used to assess the conducted and radiated electromagnetic profiles of airborne and shipboard electronic systems. This facility consists of three shielded enclosures: one anechoic, one partially anechoic, and one Mode Stirred Chamber.				3,070

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	16 1 6 1 1 2 1 1 1 1 1	The **Environmental Test Facility** includes a Climatic Test Lab and a Dynamic Test & Data Acquisition/ Analysis Lab including three temperature chambers, one thermal shock chamber, six temperature/humidity chambers, five altitude chambers, one accelerated weathering chamber, two salt spray chambers and one explosive chamber as well as ten vibration and four shock machines. This facility provides extensive climatic environmental test capability for first article and qualification testing of electronic equipment and systems.				9,630
Air Vehicle Fixed Avionics	60	The **EP-3/ES-3 CILOP and Integrated Test Facility** supports the EP-3E and ES-3A Software Support Activities (SSAs) and other related VQ Projects and contains full-scale mockups of EP-3E and ES-3A aircraft for software development, integration, test, training, and engineering support	X	X	X	18,610
Air Vehicle Fixed Avionics	84	The **Electronic Warfare Facility** provides the capabilities of Bayesian radar identification algorithm development for Radar Warning Receivers (RWRs), jammers and Electronic Surveillance Measure (ESM) sets.				2,160

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	16 1 6 1 1 2 1 1 1 1 1	The **<u>Failure Analysis Facility</u>** is used to determine the failure mechanisms and causes of failed electrical and electronics component parts and subassemblies. The only government owned Scanning Auger Multiprobe has the combined functions of Auger Electron Spectroscopy and Secondary Ion Mass Spectroscopy with two Scanning Electron Microscopes and Energy Dispersive x-ray Analysis System.				2,440
Air Vehicle Fixed Avionics Air Vehicle Rotary Avionics	57 25	The **<u>Integrated Avionics Lab</u>** provides hardware and software tools for avionics integration during design, development, and support phases of acquisition for avionics systems and sub-systems.				18,420
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	16 1 6 1 1 2 1 1 1 1 1	The **<u>Material Lab</u>** consists of an Metals/Composite Lab, an Organic Materials Lab and an Inorganic Material Lab which provide analysis, test, evaluation, and consultation on metals, composites, organic and inorganic chemistry.				13,890

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	8 1 3 1 1 1 1 1 1 1 1	The **Microwave Integrated Circuit Lab** is used for design, simulations, prototyping, testing, and evaluating of radio frequency circuits and systems.				2,740
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	54 3 21 1 1 8 4 5 1 1 1	The **Secure Compartmented Integrated Facilities (SCIF)** are used for all projects that require access to sensitive information and special security and intelligence support. These TEMPEST approved facilities include ductwork silencing, acoustic isolation, RF shielding, access control systems, motion detectors and alarm systems.				3,140

3.5 Expansion Potential

3.5.1 **Laboratory Facilities:** Use facilities records as of fourth-quarter FY93 in answering the following (in sq. ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Advanced Electronics Facility	Technical	10.4	10.4	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Avionics & Electronics Dev Lab	Technical	25.5	25.5	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	CAD/CAM Facilities	Technical	9.6	9.6	0

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	CCF	Administrative	7.9	7.9	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Centrifuge	Technical	2.5	2.5	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	EMI Facilities	Technical	1.1	1.1	0

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Environmental Test	Technical	19.4	19.4	0
Air Vehicle Fixed Avionics	EP-3/ES-3 CILOP/ITF	Technical	8.2	8.2	0
Air Vehicle Fixed Avionics	EW Lab	Technical	7.1	7.1	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Failure Analysis Lab	Technical	0.9	0.9	0
Air Vehicle Fixed Avionics Air Vehicle Rotary Avionics	Integrated Avionics Lab	Technical	7.2	7.2	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Materials Lab	Technical	22.5	22.5	0

Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	Microwave Int Circuit Lab	Technical	1.8	1.8	0
Air Vehicle Fixed Avionics Air Vehicle Fixed Flight Subsystems Air Vehicle Rotary Avionics C^4I Fixed Ground Based C^4I Ground Mobile Electronic Devices Weapons Bombs Weapons Conventional Missiles/Rockets Weapons Cruise Missiles Weapons Guided Projectiles Weapons ICBM/SLBM	CPC/SCIF	Technical	3.9	3.9	0

*** Administrative, Technical, Storage, Utility**

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

The main building complex has adequate interior height to accommodate construction of mezzanines, which would allow relocation of offices to provide additional ground floor space for labs. Approximately 93,000 square feet of net floor area could be added in this manner at an approximate cost of $5.6 million.

This area can be configured as required. Using the utilization of existing space, the following assignment of this additional floor area is provided. However, any combination of the total is possible.

CSF	Sq. Ft

Air Vehicle Fixed Avionics	**7,440**
Air Vehicle Fixed Flight Subsystems	**930**
Air Vehicle Rotary Avionics	**2,790**
C^4I Fixed Ground Based	**930**
C^4I Ground Mobile	**930**
Electronic Devices	**930**
Weapons Bombs	**930**
Weapons Conventional Missiles/Rockets	**930**
Weapons Cruise Missiles	**930**
Weapons Guided Projectiles	**930**
Weapons ICBM/SLBM	**930**
Other *	**18,600**
Total	**93,000**

*** NAWC AD Indianapolis workload not covered by R&D and In-Service Engineering funds.**

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Provision of the additional mezzanine space would provide the capacity to absorb an additional 400 to 500 work years depending upon the type of workload.

This additional workload can be distributed as required. Using the present execution of existing workload as a baseline; the following assignment of this additional workload is provided. However, any combination of the total is possible.

CSF	Wk/Yrs
Air Vehicle Fixed Avionics	**40**
Air Vehicle Fixed Flight Subsystems	**5**
Air Vehicle Rotary Avionics	**15**
C^4I Fixed Ground Based	**5**
C^4I Ground Mobile	**5**
Electronic Devices	**5**
Weapons Bombs	**5**
Weapons Conventional Missiles/Rockets	**5**
Weapons Cruise Missiles	**5**
Weapons Guided Projectiles	**5**
Weapons ICBM/SLBM	**5**
Other *	**400**
Total	**500**

*** NAWC AD Indianapolis workload not covered by R&D and In-Service Engineering funds.**

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

None.

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

There are 68 buildable acres. Using the utilization of existing area as a baseline; the following assignment of this additional space is provided. However, any combination of the total is possible.

CSF	Acres
Air Vehicle Fixed Avionics	**5.0**
Air Vehicle Fixed Flight Subsystems	**0.5**
Air Vehicle Rotary Avionics	**2.0**
C^4I Fixed Ground Based	**0.5**
C^4I Ground Mobile	**0.5**
Electronic Devices	**0.5**
Weapons Bombs	**0.5**
Weapons Conventional Missiles/Rockets	**0.5**
Weapons Cruise Missiles	**0.5**
Weapons Guided Projectiles	**0.5**
Weapons ICBM/SLBM	**0.5**
Other *	**56.5**
Total	**68**

*** NAWC AD Indianapolis workload not covered by R&D and In-Service Engineering funds.**

3.5.3 **Utilities:** Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

Our facility is in a major metropolitan area. There are no restrictions to increasing any of our utility services near or long-term for any of the following.

Air Vehicle Fixed Avionics
Air Vehicle Fixed Flight Subsystems
Air Vehicle Rotary Avionics
C^4I Fixed Ground Based
C^4I Ground Mobile
Electronic Devices
Weapons Bombs
Weapons Conventional Missiles/Rockets
Weapons Cruise Missiles
Weapons Guided Projectiles
Weapons ICBM/SLBM

SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A

APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA

9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD
18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division

16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS
(DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems
   - Rotary
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices

2. Environmental Sciences

3. Infectious Diseases

4. Human Systems

5. Manpower and Personnel

6. Training Systems

7. Environmental Quality

8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. Air Vehicles. Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. Space. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. C4I. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

Pervasive Functions (6.1, 6.2, and 6.3)

1. Electronic Devices. Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. Environmental Sciences. Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. Infectious Diseases. Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. Human Systems. Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

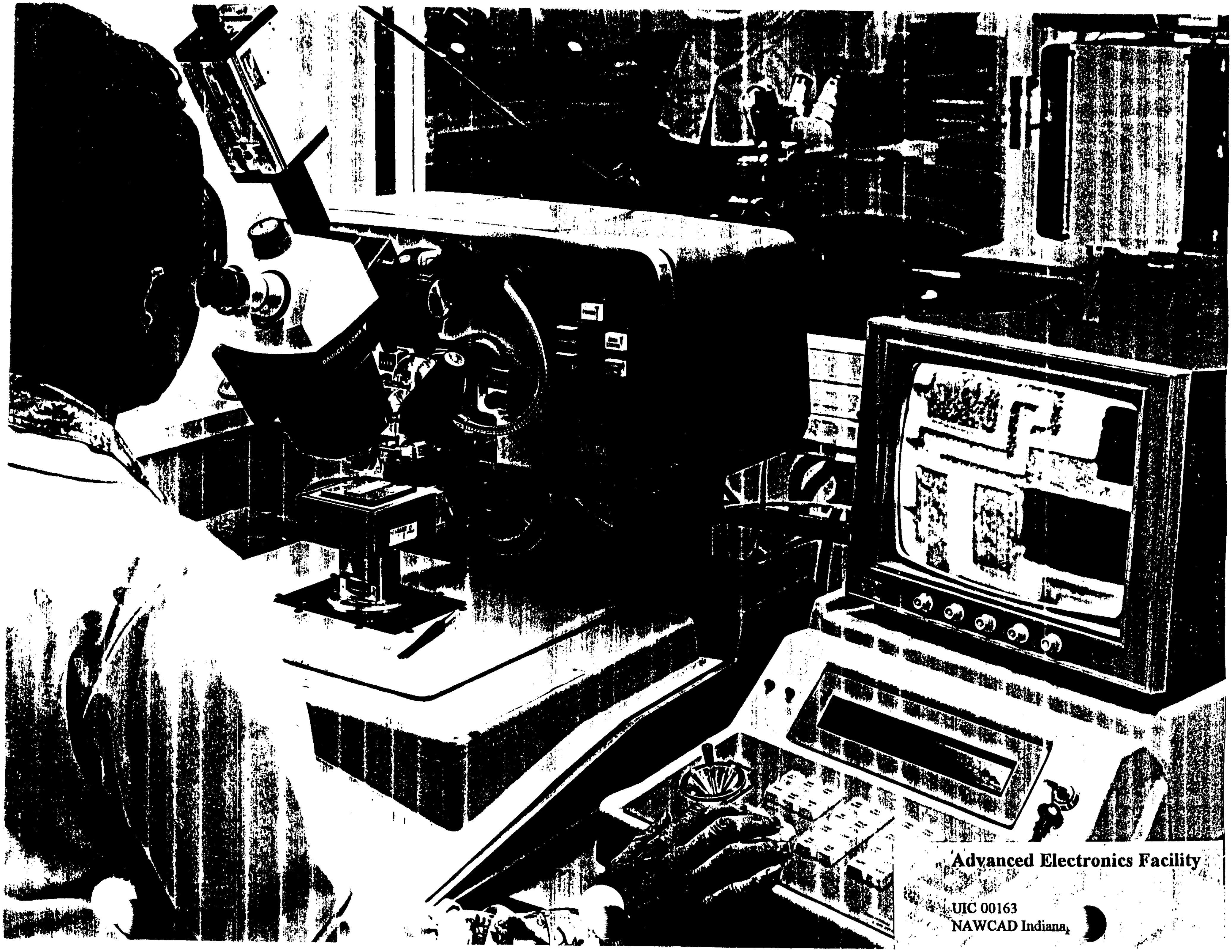
5. Manpower and Personnel. Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots);

(2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. Training Systems. Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. Environmental Quality. Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. Advanced Materials. Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.



Advanced Electronics Facility

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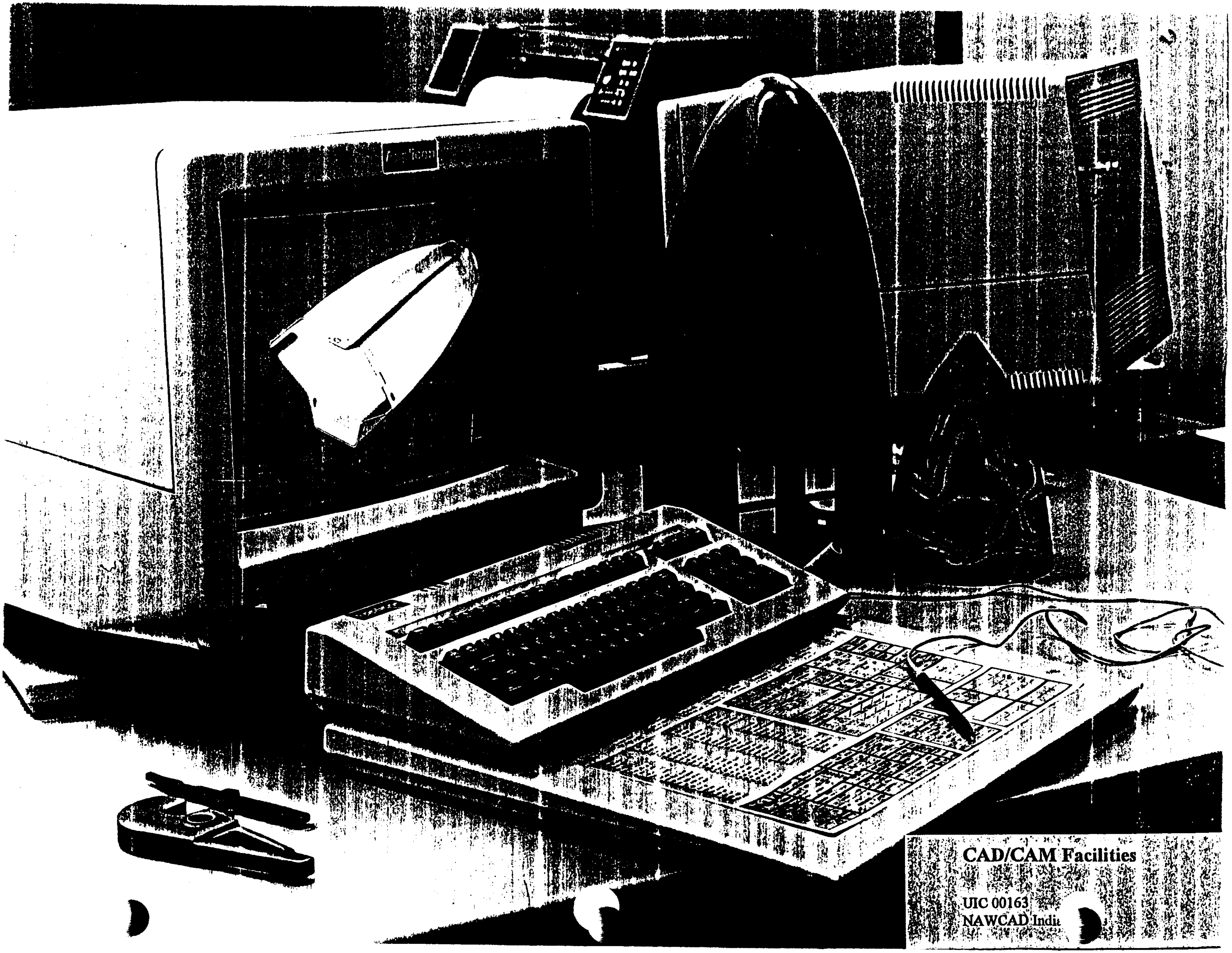
NAWCAD Indiana

Avionics/Electronics Development Lab
UIC 00163
NAWCAD Indianapo



CAD/CAM Facilities

UIC 00163
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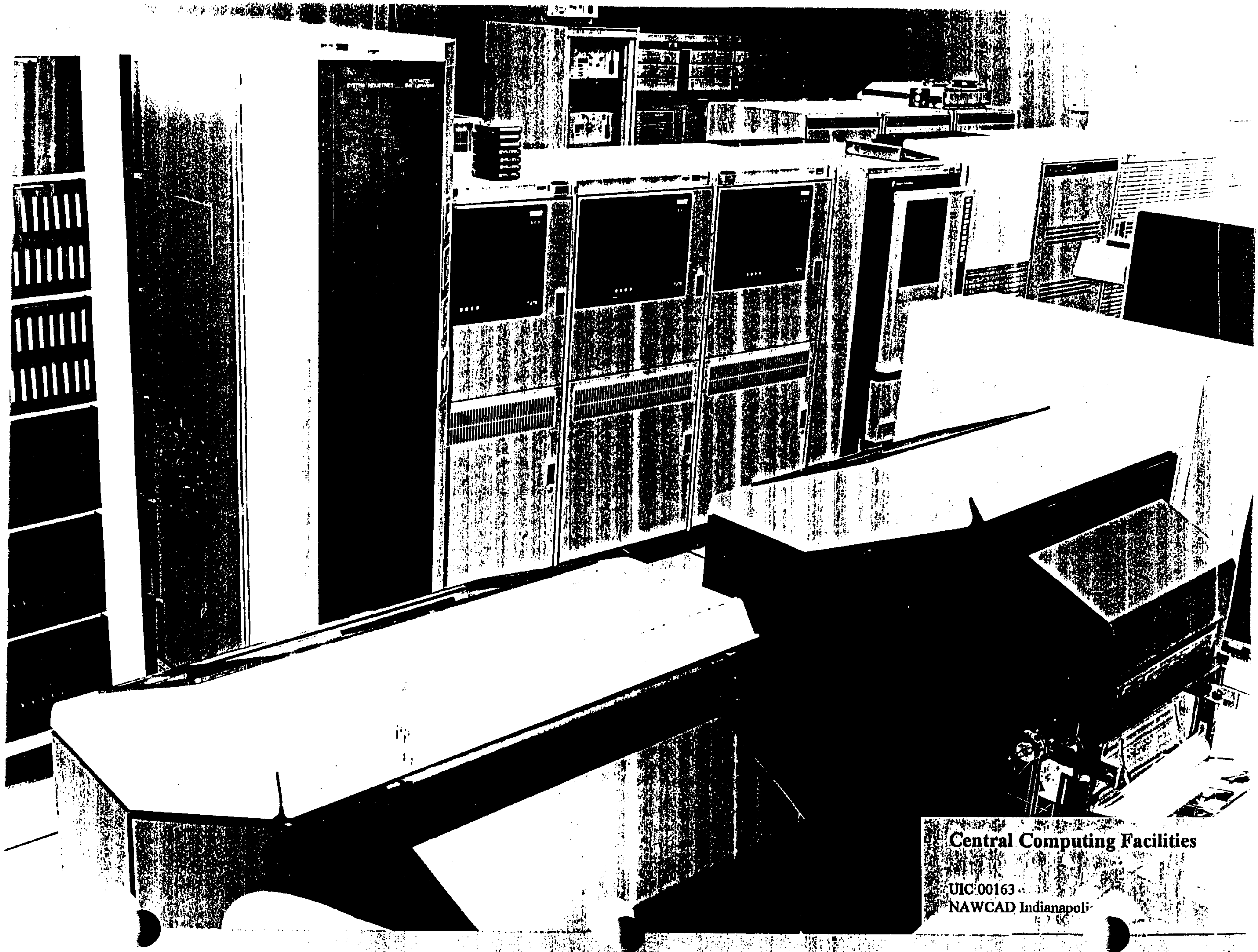

Central Computing Facilities

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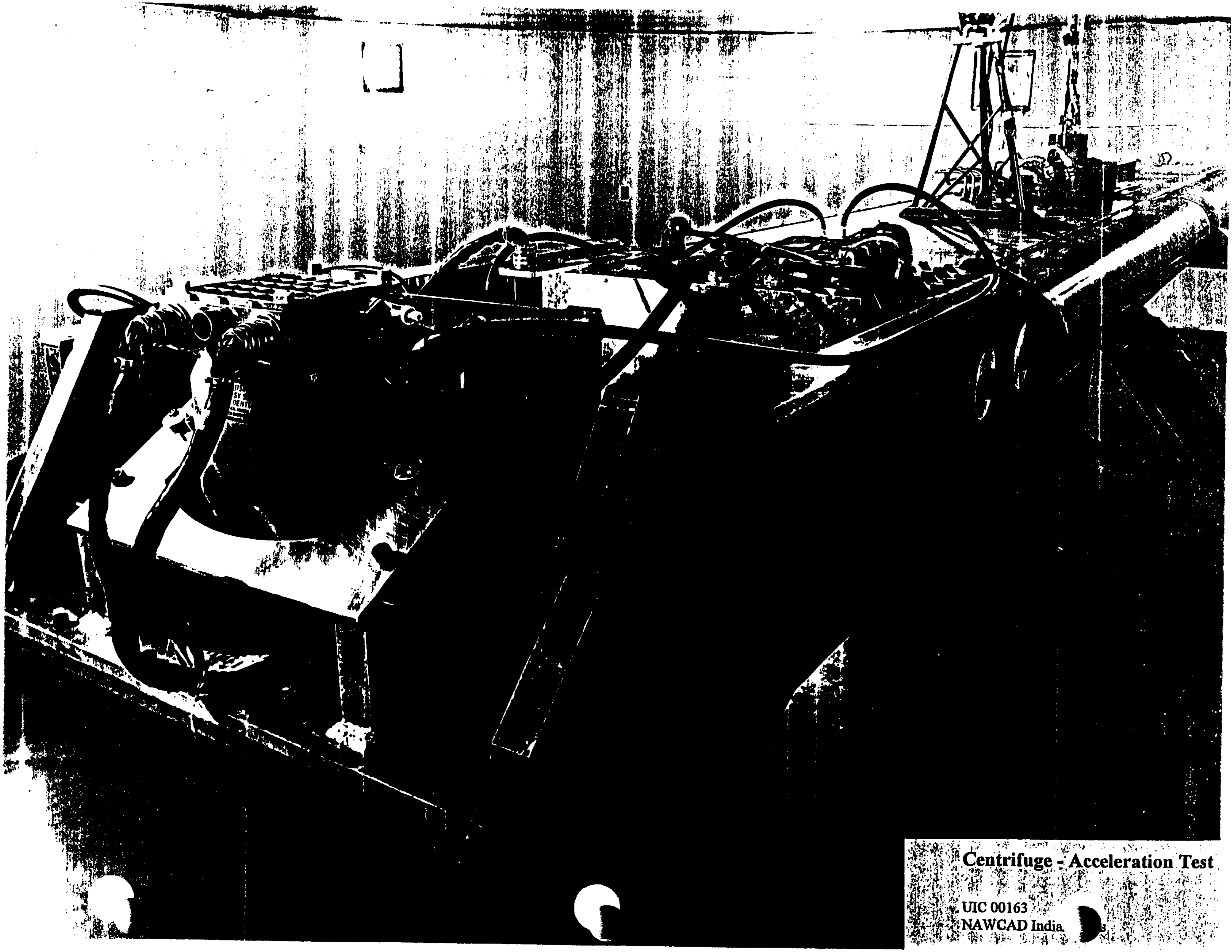

Centrifuge - Acceleration Test

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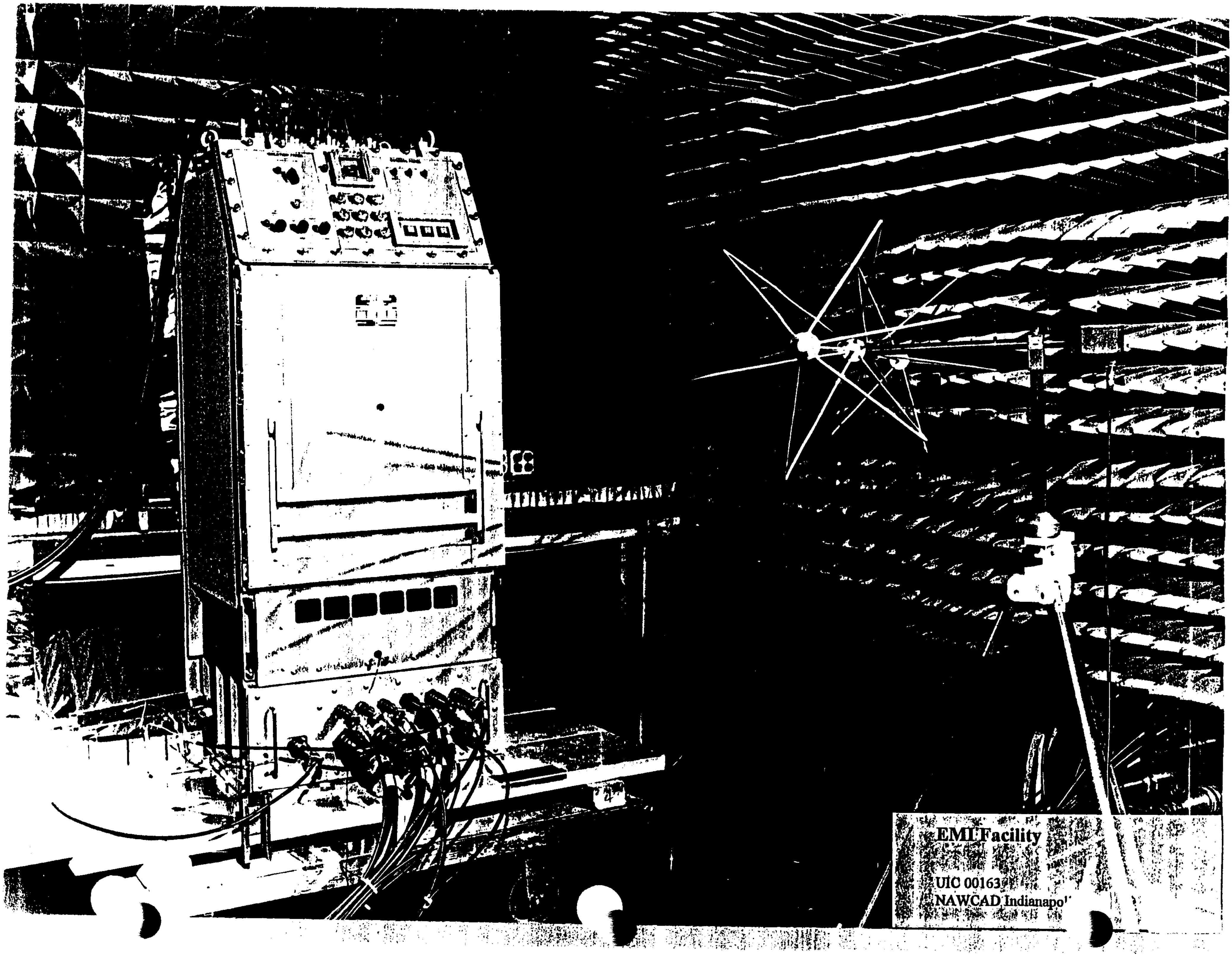
EMI Facility
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BRAC 95 DATA CALL #12 ACTIVITY UIC: 68335

"LAB" JOINT CROSS-SERVICE GROUP
DATA CALL #12

Complete Data Call Revision

NAVAL AIR WARFARE CENTER
AIRCRAFT DIVISION
LAKEHURST

This Data Call is provided as a replacement for all previous submissions of Data Call #12. This submission supersedes all previous submissions and incorporates responses to questions raised by the BSAT on 1 August, 9 August, and 12 August 1994.

WC

NAWCAD LAKEHURST

DATA CALL TWELVE

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- Determine common support functions and bases to be addressed by LJCSG
- Establish guidelines, standards, assumptions, measures of merit, data elements and milestone sches for DOD Component conduct of cross-service analysis of common support functions
- Review excess capacity analysis
- Develop closure or realignment alternatives
- Analyze cross-service trade-offs

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines

Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan -- FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.

- Reduction of "lab" infrastructure
- Return on investment (COBRA)
- Military value (BRAC criteria 1-4) -- the composite assessment of the quality of the remaining "lab" infrastructure

1.5 Activities

The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.

1.6 Common Support Functions

The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross serviced were not included.

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions only include those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 Workload. Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	**NOT AVAIL**	**103**	**204**	**191**	**233**	**163**	**175**	**210**	**191**	**207**	**194**	**185**
Total Actual Funds ($M)	**135**	**100**	**174**	**179**	**173**	**179**	**167**	**219**				
Programmed Workyears	**NOT AVAIL**	**2619**	**2532**	**2492**	**2567**	**2428**	**2320**	**2190**	**1967**	**1779**	**1885**	**1825**
Actual Workyears	**2545**	**2495**	**2519**	**2479**	**2502**	**2350**	**2308**	**2184**				

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
  - Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
  - Projected at each activity = Estimated at FY97

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

3.0.1 Air Vehicles, Fixed, Flight Subsystems

The activity mission includes assuring that fixed wing aircraft, including V/STOL aircraft can operate safely and effectively from their designated platforms including aircraft carriers, air-capable ships and forward expeditionary sites. Mission product responsibility includes Aircraft Launch and Recovery Equipment (ALRE) and Support Equipment (SE). It can be further subdivided into the following principal areas:

Aircraft Terminal Guidance
Aircraft Recovery
Aircraft Handling
Propulsion Support
Avionics Support
Aircraft Servicing and Maintenance
Aircraft/Weapon/Ship Compatibility
Aircraft Takeoff

Functional responsibilities include:

Systems and Design Engineering - assuring that new equipment or equipment upgrades are operationally compatible with the aircraft and the platform

Integrated Logistics Support - up-front analysis to influence supportability and cost of the design

Manufacturing Support - including engineering prototypes, equipment overhaul (e.g. catapult launch valves) and limited production of fleet essential items (e.g., cross-deck pendants for arresting gear systems)

Product Evaluation and Verification - at the catapult site, runway arrested landing site, jet car track site and jet blast deflector site.

In-Service Engineering - to support installation, operation, maintenance and overhaul of ALRE/SE on carriers, support and certification of aviation facilities on air-capable ships and support of forward expeditionary sites.

In support of the stated mission, this activity was recently highlighted (February 1994) in the Federal Quality Management Handbook, Lessons Learned From High-Performing Organizations In the Federal Government. Lakehurst was noted as one of eight government organizations (two from the Navy) "which have been determined to be performing at a high level by an independent panel of private and public quality management experts."

3.0.2 Air Vehicles, Rotary, Flight Subsystems

The activity mission includes assuring that all rotary aircraft can operate safely and effectively from their designated platforms including aircraft carriers, air-capable ships and forward expeditionary sites. Mission product responsibility includes Aircraft Recovery Equipment and Support Equipment (SE). It can be further subdivided into the followingo principal areas:

- Aircraft Terminal Guidance
- Aircraft Recovery
- Aircraft Handling
- Propulsion Support
- Avionics Support
- Aircraft Servicing and Maintenance
- Aircraft/Weapon/Ship Compatibility

Functional responsibilities include:

Systems and Design Engineering - assuring that new equipment or equipment upgrades are operationally compatible with the aircraft and the platform

Integrated Logistics Support - up-front analysis to influence supportability and cost of the design

Manufacturing Support - including engineering prototypes, equipment overhaul and limited production of fleet essential items.

Product Evaluation and Verification - Elevated Fixed Platform and Universal Landing Pad.

In-Service Engineering - to support installation, operation, and certification of aviation facilities on air-capable ships.

In support of the stated mission, this activity was recently highlighted (February 1994) in the Federal Quality Management Handbook, Lessons Learned From High-Performing Organizations In the Federal Government. Lakehurst was noted as one of eight government organizations (two from the Navy) "which have been determined to be performing at a high level by an independent panel of private and public quality management experts."

3.1 Location

3.1.1 Geographic/Climatological Features: Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

3.1.1.A Enhance Mission Accomplishment

Air Vehicles, Fixed, Flight Subsystems and Air Vehicles, Rotary, Flight Subsystems

The activity is protected from commercial encroachment by the Pinelands Protection Act of 1979. The perimeter lands to the north and south are in the Pinelands Preservation and Forest areas.Virtually all land uses except agricultural, limited recreation, and forestry programs are prohibited in the preservation area. On the eastern boundary, light commercial, industrial and residential uses are allowed.

The activity is located in the center of the Boston - Washington corridor, approximately 45 miles east of Philadelphia, 50 miles south of New York City and 10 miles west of the Atlantic Ocean.

The activity possesses the only military parachute drop zone in the north east region.

In addition, it is noteworthy to address the potential for jointness among Lakehurst, Fort Dix and McGuire Air Force Base. The Fort Dix 31,065 acre complex which includes McGuire Air Force Base is contiguous to Lakehurst's 7,430 acres. One recent example of Jointness is the Air Mobility Warfare Center and the Army planning to use Lakehurst grounds for training exercises.

3.1.1.B Required for Mission Accomplishment

Air Vehicles, Fixed, Flight Subsystems and Air Vehicles, Rotary, Flight Subsystems

The following features are required to support the product evaluation and verification mission which necessitates catapult and arrestment of fixed wing aircraft and operation of rotary wing aircraft.

The activity experiences a low density air traffic environment. Conflict with commercial and private air traffic is minimal.

The topography of the surrounding area is flat with sparse development and few obstructions to air navigation. This provides an abundance of VFR operating areas and easy access to IFR route structure.

The near sea-level elevation (100 feet) is essential to simulate at-sea catapult and recovery operations.

The Air Installation Compatible Use Zone study indicates that the airfield safety and noise abatement zones have not been encroached by off-base development.

3.1.2 Licenses & permits: Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

3.1.2.A Air Vehicles, Fixed, Flight Subsystems

The TC13 MOD O and the TC13 MOD 2 catapults are both connected to an industrial wastewater treatment system for which a New Jersey Pollution Discharge Elimination System permit has been authorized. This permit enables continuous operation of the catapult systems. A member of the Public Works Environmental Branch is a licensed NS operator responsible for the operation of the wastewater treatment system. A New Jersey Stormwater Discharge Permit details the storm water discharge for the entire catapult area under normal operation and usage. A New Jersey Department of Environmental Protection and Energy (NJDEPE) Air Discharge Operating Permit has been obtained for the boiler which supplies the steam for the catapult systems. The boiler is being upgraded with Continuous Emission Monitoring equipment to exceed the permit conditions, in anticipation of stricter air pollution legislation in New Jersey. The catapult and arresting gear test area is located within Noise Zone 3 where noise in excess of 75 Level of Day and Night (Ldn) can occur.

3.1.2.B Air Vehicle, Rotary, Flight Subsystems

The Helo Complex consists of an elevated fixed platform and a universal lighting pad. This testing area is also within the scope of the New Jersey Stormwater Discharge Permit. This area is located in Noise Zone 3.

3.1.3 Environmental Constraints:

3.1.3.A Air Vehicles, Fixed, Flight Subsystems and Air Vehicles, Rotary, Flight Subsystems

The 1993 Environmental Compliance Evaluation (ECE) determined that NAWCAD Lakehurst is in compliance with all mandated permits and licensing requirements. NJDEPE Air Discharge Operating Permits have been obtained for its four National Priority List (NPL) Groundwater Pump and Treatment Facilities.

EPA and NJDEPE approval has been received for the recycling of petroleum hydrocarbon contaminated soil, excavated from different NPL sites, using an asphalt batching process. Another NPL remediation project, which has obtained approval from both EPA and NJDEPE, is bio-venting of soils.

NAWCAD Lakehurst possess the unique capability to complete and maintain all required permits and licenses.

NAWCAD Lakehurst is classified under the Resource Conservation and Recovery Act (RCRA) as a generator of hazardous waste; NAWCAD Lakehurst is permitted to store hazardous waste for up to 90 days.

An increase in mission can be accommodated by the environmental resources at NAWCAD Lakehurst. An increase may require a Part B for the Treatment Storage Disposal Facility Permit. This is required if hazardous waste must be stored in excess of 90 days or if treatment is done on site.

Environmental contraints do not differ from those items listed in the most recently accepted master plan, Section V-D.

The specific topics addressed in the plan include:

Natural Constraints
- Threatened and Endangered Species
- Historic Sites
- Flood Prone Areas
- Wetlands

Man-Made Constraints
- Airfield Imaginary Surfaces
- Contaminated Areas
- Electromagnetic Interference and Radiation hazards
- Explosive Safety Quantity Distance Arcs
- Ordnance Handling Routes
- Noise Data
- Ordnance Contaminated Areas
- Range Safety Zone
- AICUZ

Although these areas place certain restrictions on growth, careful environmental planning and design would allow for growth.

3.1.4 **Special Support Infrastructure:** List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

3.1.4.A Air Vehicles, Fixed, Subsystems

The steam catapult complex requires high pressure steam to operate the two installed catapults. These catapults, a TC13 Mod 0 and a TC13 Mod 2, are used to develop and evaluate improvements to the launcher system.

The steam supply for a fully capable test catapult must be able to deliver saturated or superheated steam at a flow rate to conduct catapult steam charging tests and to demonstrate aircraft launches with a minimum launch interval of 45 seconds. The highest end pressure used on present fleet catapults is 560 psi. Therefore, the source pressure must be high enough to deliver this flow rate and pressure while taking into account pressure drop between the steam supply and catapult accumulator (typically approx. 80 psi).

The existing steam plant has 2 operational boilers that can deliver a combined total of 138,000 pounds per hour (one at 38,000 and one at 100,000 pounds per hour) at 600 psi. The current 138,000 pounds per hour delivery from the two operational boilers provides sufficient capacity to simultaneously operate both catapults or to conduct steam charging tests on one catapult by using the second catapult's accumulators to augment steam flow from the boilers.

Power Plant #2 Facility No. 362 category code - 821-09 Catapult Steam Plant. This facility provides the steam necessary for operation of the TC-13 Mod 0 and Mod 2 catapults.

Sub station #2 Facility No. 358 category code - 813-20 Substation generates more than 499 kv. This facility provides the electrical power necessary for operations of all facilities located in the vicinity of catapults and track areas.

3.1.4.B Air Vehicles, Rotary, Flight Subsystems

There is no special support infrastructure for this CSF.

3.1.5. Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

3.1.5.A Air Vehicles, Fixed, Flight Subsystems and Air Vehicles, Rotary, Flight Subsystems.

Colleges and universities with curriculums that directly relate to general knowledge requirements for professional and technical positions at the activity are numerous and easily accessible to activity personnel. Numerous engineering contractors are closely available to provide support as required. Specialized knowledges of the unique equipment developed by the activity are not obtainable through formal education, but rather are developed through on-the-job training. It is also important that we are nearby to NAWCAD PAX (50 minute station to station flight) and within one hour drive of NAWCAD Warminster and NAWCAD Trenton for coordination and technical interface.

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

Air Vehicle, Fixed, Flight Subsystems Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	**648**	**6**	**0**	**0**
Management (Supv)	**144**	**1**	**0**	**0**
Other	**211**	**0**	**0**	**0**
Air Vehicle, Rotary, Flight Subsystems Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	**34**	**0**	**0**	**0**
Management (Supv)	**8**	**0**	**0**	**0**
Other	**11**	**0**	**0**	**0**

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I) (Civilian Only)

Air Vehicles, Fixed, Flight Subsystems Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	164	12	121
Associates	27	3	30
Bachelor	321	65	52
Masters	131	64	7
*Doctorate (include Med/Vet/etc)	5	1	1
Air Vehicles, Rotary, Flight Subsystems Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	9	1	6
Associates	1	0	2
Bachelor	17	3	3
Masters	7	3	0
Doctorate (include Med/Vet/etc)	0	0	0

*** Includes Professional Degrees (EX: JD)**

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I) (Civlian Only)

Air Vehicles, Fixed, Flight Subsytems	Years of Government and/or Military Service				
Type of Position	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	3	400	80	58	107
Management (Supv)	0	16	26	23	80
Other	0	70	51	37	52
Total	3	486	157	118	239
Air Vehicles, Fixed, Rotary Subsystems	Years of Government and/or Military Service				
Type of Position	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	21	4	3	6
Management (Supv)	0	1	1	1	4
Other	0	4	3	2	3
Total	0	26	8	6	13

- Other includes employees in series 0334, 0343, 0346, 1150, 1152, 1910, 4701, 1670 with Sup. Code of 6, 8 (non-supv or mgt.)
Total population = 1056

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
Air Vehicles, Fixed, Flight Subsystems	**1**	**0**	**Intense Light Filter for Imaging Systems**
Air Vehicles, Fixed, Flight Subsystems	**1**	**0**	**Oxygen Sensor Using Hall Effect Device**
Total	**2**	**0**	

3.2.4.2 How many papers were published in peer reviewed journals? (Include title of article, journal in which it was published, and month and year of publication. (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicles, Fixed, Flight Subsystems	1	"Electromagnetic Aircraft Launch System -- EMALS" by Michael R. Doyle, accepted for publication in the January 1995 issue of: IEEE Transactions on Magnetics, Vol 31, No. 1 by the IEEE Magnetics Society (R)
Air Vehicles, Fixed, Flight Subsystems; Air Vehicles, Rotary, Flight Subsystems.	1	"Repair and Maintenance of Fiber Optic Data Links on Navy Aircraft" by Eric Fryland, published in the Sept 1991 issue of Proceedings, Volume 1580 by SPIE - the International Society for Optical Engineering (R)
TOTAL	2(R)	

(R)

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Enclosure (5)

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3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

Air Vehicles, Fixed, Flight Subsystems	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	18	0	0	0
Engineering Development	871	6	0	0
In-Service Engineering	230	1	0	0
Air Vehicles, Rotary, Flight Subsystems	**Fiscal Year 1993 Actual**			
	Civilian	Military	FFRDC	SETA
Science & Technology	1	0	0	0
Engineering Development	46	0	0	0
In-Service Engineering	12	0	0	0

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:

- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT ID (Air Vehicles, Fixed, Flight Subsystems)	**V-22**	**23.5**	**3561.0**	**V-22 PROGRAM SUPPORT**

ACAT III/IV (Air Vehicles, Fixed, Flight Subsystems)	2			
EMALS		10.4	1.4M	-ELECTROMAGNETIC A/C LAUNCHER SYS
ICOLS		6.6	.9M	-IMPROVED CARRIER OPTICAL LANDING SYS
ACAT III/IV (Air Vehicles, Fixed, Flight Subsytems; Air Vehicles, Rotary, Flight Subsystems)	2			
ISIS		16.2	2.2M	-INTEGRATED SHIPBOARD INFO SYS
Fire Truck		2.1	.3M	-A/S32P-25 SHIPBOARD FIRE TRUCK
OTHER	14	57.0	9.3M	
(Air Vehicles, Fixed, Flight Subsystems; Air Vehicles, Rotary, Flight Subsystems)				-SEABASED OPERATION SUPPORT -SEABASED MAINT SUPPORT -CVN 76 STUDIES; -IFF -STANDARD COMPASS SYS -STD ENG TEST SET -ADVANCED BOMB FAMILY JDAM HANDLING EQUIPMNT -AIRCRAFT LAUNCH/RECOVERY EQUIPMNT MATL STUDIES -SUPPORT EQUIPMNT

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OTHER (Cont'd) (Air Vehicles, Fixed, Flight Subsystems) (Air Vehicles, Rotary, Flight Subsystems)				 -TARGET (QF-4) -TOW TARGET -MINE COUNTER MEASURES CONVERSION -LX STUDIES -SH-60

(R)

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3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicle, Fixed, Flight Subsystems	**Ship/Facility Certifications; Product Support**	**$15,785.0**	**230**	**Various Fixed Aircraft**
Air Vehicle, Rotary, Flight Subsystems	**Ship/Faciltiy Certifications**	**$830.0**	**12**	**Various Rotary Aircraft**

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF Air Vehicles, Fixed, Flight Subsystems	FY94 ($K)	FY95 ($K)	FY96 ($K)	FY97 ($K)
R&D	26,197.4	27,936.3	37,737.0	24,493.0
O&MN	57,686.5	69,023.8	61,877.4	63,997.6
APN	56,428.0	46,714.1	45,024.8	51,705.0
OPN	7,924.8	10,553.0	8,156.6	8,005.8
SCN	9,638.3	18,122.1	12,667.7	7,828.9
Other Navy	8,671.8	10,223.9	7,613.7	8,116.2
All Other	14,464.2	15,256.7	12,720.3	12,010.3
CSF Air Vehicles, Rotary, Flight Subsystems	**FY94 ($K)**	**FY95 ($K)**	**FY96 ($K)**	**FY97 ($K)**
R&D	0	0	0	0
O&MN	0	0	0	0
APN	7,352.3	6,085.4	5,866.5	6,736.9
OPN	803.0	1,069.3	826.5	811.2
SCN	181.0	340.3	237.9	147.0
Other Navy	113.0	133.2	99.2	105.8
All Other	1,314.4	1,386.4	1,150.2	1,091.4

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94 ($K)	FY95 ($K)	FY96 ($K)	FY97 ($K)
Air Vehicles, Fixed, Flight Subsystem	554,614.0	485,499.0	500,473.0	575,355.0
Air Vehicles, Fixed Subsystems	29,190.0	25,553.0	26,341.0	30,282.0

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	

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Air Vehicles, Fixed, Flight Subsystem NOT SHARED	Steam Catapult Complex: This steam catapult complex is the <u>only facility in the world</u> with the ability to launch both aircraft and deadloads. Two shipboard-type catapults located at the eastern end of the test runway are configured to the latest shipboard style to provide for the development and evaluation of shipboard catapult systems and to provide in-service engineering support for this equipment. The TC13 Mod 2 Catapult is configured to the new Low Pressure Catapult (C13 Mod 2) system being installed on the USS ABRAHAM LINCOLN (CVN 72). The TC13 Mod 0 Catapult is located adjacent to the TC13 Mod 2 and is its predecessor in the history of shipboard catapults. Approximately 60 feet shorter and capable of generating less energy, it is otherwise very similar to the Mod 2 except for the power cylinders, which have a smaller inside diameter. Both consist of two slotted cylinders that extend the length of the stroke in which twin pistons travel. The pistons are attached to a launch shuttle and transmit up the 340,000 pounds of accelerating force to the aircraft as up to 560 psi steam is throttled into the cylinder. At the end of the launch stroke, the pistons are controlled-decelerated by a "Water Brake" Device and returned to battery position by hydraulic retraction motors.	YES	YES	YES	120,500

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Steam Catapult Complex (Cont'd) **Both catapults are capable of launching aircraft weighing up to 90,000 pounds and produce end speeds up to 185 knots under normal conditions and up to 300 knots for special catapult tests.** **Steam capacity for the catapults is obtained by means of steam accumulators that provide nearly constant pressure during the launch stroke. The TC13 Mod 0 Catapult has two 1,500 cubic foot dry accumulators, and the TC13 Mod 2 has one 1,900 cubic foot wet accumulator. A steam power plant supplies up to 138,000 pounds per hour of steam to these accumulators. Steam is generated up to a maximum 196,000 pounds/hr at 1,050 psi. Steam temperature is 900 degrees Fahrenheit. Two high pressure boilers are available and two 135 psi boilers for auxiliary steam and heating. Other equipment installed: Demineralizer, Iron Remover, Deaerator, Feed Pumps, Wells, Tanks and Air Compressor.**	YES	YES	YES	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Steam Catapult Complex (Cont'd) **A unique feature of both the TC13 Mod 0 and Mod 2 is the deadload launch capability. Recessed guide slots on either side of each catapult track are used to maintain longitudinal stability of the four-wheeled deadload vehicles, and a friction brake system of approximately 100 million foot-pound capacity brings the deadloads to a stop 100 to 500 feet ahead of the catapult. Although used primarily for testing the catapult performance prior to actual aircraft launch, this deadload capability affords a programmed linear acceleration force platform that has been used also in testing (at loads up to 15G) aircraft drop tanks, cargo tie-downs and aircraft pylons.** **The catapult centerlines should be within 1-1/2 degrees of the runway centerline to permit safe aircraft launches for all required evaluations.**	YES	YES	YES	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	Runway Arrested Landing Site (RALS): This is the only facility in the world capable of making both high-speed ground roll-in arrestments and fly-in arrestments on shipboard arresting gear. The RALS site is capable of making shipboard type arrestments of all Navy Aircraft. Located under the runway are Mark 7 Mod 1, Mod 2, and Mod 3 arresting engines installed accurately simulate an aircraft carrier installation. The site is capable of recording data such as aircraft engaging velocity, aircraft hookload, arresting engine cylinder pressure, arresting cable tension, and numerous other arresting gear parameters as required. A movable control tower and recessed arresting gear retract station complete the shipboard arresting gear site. The RALS site is located on a dedicated 12,000 foot runway with over 3,000 feet of runway available to buildup speed while the aircraft remains on the runway, plus 8,000 foot of runway remaining after the arresting equipment which provides a large margin of safety should the new equipment not perform as expected. This provides the unique capability of making both high-speed ground roll-in arrestments and fly-in arrestments.	YES	YES	YES	28,544

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Runway Arrested Landing Site (RALS) (Cont'd): **The RALS is used for development and evaluation of aircraft recovery equipment and aircraft compatibility. This site is used to evaluate all changes to shipboard arresting gear prior to introduction into the Fleet. At this site, all data necessary for developing recovery bulletins that enable aircraft to land aboard aircraft carriers is generated through the use of its unique capability of making both high-speed ground roll-in arrestments and fly-in arrestments.**	**YES**	**YES**	**YES**	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Jet Blast Deflector Site:** This is the <u>only site in the world</u> capable of conducting required aircraft evaluations with a MK 7 Mod 0 JBD. The JBD site includes a MK 7 Mod 0 JBD, hydraulic system to raise and lower the JBD panels, a 30,000 gallon in-ground tank to store the cooling water, a 1,200 gallon per minute pump that circulates the cooling water through the JBD modules, and a pole field used to collect air velocity, temperature and acoustical data. The MK 7 Mod 0 JBD is 36 feet wide by 14 feet high. It is made up of 6 panels each of which is 6 feet wide by 14 feet high. The site can be reconfigured by disconnecting the two outboard panels to simulate the MK 7 Mod 1 JBD (24 feet wide by 14 feet high) when required. A pole field for collecting temperature, air speed and direction, and acoustical data is located behind the JBD. A data acquisition site records and displays the JBD cooling water, flow, and panel temperatures along with the data collected in the pole field.	YES	YES	YES	3,334

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Jet Blast Deflector Site (Cont'd): **The JBD site is used for the development and evaluation of JBD components which include module design and coatings, and the cooling system. It is also used to demonstrate aircraft compatibility with the JBD, which is a contractual requirement for all Navy aircraft.**	YES	YES	YES	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem	**Runway:** **This is the only facility in the world dedicated to ALRE development. This 12,000 foot runway, dedicated to evaluation of Aircraft Launch and Recovery Equipment (ALRE) programs, forms the nucleus for all fixed-wing capable test sites at the Center. Steam catapults are located at the approach end of Runway 30; shipboard arresting gear at the steel mid-section; shorebased arresting gear at various locations along the runway; and a Mark 8 Mod 0 Fresnel Lens Optical Landing System which can be set up for either Runway 30 or 12. Without this runway, aircraft launches at the steam catapults, evaluation of arresting equipment installed at the Runway Arrested Landing Site, and Visual Landing Aid equipment development programs could not be conducted with aircraft. Immediately adjacent to the runway, approximately mid-field, is the Jet Blast Deflector (JBD) Site that depends on the runway for landing aircraft used during JBD evaluations. The runway is equipped with landing aids and a runway lighting system.**	**YES**	**YES**	**YES**	**17,720**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Jet Car Track Site:** This facility is unique to the Navy for conducting tests in the 250 knot and below speed range. The Jet Car Track Site consists of five jet car tracks (3 currently operational) ranging in length from 7,500 feet to 9,150 feet. Tests may be conducted using weighted deadloads to simulate various aircraft landing conditions, or they may use the airframe itself as in the nylon barricade tests conducted to qualify fleet aircraft. The deadloads can weigh up to 100,000 pounds. The maximum speed for the deadloads and jet cars is 250 knots. Tests are conducted with minimum risk to aircraft and personnel and at a much lower cost than similar runway tests using manned aircraft. A four wheeled jet car, powered with J57 engines, is currently used to propel the deadloads or airframes for the test programs. This car develops 42,000 pounds of thrust and attains energy levels in excess of 140 million foot-pounds. Automatic speed control capability can be accommodated for the jet car by use of the jet car speed control. Installed at the recovery end of the tracks are a MK 7 Mod 3 and a MK 7 Mod 1 arresting gear	YES	YES	YES	24,537

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Jet Car Track Site (Cont'd): **integral to the testing conducted at this site. A data acquisition site is located adjacent to each major track site capable of recording by ground wires or telementry onto digital recording equipment, or by use of high-speed motion picture or closed circuit television.**	**YES**	**YES**	**YES**	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Rotary, Flight Subsystem NOT SHARED	**Elevated Fixed Platform:** This is the only facility in the world capable of evaluating RAST equipment. The Elevated Fixed Platform (EFP) is a 60 foot by 85 foot steel and concrete deck built atop a 25 foot high building which contains a Recovery Assist, Securing and Traversing (RAST) system. A hangar face with Visual Landing Aids (VLA) lighting package and deck markings present the pilot with a realistic shipboard landing environment. The height of the platform provides a change in ground effect as the aircraft transitions over the platform, resulting in true flight characteristics. Aircraft having gross weights of up to 90,000 pounds can be landed at up to 2.67 Gs.	YES	YES	YES	4,160

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Rotary, Flight Subsystem NOT SHARED	**Universal Landing Pad:** **The Universal Landing Pad consists of a 150 foot by 250 foot concrete pad at approximately ground level. It has a 50 foot square steel center section to facilitate the installation of various layouts of visual landing aids and is capable of handling helicopters up to 100,000 pounds gross weight at a load factor of 2.67 G. The installation of a representative pattern of mooring eyes permits tests of equipment (such as aircraft tie-downs and helicopter securing and traversing systems) for which mooring eye placement is a parameter.**	**NO**	**NO**	**NO**	**1,180**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Support Equipment Mobility Site:** This facility is used for the testing of all wheeled ground support equipment. The site includes a 30 foot wide ramp that has a slope of 5 degrees, a vibration test bed consisting of gravel, asphalt and concrete. Ground support equipment that lift and transport various types of armaments, tow and spot aircraft, transport fire fighting equipment, etc, can be towed through or driven over the course. Data from accelerometers or strain gages can be telemetered to an on-site instrumentation van to provide instantaneous results.	NO	NO	NO	117.5

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Articulated Motion Platform:** The Articulated Motion Platform (AMP) is a 13 foot by 17 foot platform that can support 17,500 pounds of equipment while performing the necessary angular rotations and horizontal translations to simulate the motion of certain ships up to sea state 5. The platform can be positioned in six independent ways which, taken separately, have the following ranges: pitch, -24 degrees to +26 degrees; roll -22 degrees to +22 degrees; yaw -29 degrees to +29 degrees; vertical translation -23 inches to +32 inches; lateral translation -42 inches to +42 inches; and longitudinal translation -48 inches to +48 inches. The control system feeds motion information derived from a mathematical model of sea motion to the platform to simulate sea states. The AMP is used to evaluate ship equipment suspected to be susceptible to ship motion.	NO	NO	NO	350

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Environmental Test Lab:** The capability of this lab is unique to DOD. Lab equipment capabilities include environmental chambers of temperature, humidity, corrosion, fungus and altitude testing. Also shipboard high impact equipment as well as instrumented and computer controlled mechanical shock and vibrations equipment. The lab has closed-loop servo-controlled, electro-hydraulic actuators for performance of fatigue testing, proof loading, determining yield points and ultimate strength of specimens. In addition, the lab does pressure and hydraulic flow testing of components such as the Catapult Capacity Selector Valve. Typical documents for which capabilities exist include MIL-STD-810, 202, 167, 1399, 108, 2036, MIL-S-901, MIL-T-28800, MIL-L-6363. The enclosed photograph depicts the equipment that will be the most difficult to relocate: The Navy Light Weight Stock Machine, a large temperature humidity chamber, a hydraulically operated vibration system and a hydraulic power pump.	YES	NO	NO	3,147

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Electromagnetic Interference Test Facility:** The Electromagnetic Interference (EMI) laboratory provides the necessary RF shielded environment and test equipment required for the evaluation of fleet systems and/or subsystems for Electromagnetic Compatibility (EMC) compliance in accordance with MIL-STD-461A/B/C/D (Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference). The EMI Laboratory houses two shielded test enclosures, one shielded and one unshielded ante room and one EMP test facility. Both shielded test enclosures are partially anechoic with approximately fifty (50) percent coverage. The EMI facility also maintains the necessary equipments and facilities for the performance of Electromagnetic Pulse (EMP) testing in accordance with MIL-STD-461C/D and the evaluation of electrostatic bag materials and EMI gasket materials. The EMI facility is one of eleven test facilities nation-wide and the only one in the Aircraft Division which has been accredited through the National Voluntary Laboratory Accreditation Program (NVLAP) to perform EMI testing in accordance with MIL-STD-461.	NO	NO	NO	3,054

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Metrology and Calibration Lab:** Electronic and mechanical standards (including physical, optical, dimensional, pressure, voltage and frequency standards) and the necessary environmentally controlled laboratories to house such equipment.	NO	NO	NO	2,076

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Data Handling Center:** The Data Handling Center (DHC) houses off-line signal processing and reproduction includes instrumentation tape recorders, demodulation equipment for 64 channels of ground based data, telemetry demodulation equipment to reproduce vehicular data, display devices, signal plotters, analog to digital conversion systems and three signal processors. Archive support equipment includes 1700 analog and 800 digital data tapes, tape library logs, tape maintenance equipment. All this equipment is used in support of evaluation projects of API products.	NO	NO	NO	881

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **(95% USE)** **Air Vehicles, Rotary, Flight Subsystem** **(5% USE)**	**2200 sq ft Materials Laboratory outfitted with sample preparation, testing, analysis, and support equipment.** **List of major equipment below:** **Sample Preparation - To reduce components into the proper size and condition to be further studied and analyzed. - $100K** **Chemical Analysis - To obtain elemental chemical analysis of specimens. - $250K** **Electron and Optical Microscopes - To view specimens under very high magnification. Used for examination of component fracture surfaces. - $175K** **Physical Testing - To determine or alter physical attributes of specimens, such as hardness, impact resistance, metallurgical structure and wear properties, for example. - $500K** **Image Analysis - To perform computer analysis of of attributes of images generated by microscopes. - $50K** **Laboratory Furniture - Various benches, work surfaces, fume hoods, and other support items. - $100K**	**NO**	**NO**	**NO**	**Facility Structure $148** **Equipment $1,175**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Carrier Analysis Room:** This is the only facility in the world equipped for carrier suitability analysis, maximum density and operational spotting analysis. The Carrier Analysis Room, also known as the Spotting Room, provides carrier suitability and shipboard compatibility requirements documentation for Navy aircraft acquisition programs, and aircraft compatibility requirements for ship acquisitions. It provides design evaluation support, and COEA inputs. It calculates and validates all Maximum Density and Analysis Spot Factors for various aircraft configurations. It analyzes and simulates airplane operations and provides spotting and handling recommendations. These capabilities are unique within the Navy and the world. Programs supported include the main, active aircraft and ship developments such as F/A-18E/F, V-22, MLR, AX, CVN 76, CVX, LPD 17(LX), MCS and multiple UAVs.	YES	YES	YES	1,278

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
	Carrier Analysis Room (Cont'd): **The Spotting Room is a dedicated secure facility located within Hangar 3. It contains a computer network consisting of a Digital Microvax II, and several IBM and MAC PC workstations. Included are all the necessary peripheral devices such as plotters, printers, scanners, digitizers, a color image printer and a CD disk drive. All Spotting Room operations are fully computerized. An extensive library of files and models, both two dimensional and three dimensional, are available. In addition, traditional spotting table facilities are available with scaled deck layouts and aircraft templates with overhead photographic capability. These facilities are used to accommodate group working sessions, particularly with fleet operators, where a hands-on approach is desirable. See Attachment 1 for a pictorial layout of the facility.**	**YES**	**YES**	**YES**	

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **NOT SHARED**	**Landing Guidance Development Facility** **This facility is used to develop advanced landing guidance and simulate performance with advanced hardware and man in the loop.**	**YES**	**YES**	**YES**	**5,300**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Manufacturing Technology This is an integrated, flexible, industrial manufacturing facility providing unique and critical products to the fleet. Comprised of a 240,000 square foot manufacturing facility, state-of-the-art equipment, highly trained personnel, and a dedicated engineering staff, Manufacturing Technology is the supplier of last resort and last source of repair for systems and equipment critical to CV and CVN (aircraft carrier) operations. Supplying Aircraft Platform Interface (API) products, Manufacturing Technology is the ONLY source of many unique systems and components which are critical to successful Navy flight operations. Without the products manufactured, repaired, and overhauled by MTD, Navy flight operations would not be possible. (See Figure 1 for Layout)**	**YES**	**YES**	**YES**	**198,012**

FIGURE 1

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
			Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **NOT SHARED**	**Purchase Cable Test Facility:** **Prior to issuance to the fleet (stock system), NAWCADLKE conducts acceptance tests on purchase cables specimens. Purchase cable are the cables which connect the "Cross Deck Pendant" (arresting cable) to the arresting engine during aircraft recovery. NAWCADLKE is the ONLY source for acceptance testing. An 11,375 sq ft area is dedicated to the two sheave and five sheave cycle test machines which impart recovery equivalent loads to the purchase cable under test.**	**YES**	**YES**	**YES**	**18,946**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **NOT SHARED**	**Cross Deck Pendant Cable: Manufacturing And Testing Facility;** **-Includes 40% of Heat Treat Facility Cost;** **-Includes 25% of Grit Blast Facility Cost** **NAWCADLKE is the sole manufacturer of Cross Deck Pendant cable assemblies. Bearing the primary input loads which occur during aircraft recovery, Cross Deck Pendants are the cable assembles which are caught by the aircraft's tail hook when landing. Due to their application, the processes for manufacturing these cables are considered flight critical processes. As part of our periodic validation of these critical processes, NAWCADLKE combines a unique tensile test cell with our on-station jet car site for dynamic evaluation.**	**YES**	**YES**	**YES**	**50,505**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **NOT SHARED**	**Jet Blast Deflector Manufacturing Facility:** **-Includes 30% Of General Welding And Metal Fabrication Facility; 25% of the Total Grit Blast Facility Cost; and 5% of the Total Heat Treating Facility Cost.** **Past attempts by commercial sources to manufacture these panels have failed. A dedicated weld shop, module manufacturing area, and special positioners/fixtures combine to enable Lakehurst to meet Fleet needs for both new ship construction and retrofit.**	**YES**	**YES**	**YES**	**6,864**
Air Vehicles, Fixed, Flight Subsystem **(95% USE)** **Air Vehicles, Rotary, Flight Subsystem** **(5% USE)**	**Prototype Manufacturing Facility:** **NAWCADLKE maintains the ability to build prototype assemblies to assist the engineers and designers of our on-station Aircraft Launch and Recovery Equipment and Ground Support Equipment groups. We are able to perform prototype and small lot manufacturing for almost any customer.**	**NO**	**NO**	**NO**	**750**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	Barricade Manufacturing Facility: NAWCADLKE is the <u>ONLY source</u> of cloth barricades which are used when aircraft are unable to catch the Cross Deck Pendant (arresting wire). A 5,000 square foot area is dedicated to a unique arrangement of layout tables, fixtures, and sewing machines which are capable of producing three 108 foot barricades per month. Assembly requires approximately 50 miles of stitching.	YES	YES	YES	26
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	Heat Treating and Grit Blasting Facility (Grouped Together Since Heat Treating Requires Grit Blasting As An Associated Process): Heat Treating Facility Grit Blast Facility NAWCADLKE's heat treating facility changes the metallurgical characteristics of the steel processed so that it meets the end-item material requirements. The grit blast facility rapidly removes scale created during heat treating as well as prepares other surfaces for paint, coating, and finishing processes.	NO	NO	NO	21,163 14,014 7,149

Common Support Functions	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Launch Valve Overhaul and Testing Facility:** NAWCADLKE is the last source of repair and supplier of last resort for Catapult Low Loss Launch Valves (LLLV). These valves control the flow of steam to the aircraft carrier catapults. Significant cost savings, compared to purchase of new launch valves, is obtained through overhaul. Since NAWCADLKE is the ONLY source for overhaul and repair, continuous NAWCADLKE operations for availability of overhauled LLLV's has remained a NAWCADLKE and Fleet priority. A shortage in LLLV's could lead to reduced aircraft carrier readiness.	YES	YES	YES	2,981

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem **NOT SHARED**	**Facility For Qualification And Aircraft Carrier Suitability Testing Of Hydraulic Pumps and Valves:** **NAWCADLKE is the <u>ONLY test</u> facility in the country for supplier qualification of aircraft carrier ALRE valves and pumps. Some of these products are mission critical. In addition, they often handle large hydraulic pressures. Qualification testing is used to both maintain a capable supplier base and reduce the risk of flaws in the end items which could result in the loss of Navy personnel and property.**	**YES**	**YES**	**YES**	**1,272**

Common Support Function	Major Facility or Equipment Description	Unique To DOD	Unique To Federal Gov't	Unique To U.S.	Replacment Cost ($K)
Air Vehicles, Fixed, Flight Subsystem **(95% USE)** - **Air Vehicles, Rotary, Flight Subsystem** **(5% USE)**	**Metal Machining and Forming Facility:** **NAWCADLKE possesses a fully equiped machining facility capable of manufacturing a wide range of piece-parts, assemblies, sub-system, and fully operational equipment. Dedicated engineering support and skilled artisans work with a combination of manual and computer controlled equipment. Manually controlled machine tools provide the flexibility to rapidly custom craft single pieces while computer controlled systems allow for rapid production of small prototype lots and repetitive overhaul operations. While this facility has served primarily as the supplier of last resort and the last source of repair for Navy API unique and critical assemblies, it has demonstrated the adaptability to meet the production needs of the Fleet, Marines forces, and other Services.**	**NO**	**NO**	**NO**	**99,816**

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Electronics Repair And Prototype Facility:** As part of the repair, overhaul, and prototype manufacture of launch and recovery systems and ground support equipment, NAWCADLKE maintains the capability to produce developmental prototypes and repair the wiring and electronics which are used in conjunction with the electro-mechanical systems which are repaired, overhauled, and manufactured.	NO	NO	NO	603
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Automated Machining Cell:** This is an automated, multi-station machining cell which is designed to produce the terminal ends which are swaged on Cross Deck Pendants. Designed to require limited human intervention, a robot transfers work pieces between the machine tools. The final product is "rough-finished" terminal ends, which, after heat treating, can be machined to the precise tolerances required for final terminals.	YES	YES	YES	1,383

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Five Axis Horizontal Milling and Boring Machine (CNC Controlled): This is a sophisticated computer controlled milling and boring machine used on medium and large parts. This machine provides the flexibility needed to rapidly change production plans in response to fleet emergency needs. It is used for a large number of NAWCADLKE's diverse products and Fleet requirements.**	**NO**	**NO**	**NO**	**1,182**
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicle, Rotary, Flight Subsystem (5% USE)	**CNC Turning Center (#311): This machine is used for pitch shafts and pitch roll hubs on carrier optical landing systems. In addition, it is used for initial manufacture and remanufacture of launch valves, catapults and arresting gear and SH-60 transmission hoists.**	**NO**	**NO**	**NO**	**581**

Common Support Function	Major Facility or Equipment Description	Unique To DOD	Unique To Federal Gov't	Unique To U.S.	Replacement Cost ($K)
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**CNC Horizontal Milling Machine (#123):** This is a computer controlled milling machine used primarily in the manufacture of launch valves, jet blast deflectors, and other ALRE and support equipment products. It provides the close tolerances required of precision machining.	NO	NO	NO	457
Air Vehicles, Fixed, Flight Subsystem (95% USE) Air Vehicles, Rotary, Flight Subsystem (5% USE)	**Vertical Milling Machine (Kingsbury) (#122)** This is a computer controlled milling machine used in the manufacture of ALRE products (with some support equipment use as well). It is used to provide close tolerances, precision machining.	NO	NO	NO	406
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Horizontal Milling and Boring Machine (#121):** This milling and boring machine is used primarily in launch valve main body and steam head production and refurbishment.	NO	NO	NO	725

Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Jig Milling and Boring Machine (#207):** This machine is an integral milling machine in the overhaul of launch valves.	NO	NO	NO	1,779

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U.S.	
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Travelling Column Milling and Boring Machine (#271): This machining center equipment is used in the initial manufacture of the large (2ft diameter x 9ft long) Launch Power Cylinders, the Low Loss Launch Valve (LLLV) Bodies, the LLLV Steam Heads, the A/C Jack Tester Stands and the Jet Blast Deflector (JBD) Panel weldments. All of these items are very critical to fleet readiness. The JBD panels and the overhauled LLLV parts are produced solely at NAWCADLKE.**	**NO**	**NO**	**NO**	**1,202**
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**650 Ton Punch Press (#513): This unusually large press is critical to Jet Blast Deflector (JBD) panels manufactured at NAWCADLKE. It is used to realign the JBD panels after the heat deformation that results during the welding of the various components which make up the panel assembly.**	**NO**	**NO**	**NO**	**574**
Air Vehicles, Fixed, Flight Subsystem NOT SHARED	**Planar Milling Machine (#108): This unusually large milling machine is critical in the manufacture of large flat precision products like the the Jet Blast Deflector panels produced <u>solely</u> at NAWCADLKE. It is also used in the production of 12ft long tracks for sheave dampers and arresting gear base components.**	**NO**	**NO**	**NO**	**2,570**

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicles, Fixed, Flight Subsystem	EMALS LAB	LAB	3	3	0
	CATAPULTS	LAB	1.5	1.5	0

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicles, Fixed, Flight Subsystem	INFORMATION TECH	LAB	1	1	0
	NDI/ ELECTRONICS	LAB	2	2	0
Air Vehicles, Rotary, Flight Subsystem	FIBEROPTICS	LAB	1	1	0
	PRODUCT DEVL	LAB	2	2	0
	COMPONENTS ANALYSIS	LAB	2.3	2.3	0
	INDUSTRIAL COMPLEX	TECHNICAL	240	240	0
	MATERIAL LABORATORY	TECHNICAL	2.2	2.2	0
	SPOTTING ROOM	TECHNICAL	3.3	3.3	0
	ATE SOFTWARE FACILITY	TECHNICAL	7.5	5	2.5
	INTERGATED SHIP INFORMATION SYSTEM	LAB	4	4	0
	VISUAL LANDING AID LAB	LAB	8	8	0
	PHOTOMETRIC	LAB	6	6	0
	PHOTOMETRIC	TECHNICAL	3	2.5	.5

* Administrative, Technical, Storage, Utility

3.5.1 Laboratory Facilities:

Common Support Function: **Air Vehicles, Fixed, Flight Subsystems; Air Vehicles, Rotary, Flight Subsystems.**

Major Facility or Equipment: 2200 sq ft Material Laboratory outfitted with sample preparation, testing, analysis and support equipment.

Type of Space:	**Technical**
Space Capacity:	**Current: 2200 sq ft**
	Used: 2200 sq ft
	Excess: None

Equipment Description	Replacement Costs
Sample Preparation - To reduce components into the proper size and condition to be further studied and analyzed.	$100K
Chemical Analysis - To obtain elemental chemical analysis of specimens.	$250K
Electron and Optical Microscopes - To view specimens under very high magnification. Used for examination of component fracture surfaces.	$175K
Physical Testing - To determine or alter physical attributes of specimens, such as hardness, impact resistance, metallurgical structure and wear properties, for example.	$500K
Image Analysis - To perform computer analysis of of attributes of images generated by microscopes.	$ 50K
Laboratory Furniture - Various benches, work surfaces, fume hoods, and other support items	$100K
TOTAL	$1,175K

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

a. Manufacturing Technology:

For BRAC 95 Data Call Number 4 we estimated our workforce will be 191 Workyears. Using our current proportions of shop/office staffing, this workforce should consist of 147 workers in direct shop labor operations and 44 workers in various other managerial administrative and support functions. Current A-11 Budgeting calls for a 65% productive ratio in FY97 and this was used for Data Call 4 computations.

Considering the nature of our operations (i.e., equipment maintenance, facility functions, etc.) the highest productive ratio achievable with type of work required by our current work orders is estimated to be 70%. If we received a higher proportion of metal fabrication and welding work, which are areas currently operating at less than full production capacity, our productive ratio could approach 80% with no additional personnel . NAWCADLKE has the capability to absorb additional Workyears in aircraft launch and recovery equipment and flight critical subsystem manufacturing, support equipment prototyping and limited production, and the capability to absorb all of the repair, overhaul, and modernization work for support equipment and aircraft launch and recovery equipment currently done at the Navy Depots (NADEPs).

Assuming additional Workyears which fall within the NAWCADLKE manufacturing areas which are operating at less than full capacity, we could absorb 29 similar Workyears with no additional personnel, equipment, or facility changes. This is based on a single shift operation and a productive ratio increase from 65% to 80% due to the improvement in work order matching to NAWCADLKE production capacity.

Assuming a single shift operation, no additional personnel, equipment, or facility changes, and assuming a 15% overtime factor, (i.e., each shop employee would work an <u>average</u> of 46 hours per week (some employees would work no overtime, others work more than 15%) for an increase of 22 available Workyears), our additional workload capability is 51 Workyears. This value of 51 Workyears is based on the 29 Workyear improvement from increased capacity utilization plus the 22 Workyear overtime factor.

Considering additional personnel associated with additional workyears and assuming single shift operations, the NAWCADLKE can absorb up to 150 additional Workyears of effort. At the peak of the military buildup in the 1980's NAWCADLKE manufacturing staffing was in excess of 320 people. Should approximately 100 additional workers be moved to the NAWCADLKE to support additional Workyear requirements, minor facility modification would be necessary. The minor modifications would include minor changes to existing buildings for additional workspace and for storage of assets awaiting repair or shipping. Previously available shop space has been converted for RDT&E laboratory facilities (i.e. the Electro-Magnetic Aircraft Launch proof of principle and demonstration hardware).

NAWCADLKE has the ability to operate in a three shift, 24-hour manufacturing operation. This capability dramatically increases our ability to absorb additional Workyears. When moving to a three shift operation, we estimated that we would need to triple our shop workforce while needing to only double the managerial and support staff requirement. Using the estimated 147/44 ratio for FY97, and assuming that 338 trained and capable workers are added to our staff, with an 80% productive ratio, we could absorb 336 Workyears.

Further, if we were given additional personnel, equipment, and workload, using a three shift operation we could absorb 669 Workyears. From the BRAC95 Data Call 4 results, given additional equipment, personnel, and workload, we could increase production in our primary commodity hours to 1,388,457 DLMH. Using 1,750 hours per year as the actual productive time (this deducts sick leave, annual leave, etc.), this would be a total of 793 Workyears. Deducting the assumed baseline FY97 Workload of 124 Workyears, we can increase by 669 Workyears.

The NAWCADLKE Manufacturing Technology Department has the ability to contract additional work. We have been contracting out selected manufacturing work for many years. Through the years, we have developed relationships with a cadre of local suppliers (i.e., machine shops, plating contractors, etc) through the effective use of rapid farmout contracting techniques. We have skilled personnel who are currently performing pre-award surveys, contractor audits, producibility analyses and data package development/validation. In addition, our staff includes Contracting Officer Technical Representatives.

b. Materials Laboratory:

1.5 to 2.0 workyears with the existing facility.

For additional workyears, equipment and the expansion of the facility is required.

c. Spotting Room:

The existing facility can support up to 6 additional workyears of similar work.

d. Photometric Facility:

The facility is currently operating at less than full capacity with its current requirements which are based only in Navy programs. The Federal Aviation Administration funds laboratory measurements and associated field measurements with portable equipment. The existing facility could support an additional 4 workyears with only a single shift operation. Assuming either overtime and/or a second shift, the existing facility could assume an additional 6 workyears.

Minor facility modification would expand capacity up to an additional 15 workyears of photometric and radiometric measurements for electro-optic systems and devices.

e. ATE Software Facility:

NAWCADLKE has the capacity to assume similar workyears in various engineering and technical areas. In the engineering area, Automatic Test Equipment support such as development of application Test Program Sets (TPS) for various Units Under Test and the establishment of a Test Integration Facility (TIF) can be accomplished at Lakehurst with minor facility modification.

As the Cognizant Field Activity for Common ATE and CASS system software, NAWCADLKE, maintains an existing facility with the same hardware and software assets required for TPS development. These assets include one Hybrid CASS station, three off-line support mid range computer systems, multiple workstations and the software needed to station and system operations and control. For TPS development, additional CASS stations would be required but the support computer systems have enough capacity to handle the added work efforts. Should more CASS hardware be acquired for the TPS efforts, NAWCADLKE can easily establish itself as a TIF and allow multiple TPS developers to share the CASS resources. This is attainable due to the similarities in managing the ATE Software Center at NAWCADLKE and a TIF operation. There is also the fact that with current computer systems requiring less space and environmental controls, that of the current 7,500 (approximate) square feet at the ATE Center for the equipment at hand, there is approximately 2,500 feet available to house 7 to 8 additional CASS stations. With these modifications, up to 60 workyears of similar work can be accomplished at NAWCADLKE.

f. Product Evaluation and Verification:

The Product Evaluation and Verification Function can absorb additional workload in three areas:

1) Jet Car Track Site: 6 workyears
2) Jet Blast Deflector Site: 1 workyear
3) Metrology and Calibration Laboratory: 2 workyears

This estimate is based on the productive ratio for the department and utilization of selected sites and laboratories.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Given No Additional Personnel: 51 Workyears*
Given Additional Personnel (336 Workers): 336 Workyears
Given Additional Personnel and Equipment: 669 Workyears**
(Calculations explained in 3.5.1.1.a)

***Part of this additional workload capacity is based on the assumption that the additional workload received corresponds to work areas which are currently operating at less than full capacity. In addition, use of a moderate amount of overtime was assumed.**

****A two year ramp up to this work level is assumed based on a two year lead time to procure and install the additional equipment, bring on additional staff, increase raw material stocks, etc.**

The Landing Guidance Development Facility planned FY97 workload is 1.75 workyears which is 35% of its estimated total capacity of 5 workyears. Consequently, an additional 3.25 workyears could be supported by this facility.

The Product Evaluation and Verification Department can absorb additional workload in three areas. We can absorb six workyears at the Jet Car Track Site, one workyear at the Jet Blast Deflector Site, and two workyears in the Metrology and Calibration Laboratory.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 **Land Use:** Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II).

638 areas.

3.5.3 **Utilities:** Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

Electrical Supply: Present peak demand is 7,350 KiloWatts (KW) with a normal steady state of 6,200 KW. Electrical feeds on the base can support up to 26,500 KW. Jersey Central Power and Light (JCP&L) can supply up to 30,000 KW without modifying their transmission lines.

Natural Gas: Present peak demand is 9,921 CFH with a steady state load of 3,962 CFH. New Jersey Natural Gas can supply up to 2,500,000 CFH.

Sewage: Present peak demand is 860,000 GPD with a normal steady state load is 191,000 GPD. On base pumping capacity is 1,152,000 GPD. The Ocean County Utilities Authority can handle up the 1,500,000 without modification of their current system.

Potable Water: Present peak demand is 495,700 GPD with a steady state load of 343,536. Water is supplied by wells and the current pumping capacity for the base is 864,000 GPD. Usage beyond that would require additional wells.

Steam: Present peak demand is 146,500 lbm/Hr at 125 psi. The normal steady state load is 64,000 lbm/Hr. On base capacity is 186,000 lbm/Hr. Additional steam demand beyond that would require expanding the boiler plant and installing new boilers. However, the base is in the process of converting from a central steam heating plant to individual heating boilers (No. 2 fuel oil, propane, and natural gas).

SECTION IV: APPENDICES:

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A

APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA
9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Monmouth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ

15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD
18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division
16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS (DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems
   - Rotary
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

Pervasive Functions

1. Electronic Devices
2. Environmental Sciences
3. Infectious Diseases
4. Human Systems
5. Manpower and Personnel
6. Training Systems
7. Environmental Quality
8. Advanced Materials

DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. **Air Vehicles.** Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. **Weapons.** Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. **Space**. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. **C4I**. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

Pervasive Functions (6.1, 6.2, and 6.3)

1. **Electronic Devices.** Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. **Environmental Sciences.** Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. **Infectious Diseases.** Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. **Human Systems.** Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

5. **Manpower and Personnel.** Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. **Training Systems.** Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. **Environmental Quality.** Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. **Advanced Materials.** Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical,

and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

DATA CALL 12 REVISION 2
BRAC-95 CERTIFICATION

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

WILLIAM E. NEWMAN
NAME (Please type or print)

W E Newman
Signature

COMMANDER
Title

8/18/94
Date

NAVAL AIR WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

WILLIAM C. BOWES
NAME (Please type or print)

W. Bowes
Signature

COMMANDER
Title

19AUG94
Date

NAVAL AIR SYSTEMS COMMMAND
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

W Earner
Signature

Title

8/26/94
Date

DATA CALL 12 REVISION 2
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 8 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

RAYMOND A. DUDDERAR
NAME (Please type or print)

R A Dudderar
Signature

ACTING COMMANDER
Title

8/15/94
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION LAKEHURST
Activity

Enclosure (1)

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION
PATUXENT RIVER, MARYLAND 20670-5304

5400
Ser AD07/1066
AUG 15 1994

From: Commander, Naval Air Warfare Center Aircraft Division, Patuxent River, MD 20670-5304
To: Commander, Naval Air Warfare Center, 1421 Jefferson Davis Highway, Arlington, VA 22243-6000

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period from 0900, 15 August 1994 until 1800, 17 August 1994, I will be on temporary additional duty.

2. Captain Raymond A. Dudderar, USN, will be Acting Commander. In my absence, he is authorized to release the completed Base Realignment and Closure Data Call, and provide the certification for the data call.

3. My point of contact at Division Headquarters is Mr. Stuart B. Simon, Code AD07. He can be reached at commercial (301) 826-1122 or DSN 326-1122.

Barton D. Strong
BARTON D. STRONG

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CONAWCTSD Orlando
COMNAWCAD Patuxent River
NAWCAD Patuxent River (CT00)
NAWCAD Indianapolis (Code 01)
NAVAIRENGSTA Lakehurst (Code 71)
NAWCAD Warminster (Code 01A1)
NAWCAD Trenton (Code 07B)
NAWCTSD Orlando (Code 503)
CONAS, Patuxent River

Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

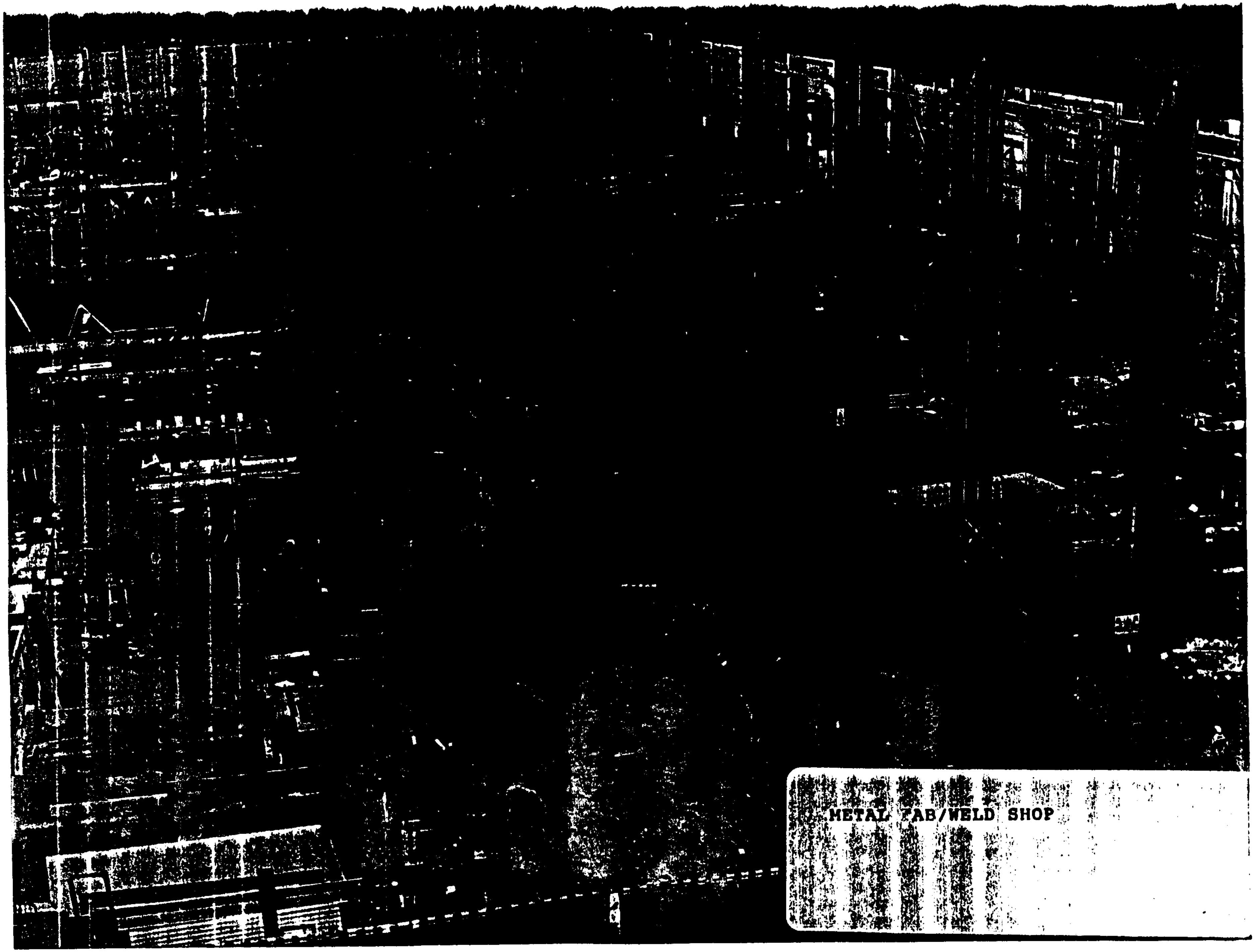
"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

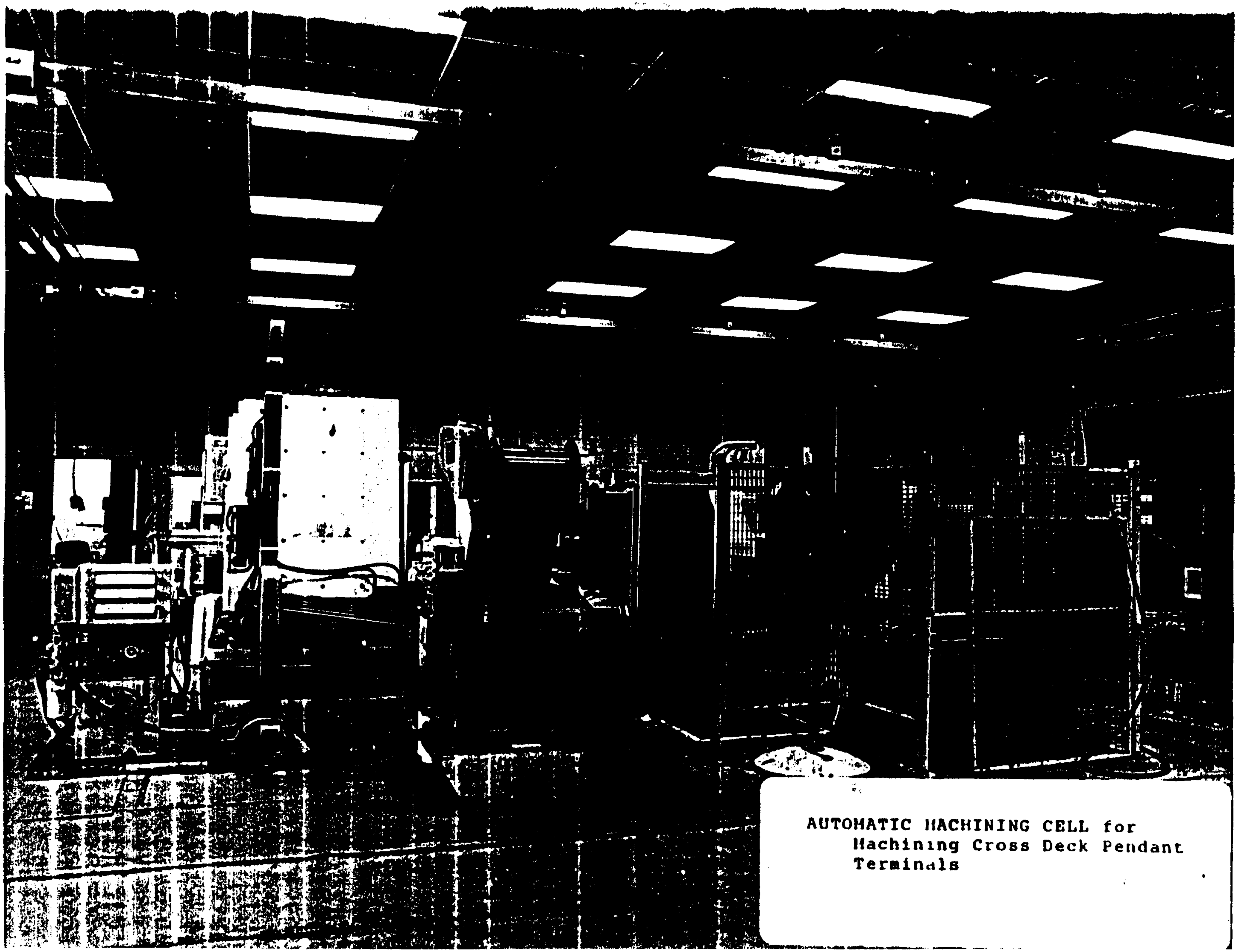
"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

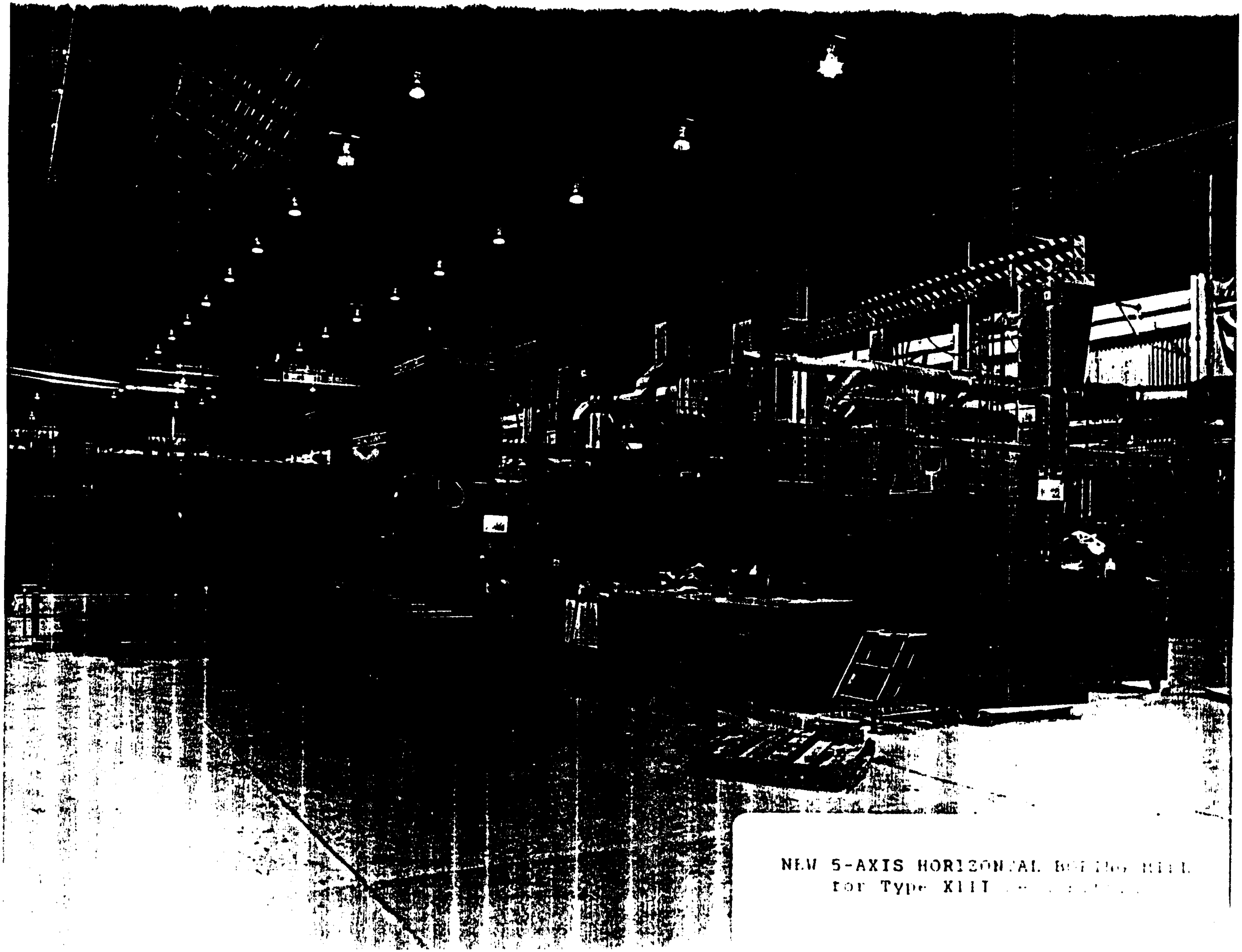
The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.


METAL FAB/WELD SHOP

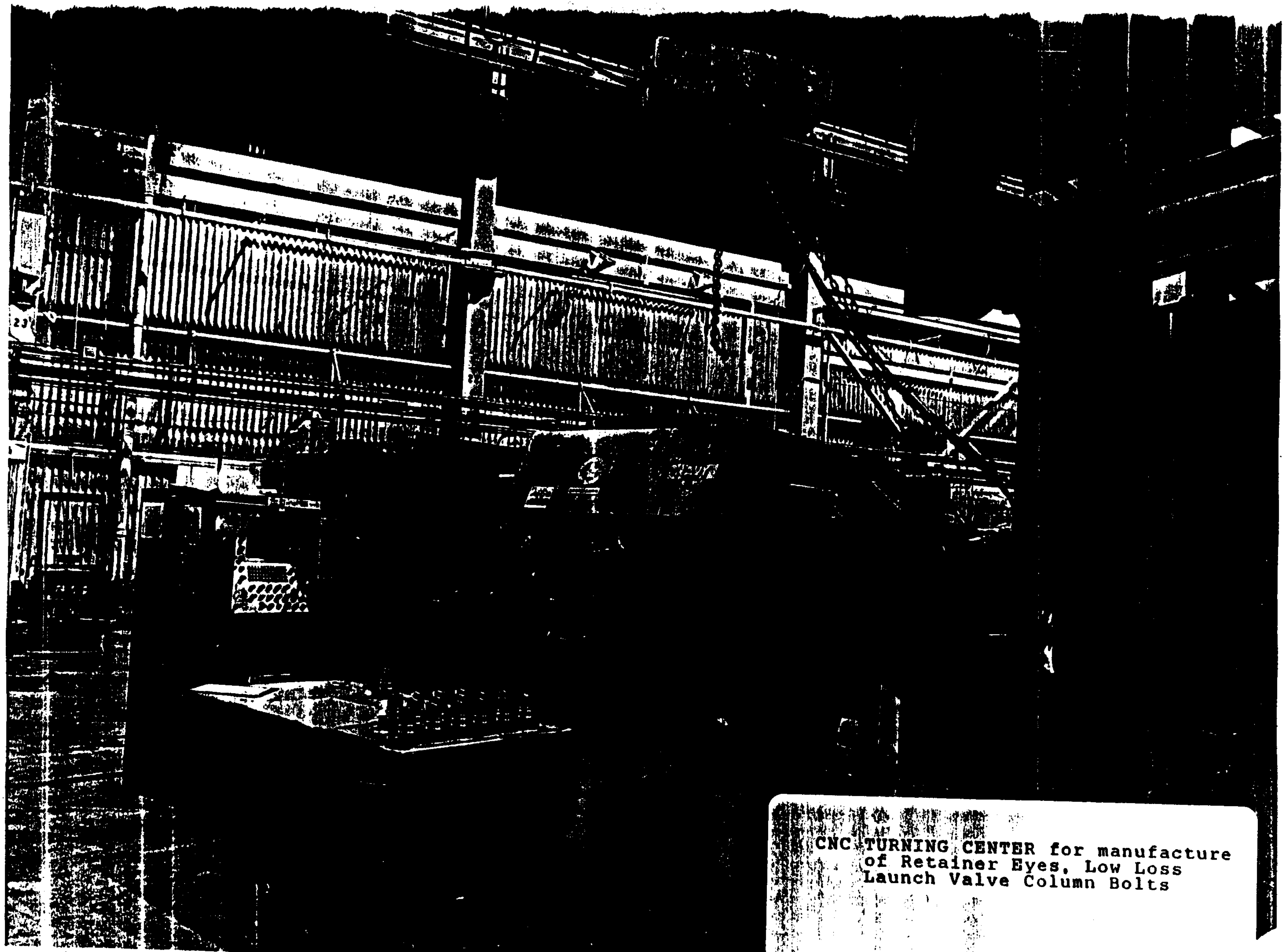
Electrical Assembly in progress



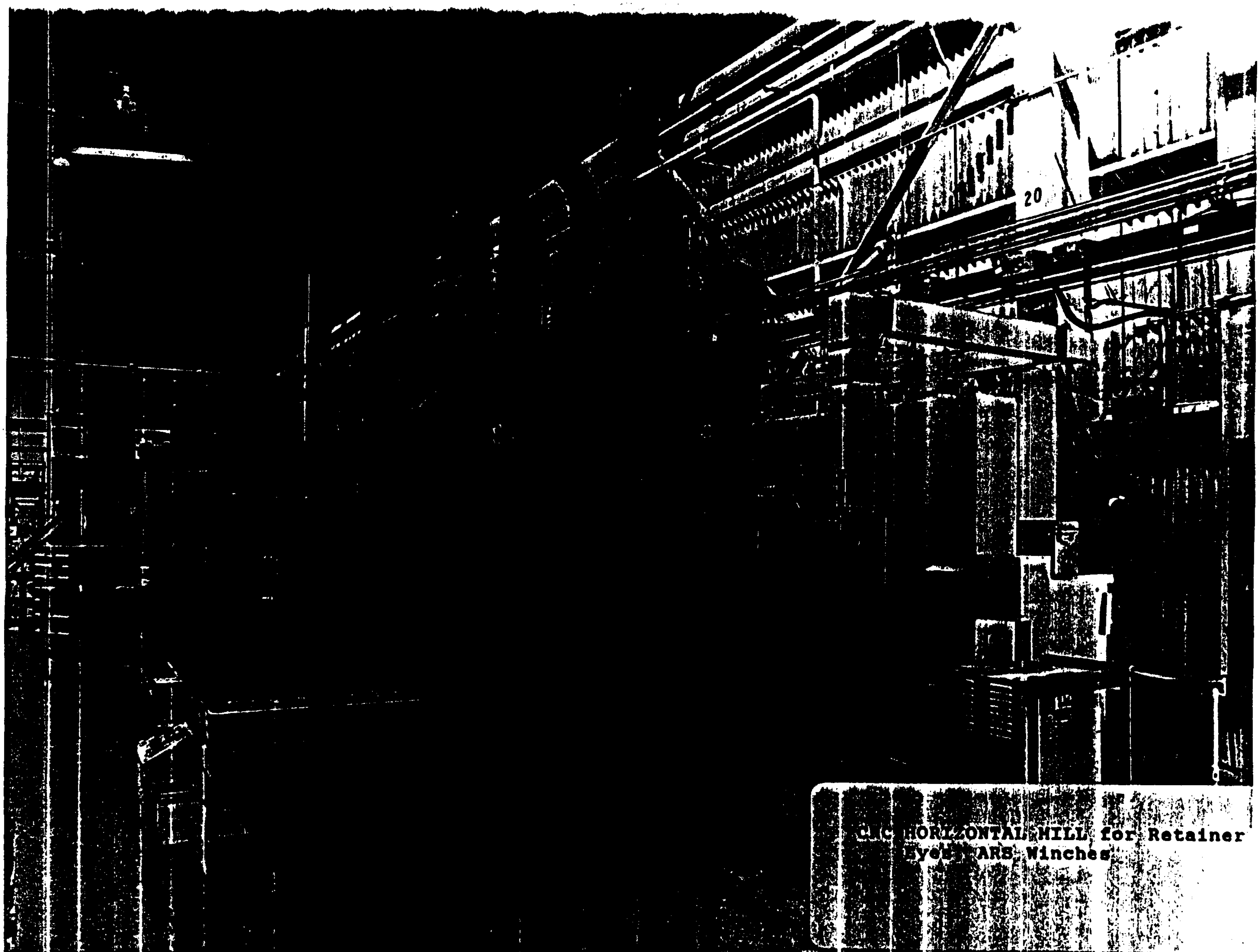
AUTOMATIC MACHINING CELL for
Machining Cross Deck Pendant
Terminals



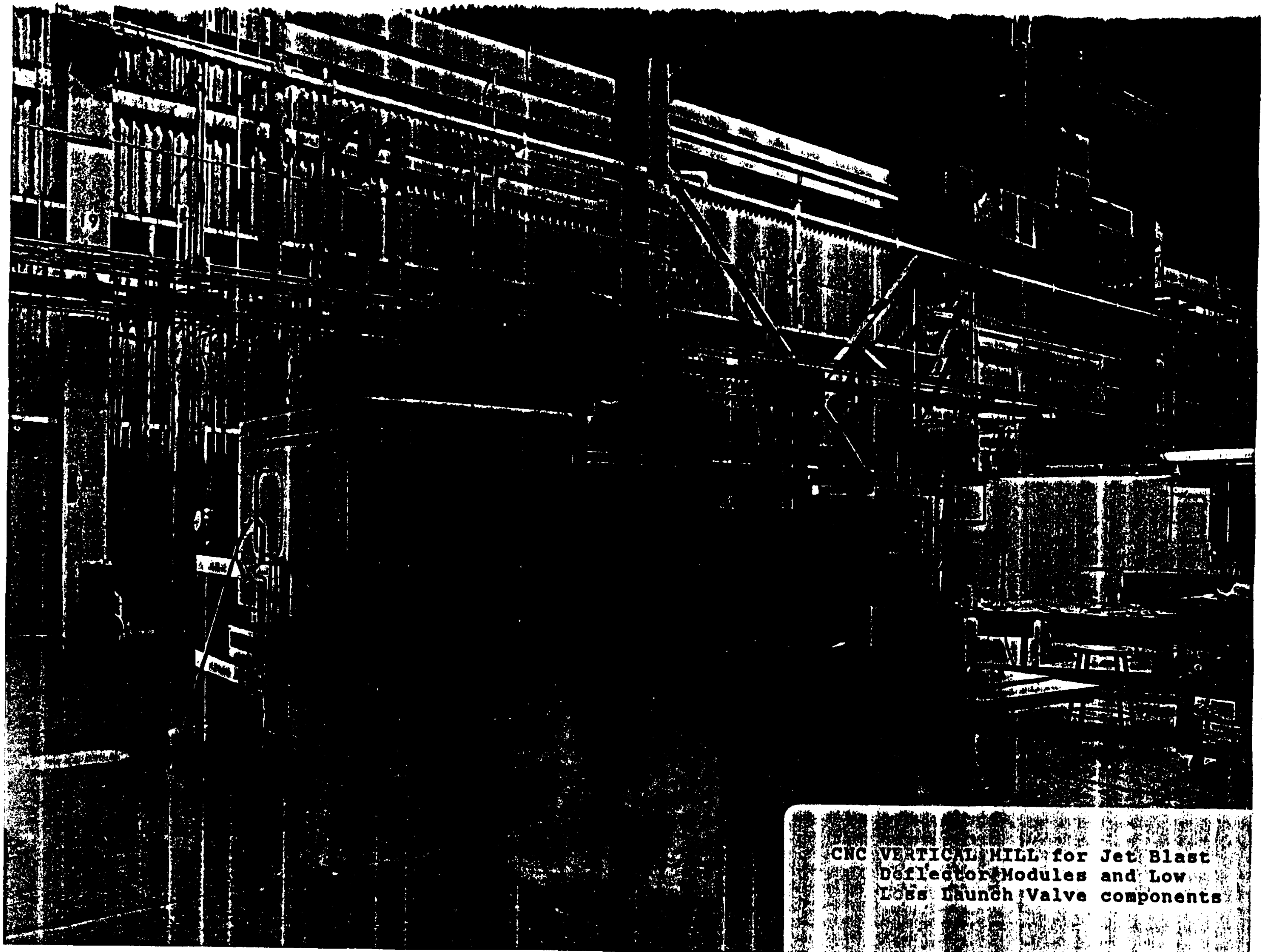
NEW 5-AXIS HORIZONTAL BORING MILL
for Type XIII



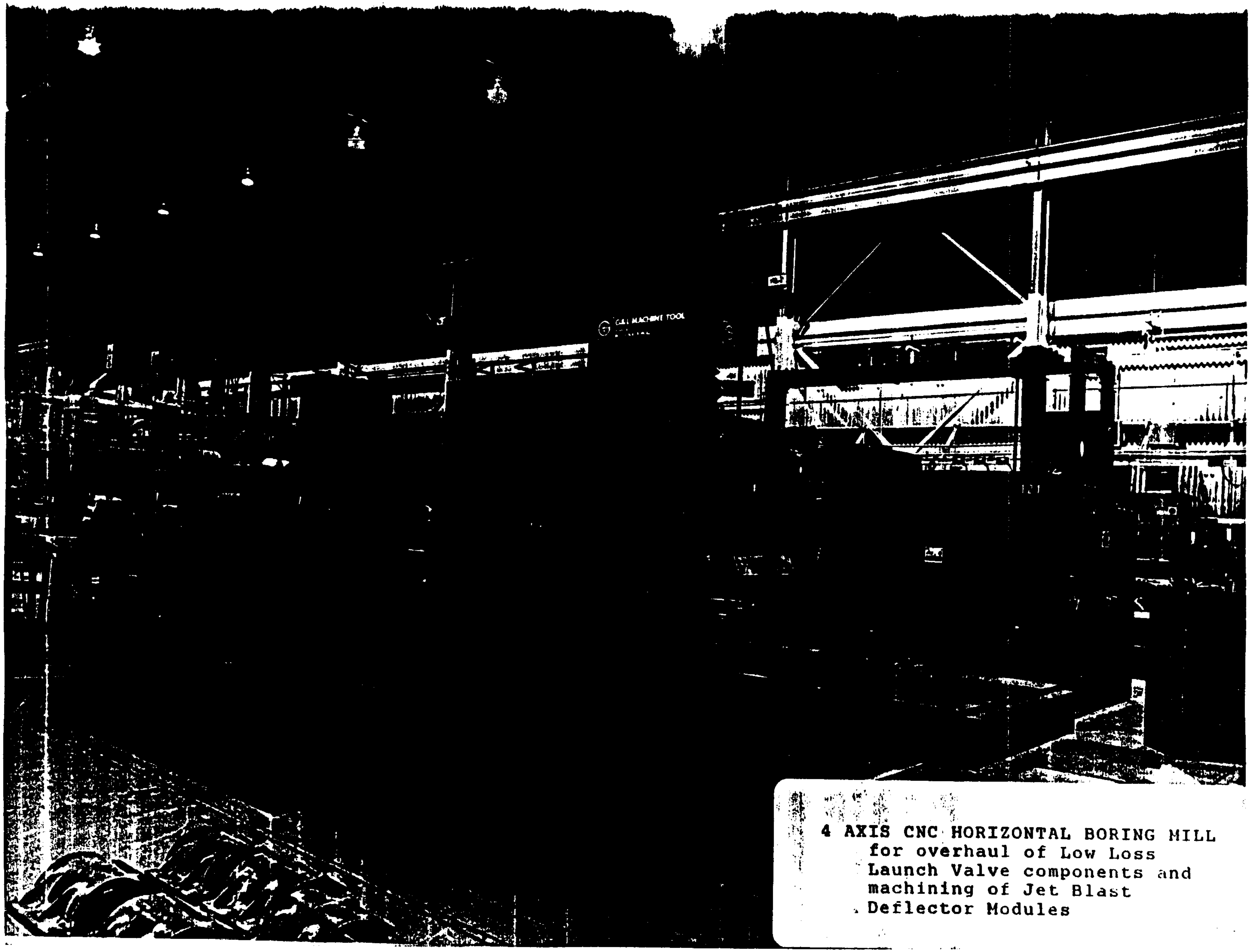
CNC TURNING CENTER for manufacture of Retainer Eyes, Low Loss Launch Valve Column Bolts



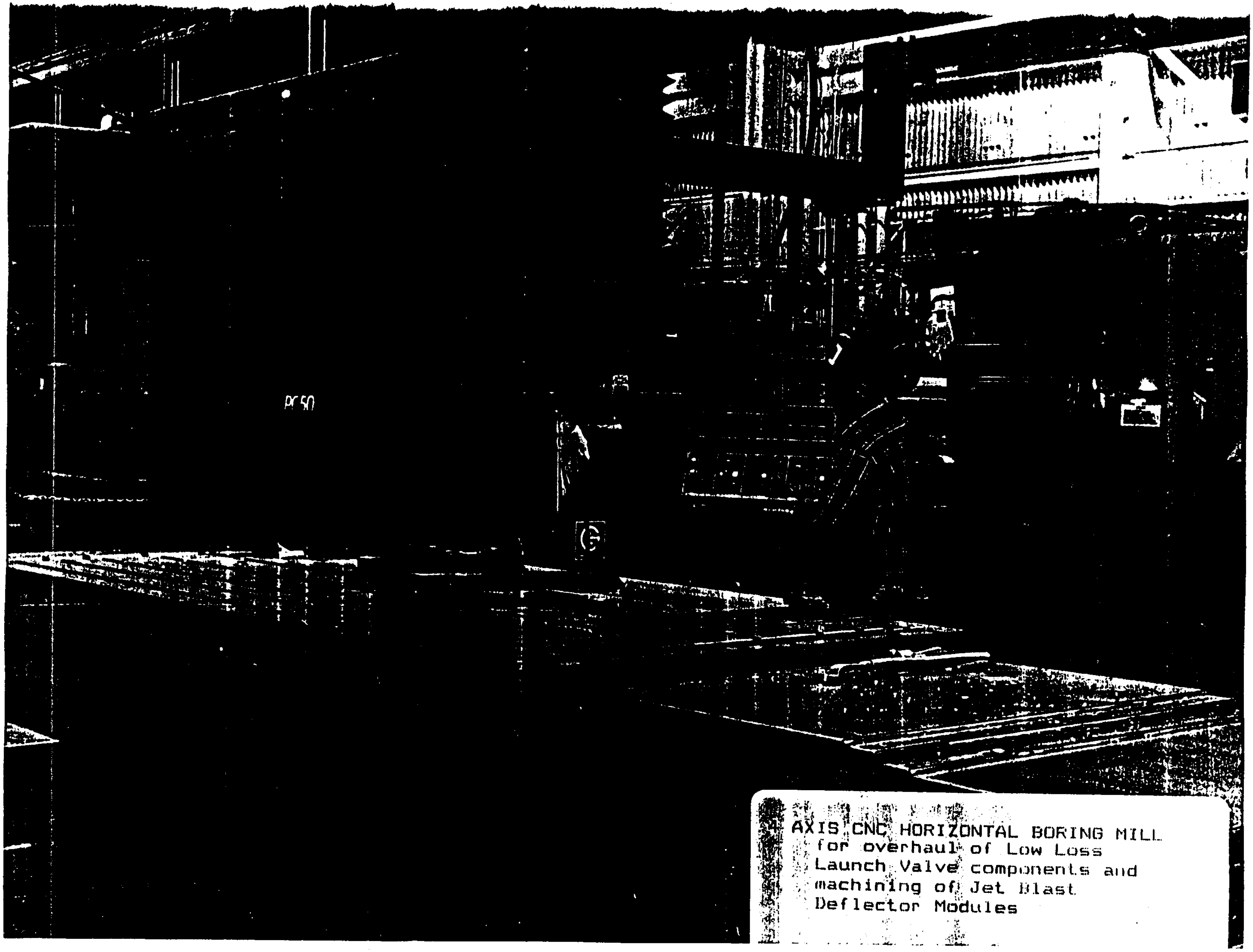
C.C HORIZONTAL MILL for Retainer Eyes, ARS Winches



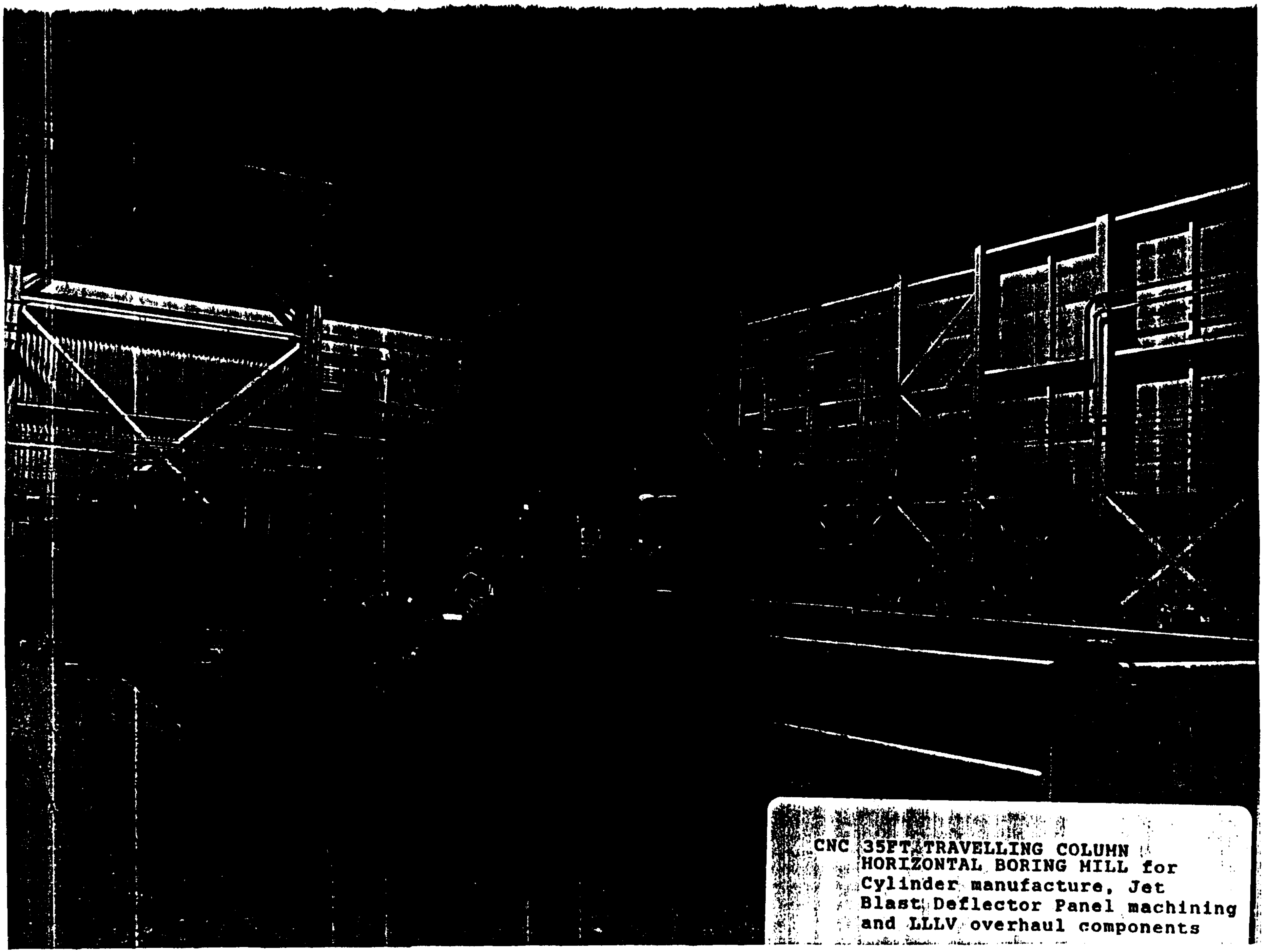
CNC VERTICAL MILL for Jet Blast Deflector Modules and Low Loss Launch Valve components

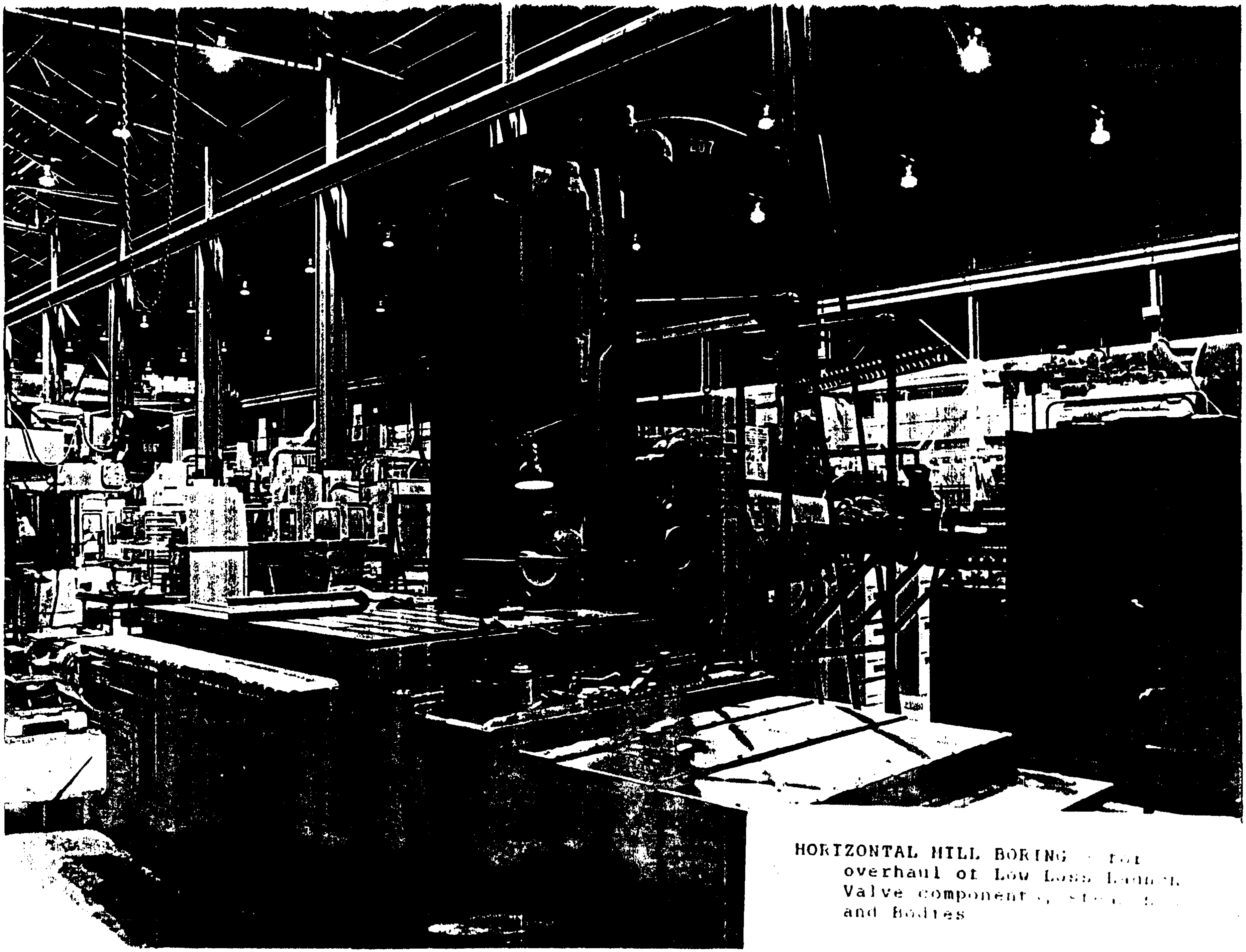


4 AXIS CNC HORIZONTAL BORING MILL for overhaul of Low Loss Launch Valve components and machining of Jet Blast Deflector Modules

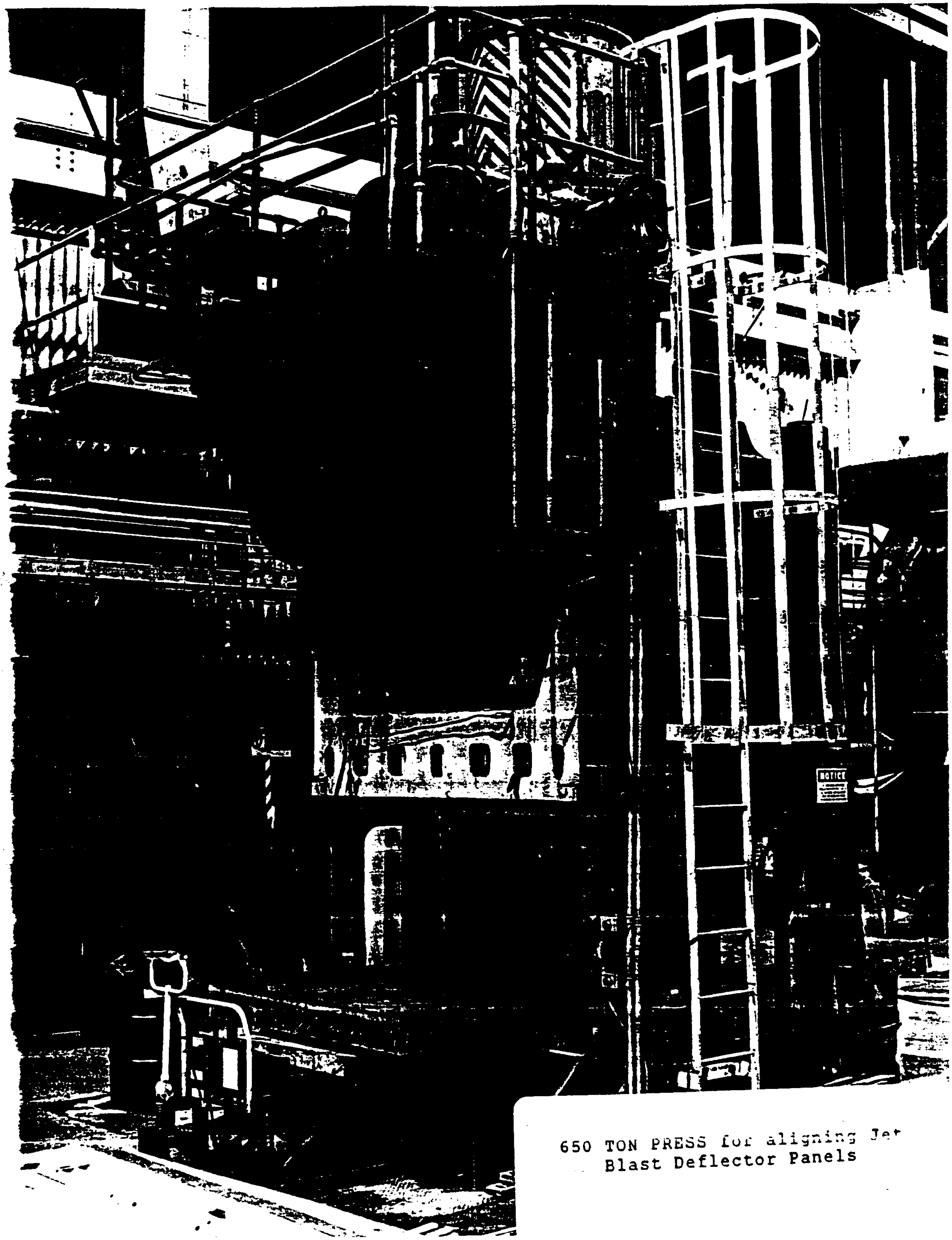


4 AXIS CNC HORIZONTAL BORING MILL for overhaul of Low Loss Launch Valve components and machining of Jet Blast Deflector Modules

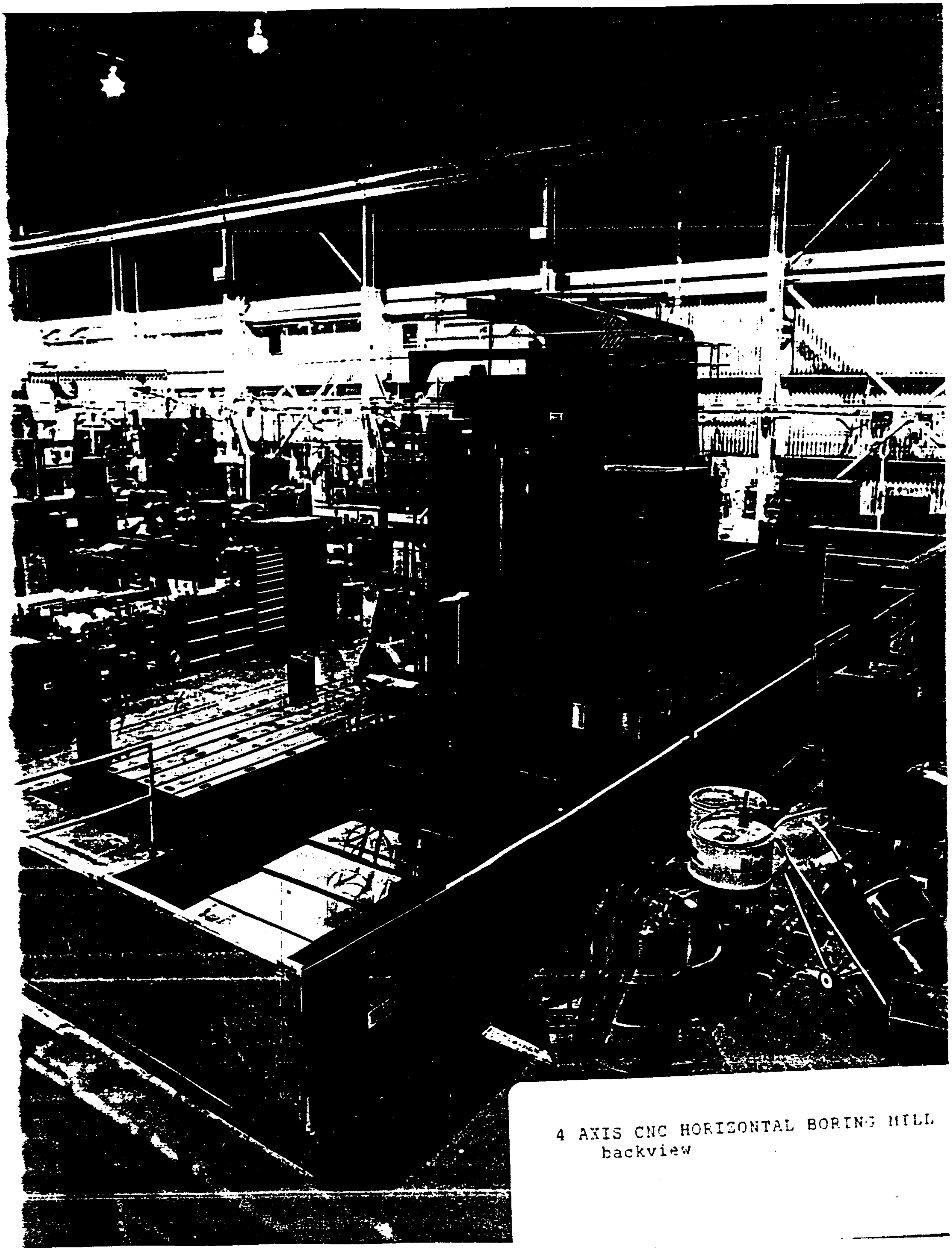

CNC 35FT TRAVELLING COLUHN
HORIZONTAL BORING HILL for
Cylinder manufacture, Jet
Blast Deflector Panel machining
and LLLV overhaul components



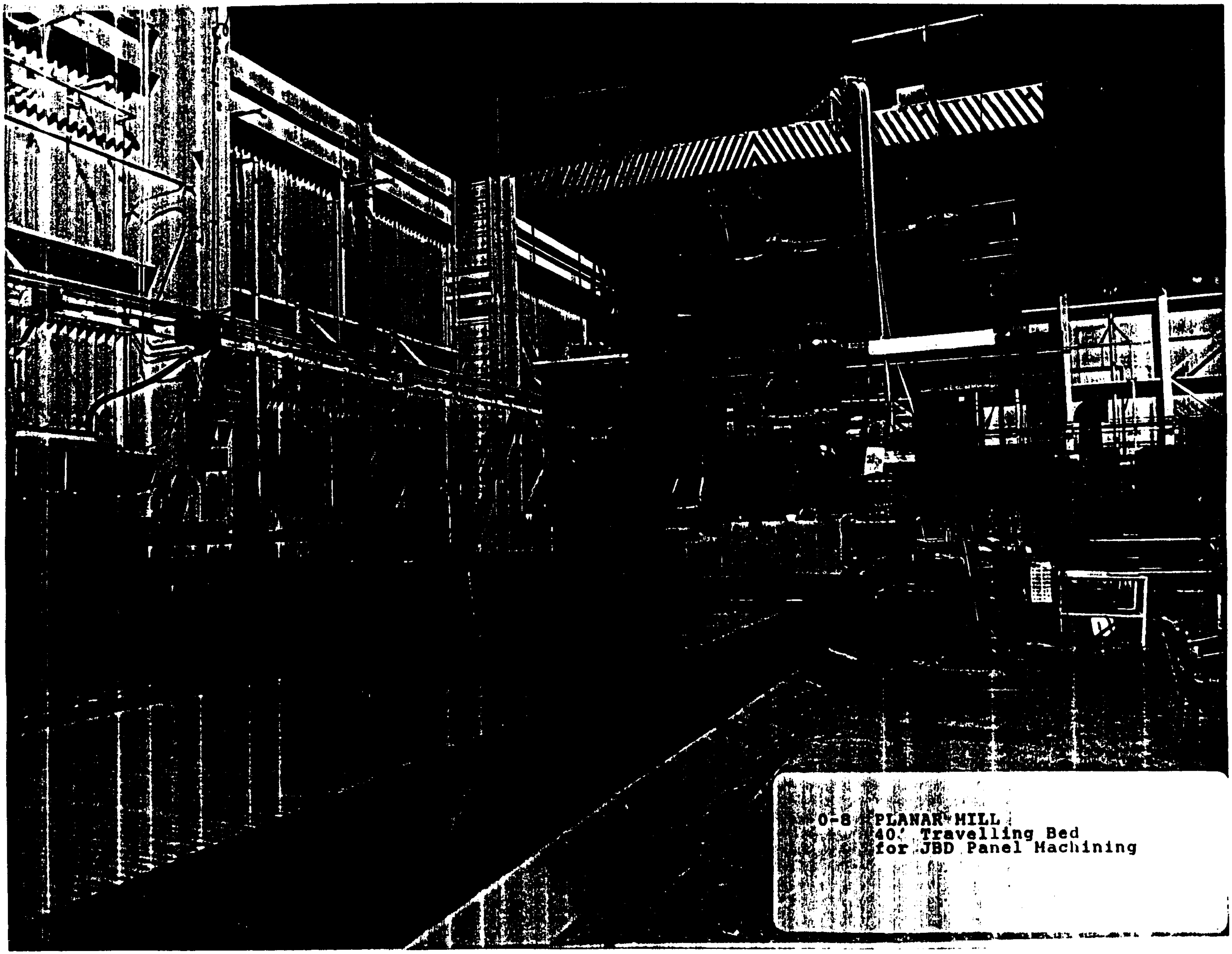
HORIZONTAL MILL BORING - for overhaul of Low Loss [illegible] Valve component[illegible] and Bodies



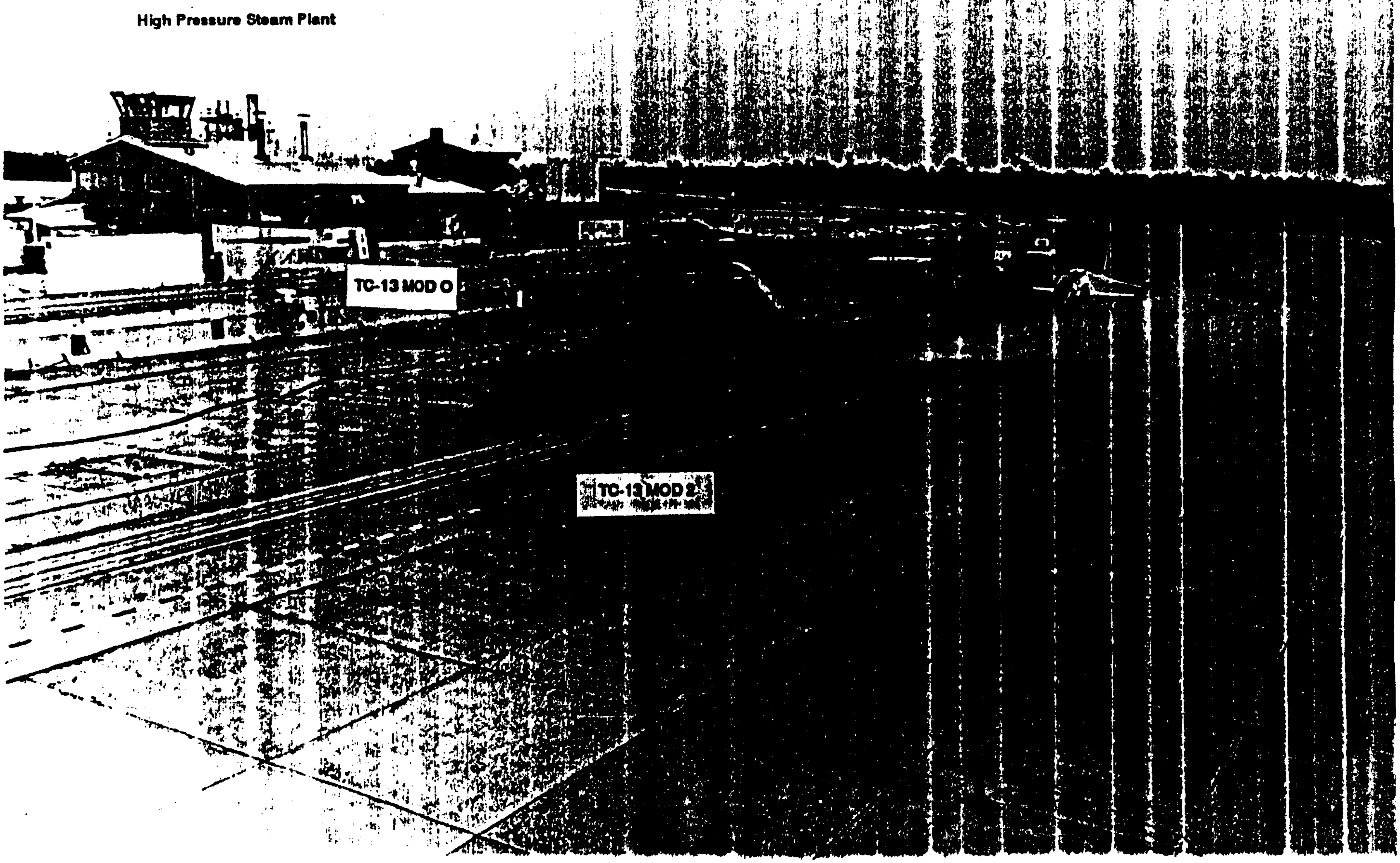
650 TON PRESS for aligning Jet Blast Deflector Panels

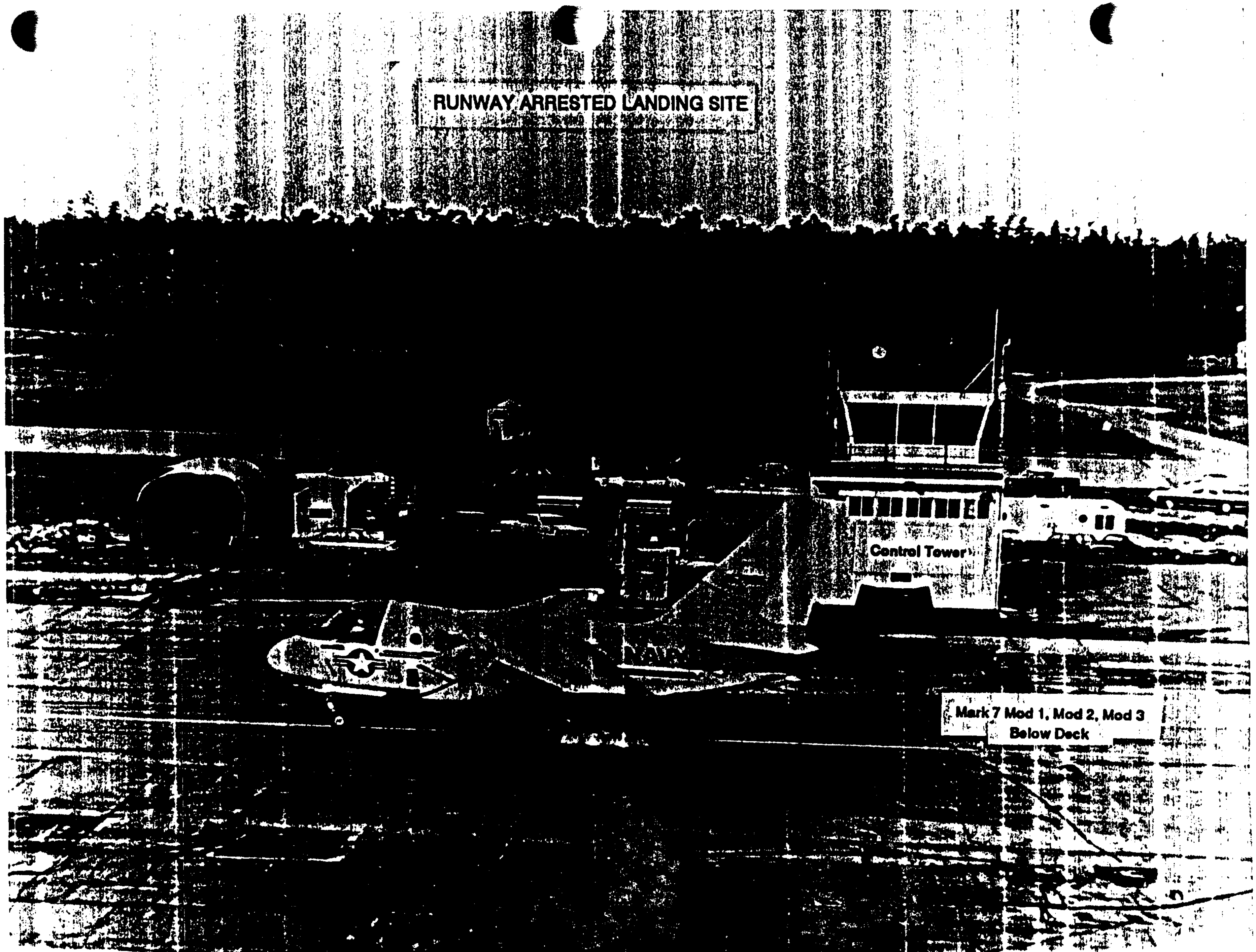


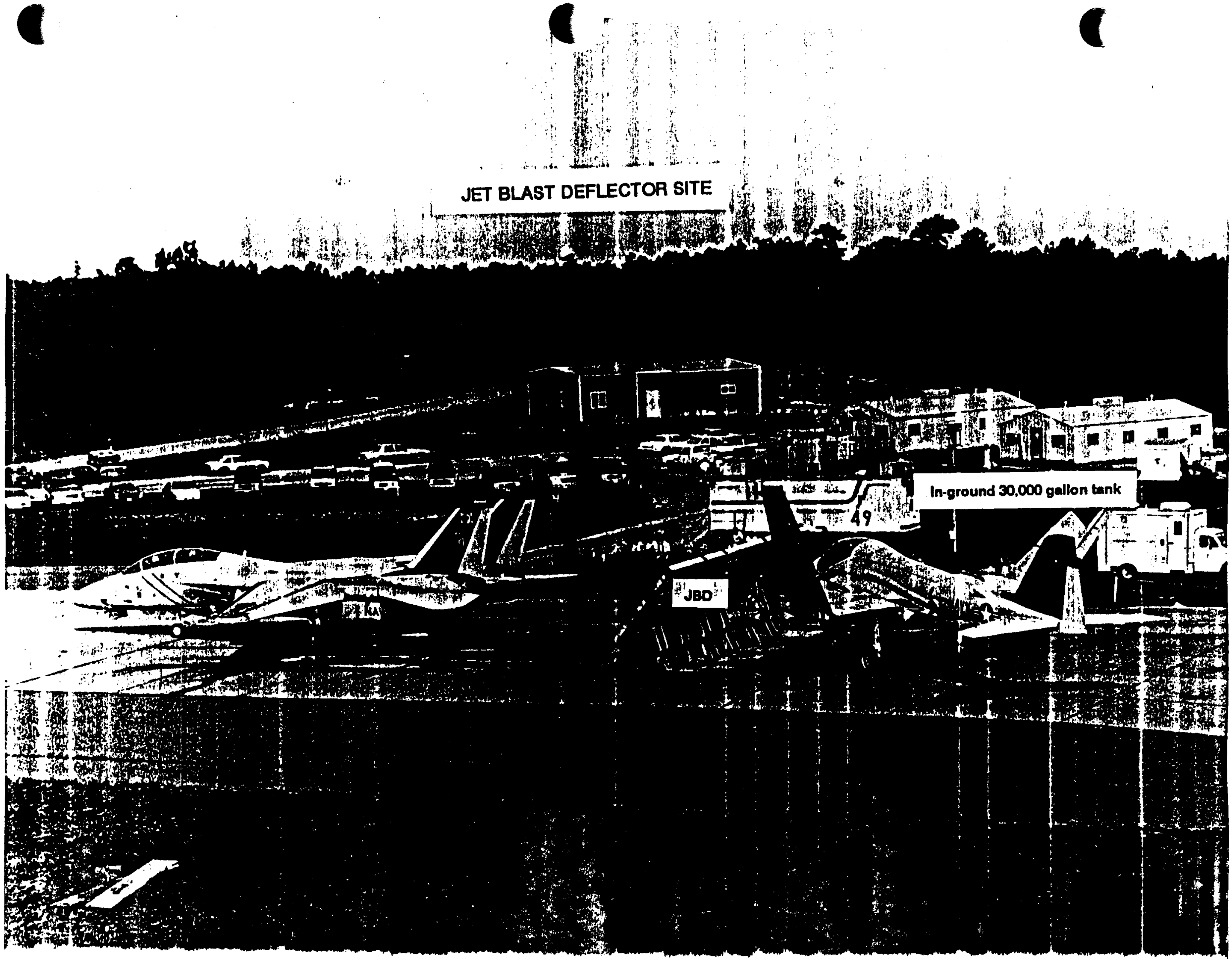
4 AXIS CNC HORIZONTAL BORING MILL
backview


O-8 PLANAR MILL
40' Travelling Bed
for JBD Panel Machining

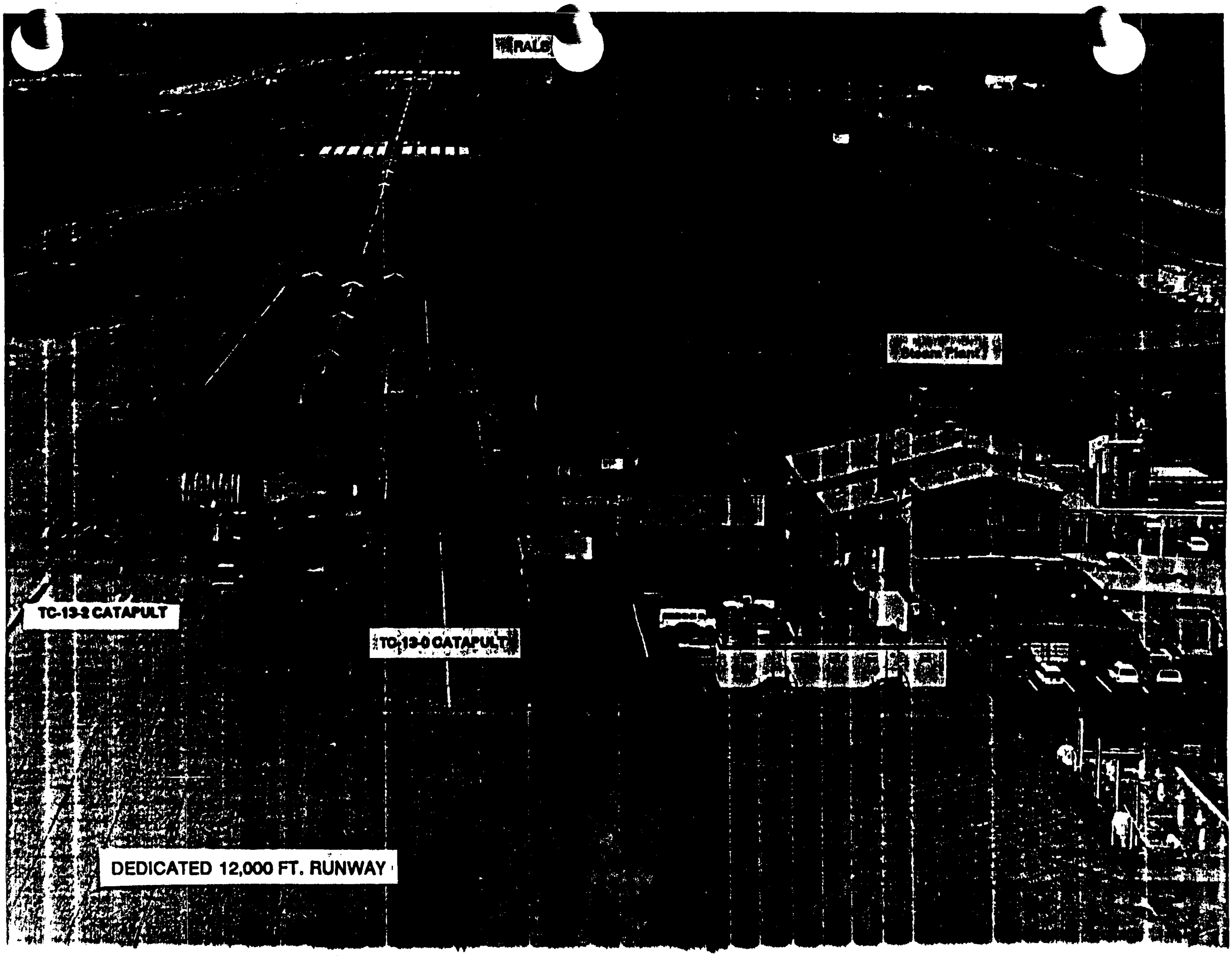
STEAM CATAPULT COMPLEX

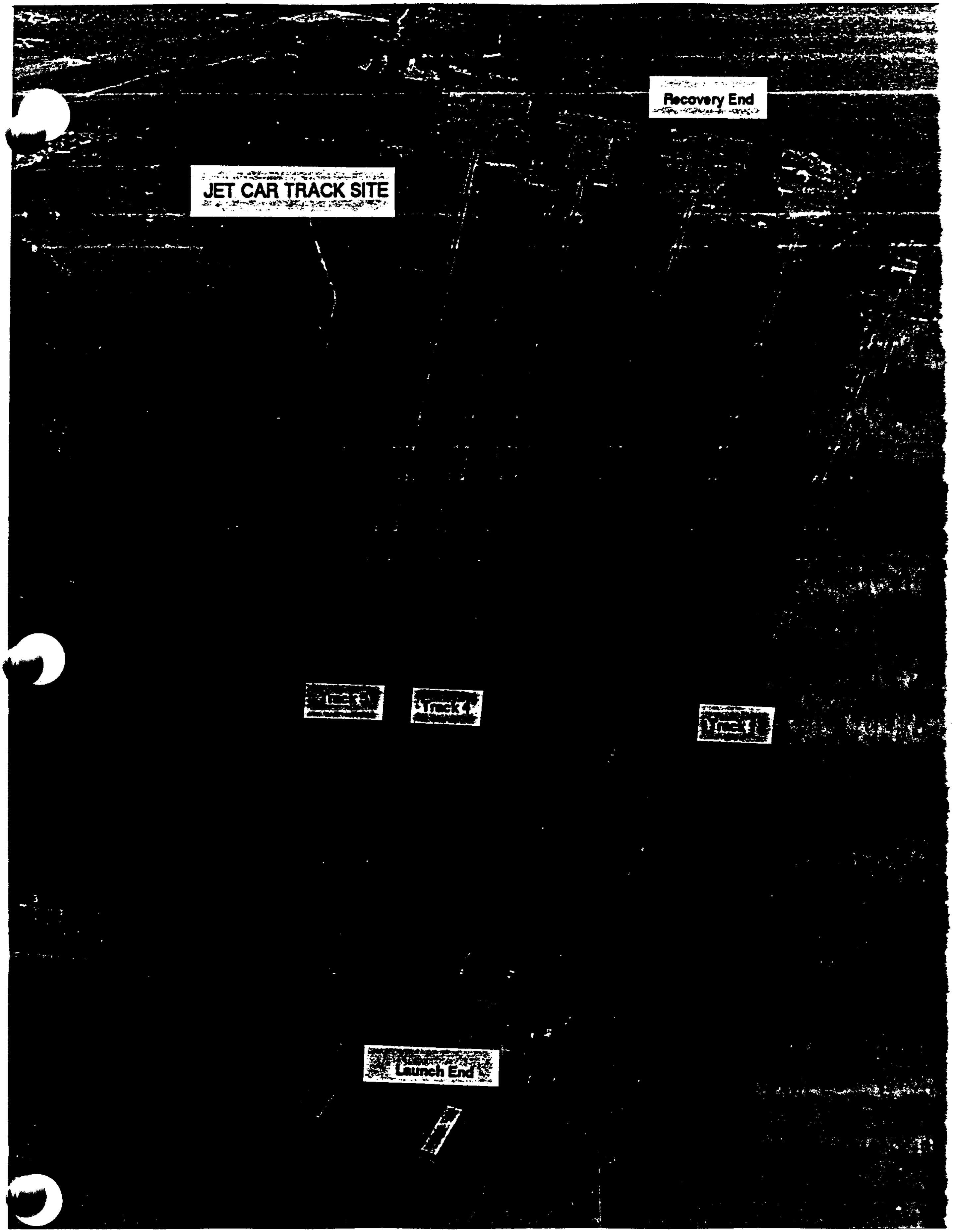


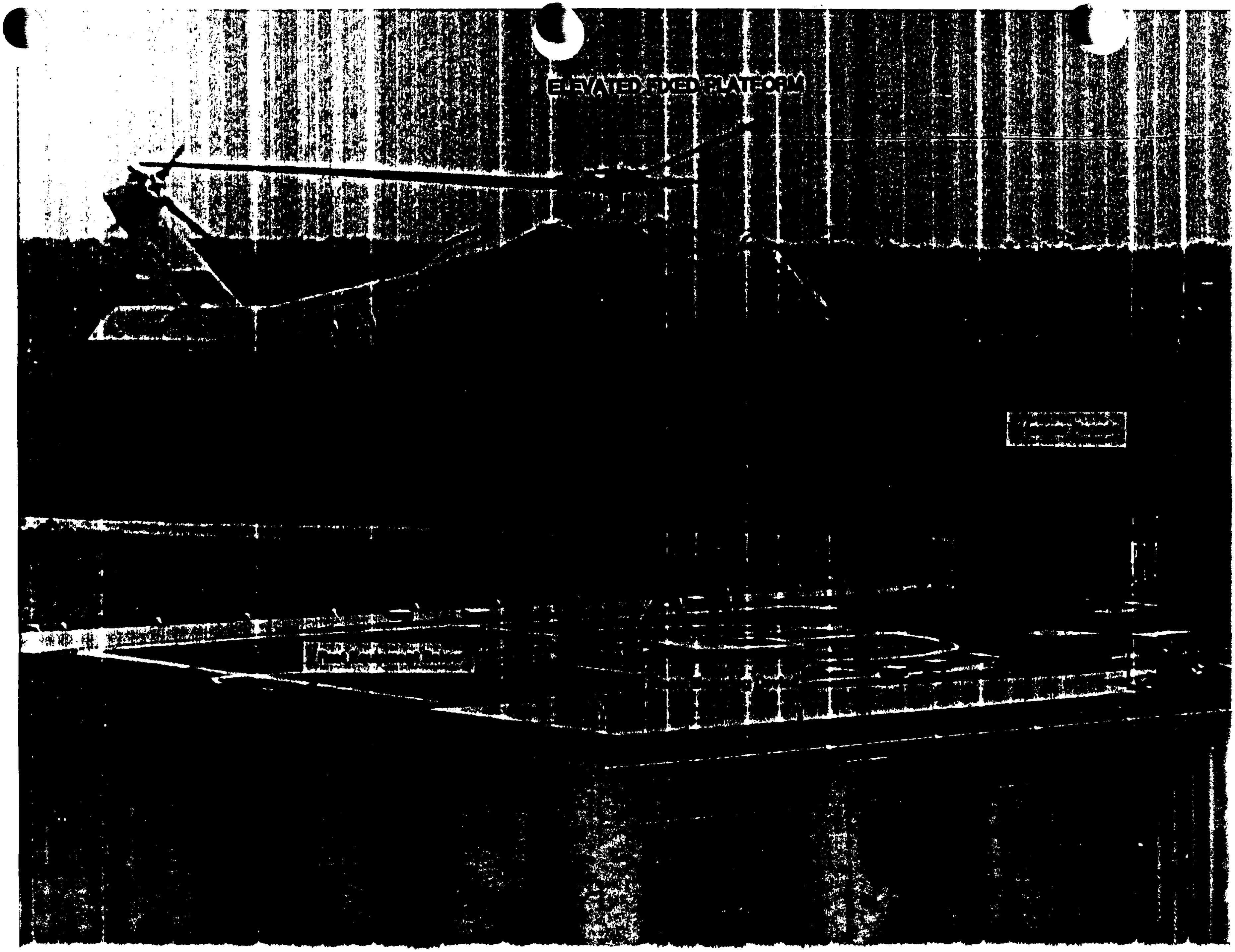

RUNWAY ARRESTED LANDING SITE
Control Tower
Mark 7 Mod 1, Mod 2, Mod 3
Below Deck

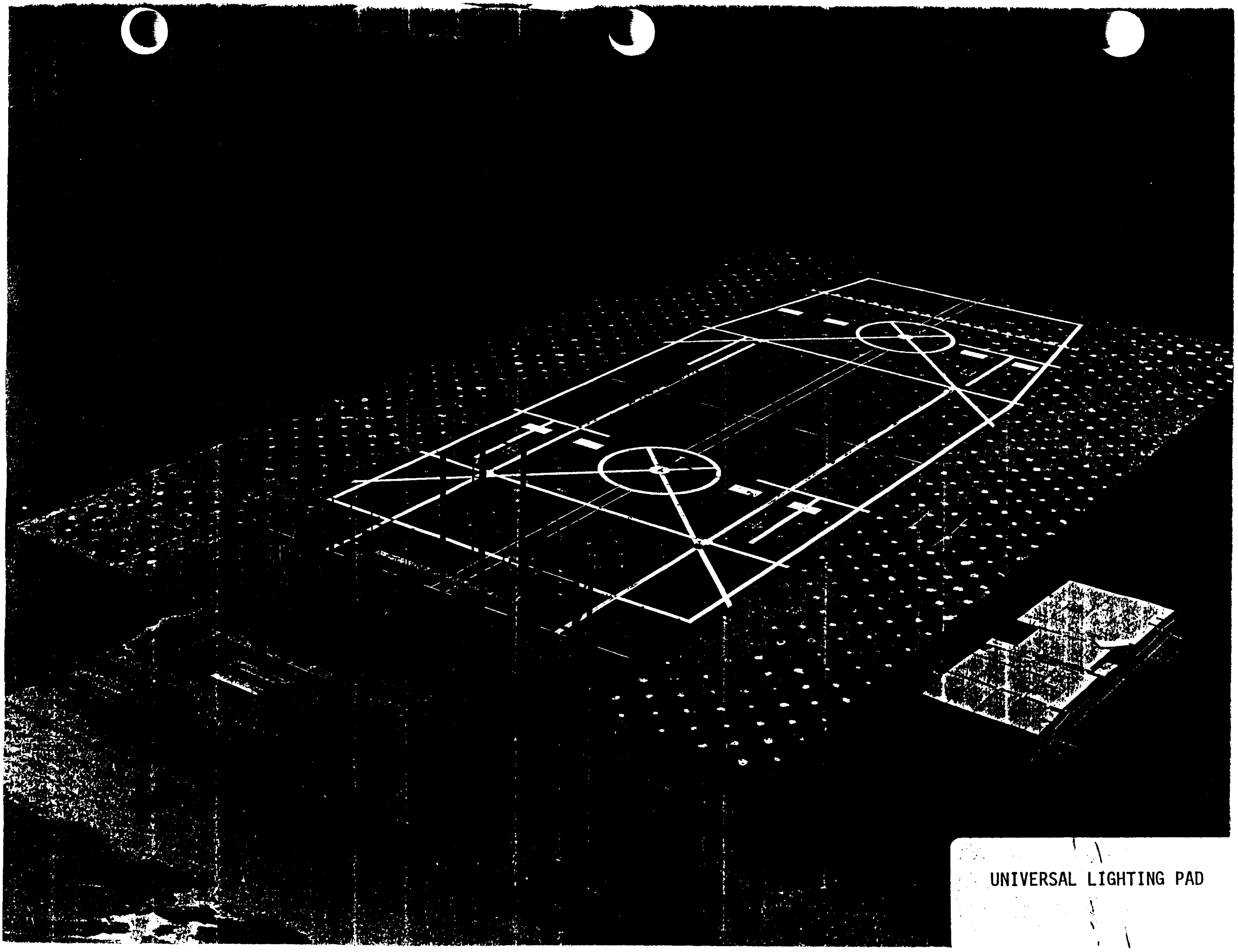


JET BLAST DEFLECTOR SITE
In-ground 30,000 gallon tank
JBD

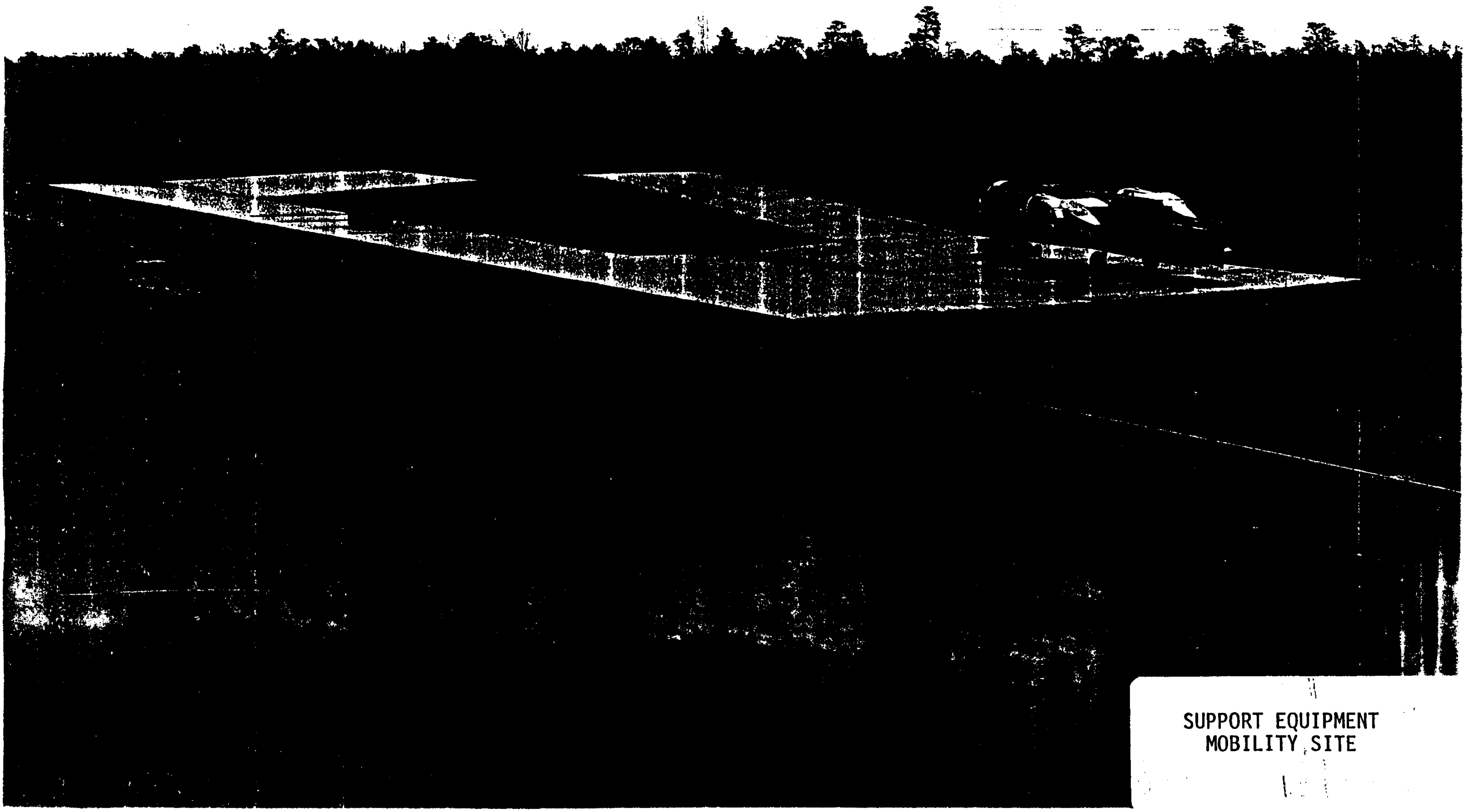

RALS
TC-13-2 CATAPULT
TC-13-0 CATAPULT
DEDICATED 12,000 FT. RUNWAY


Recovery End
JET CAR TRACK SITE
Launch End

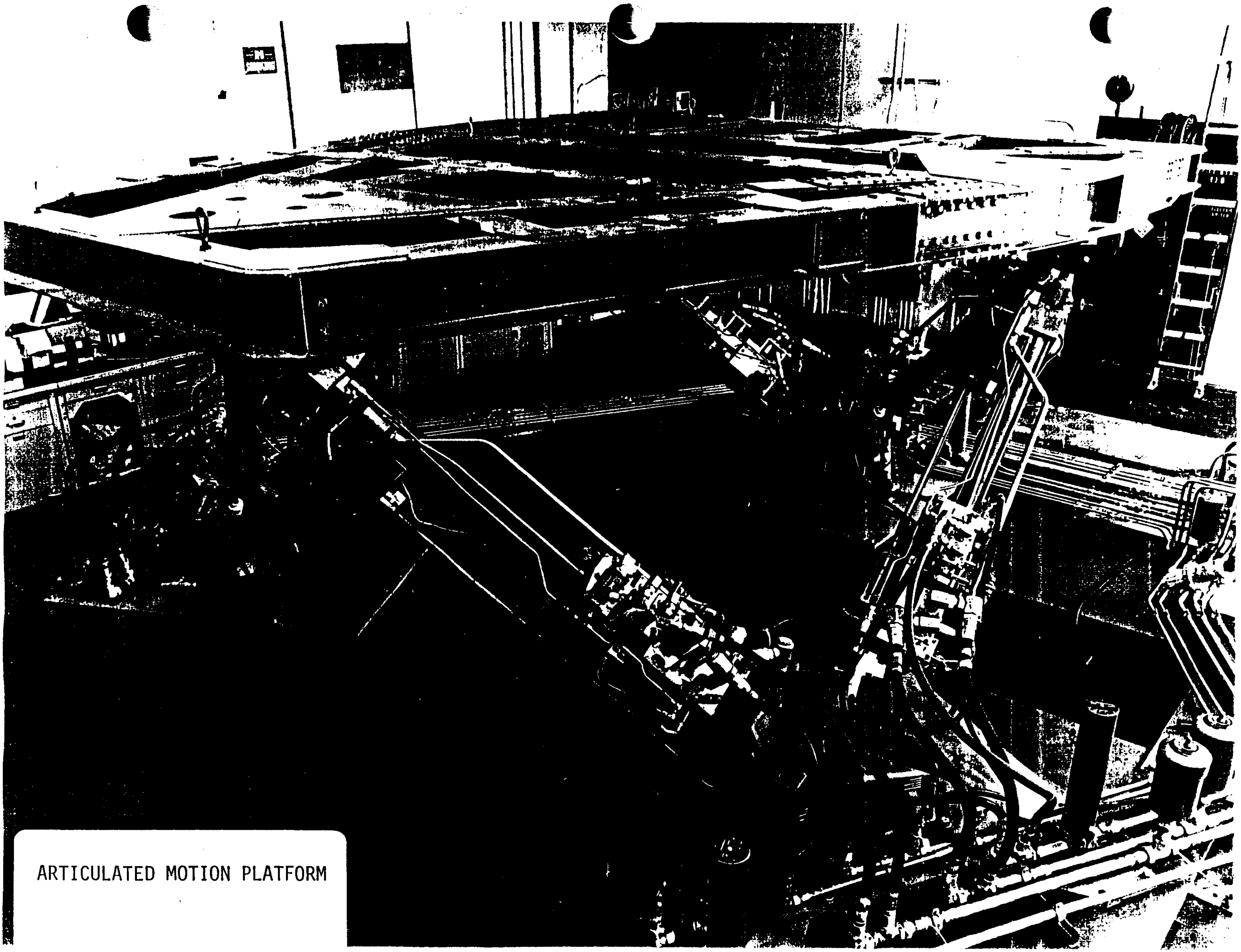

ELEVATED FIXED PLATFORM



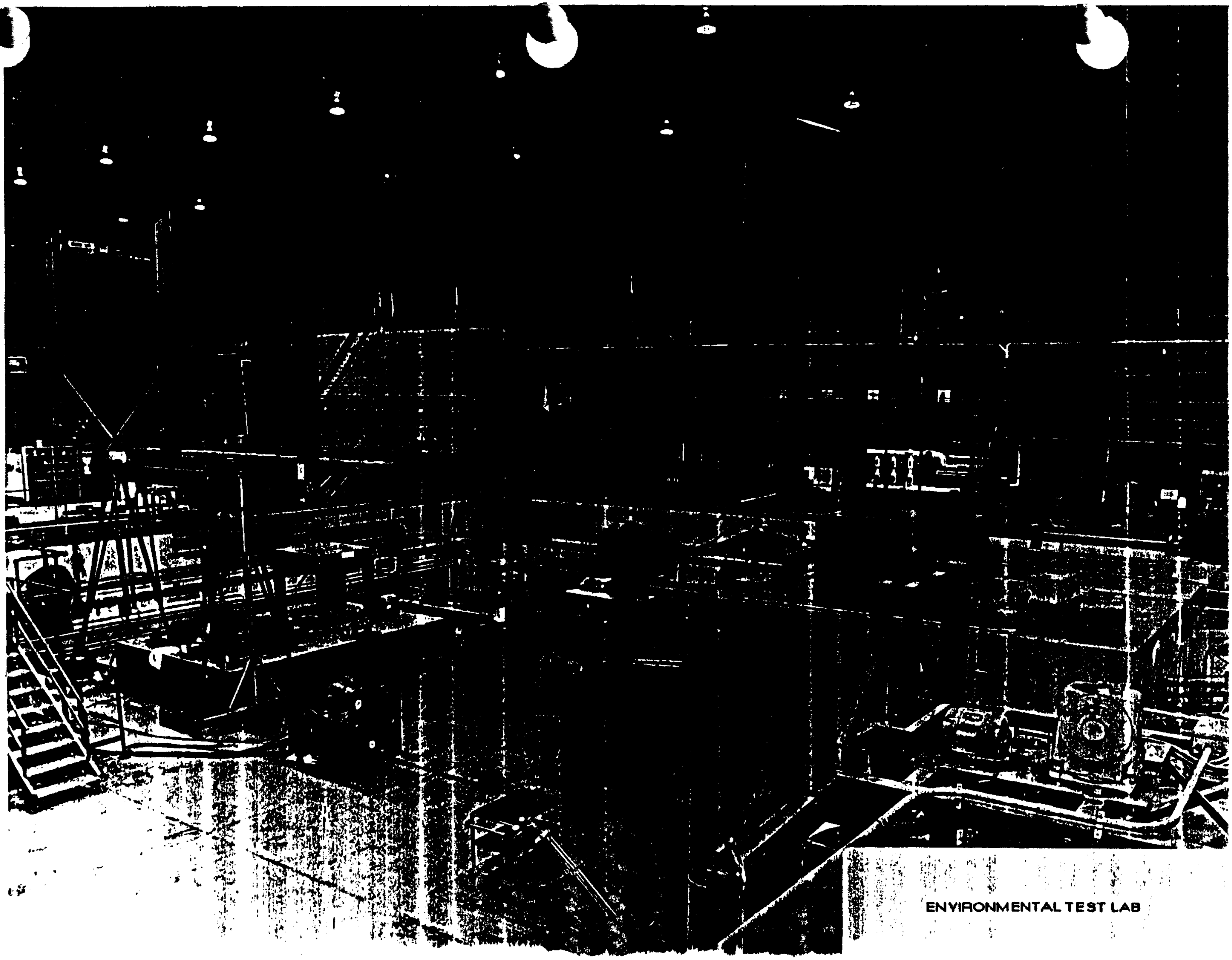
UNIVERSAL LIGHTING PAD



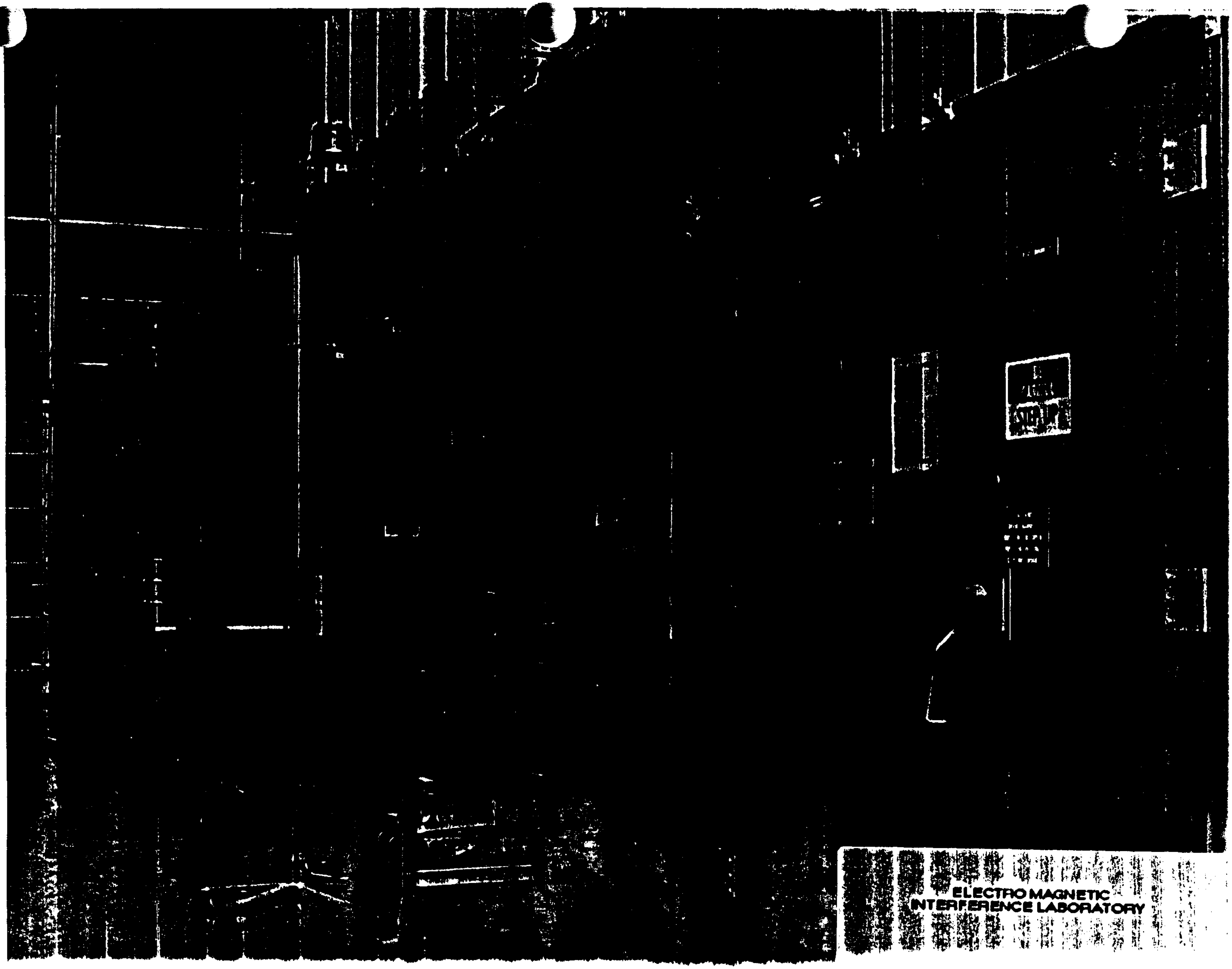
SUPPORT EQUIPMENT
MOBILITY SITE



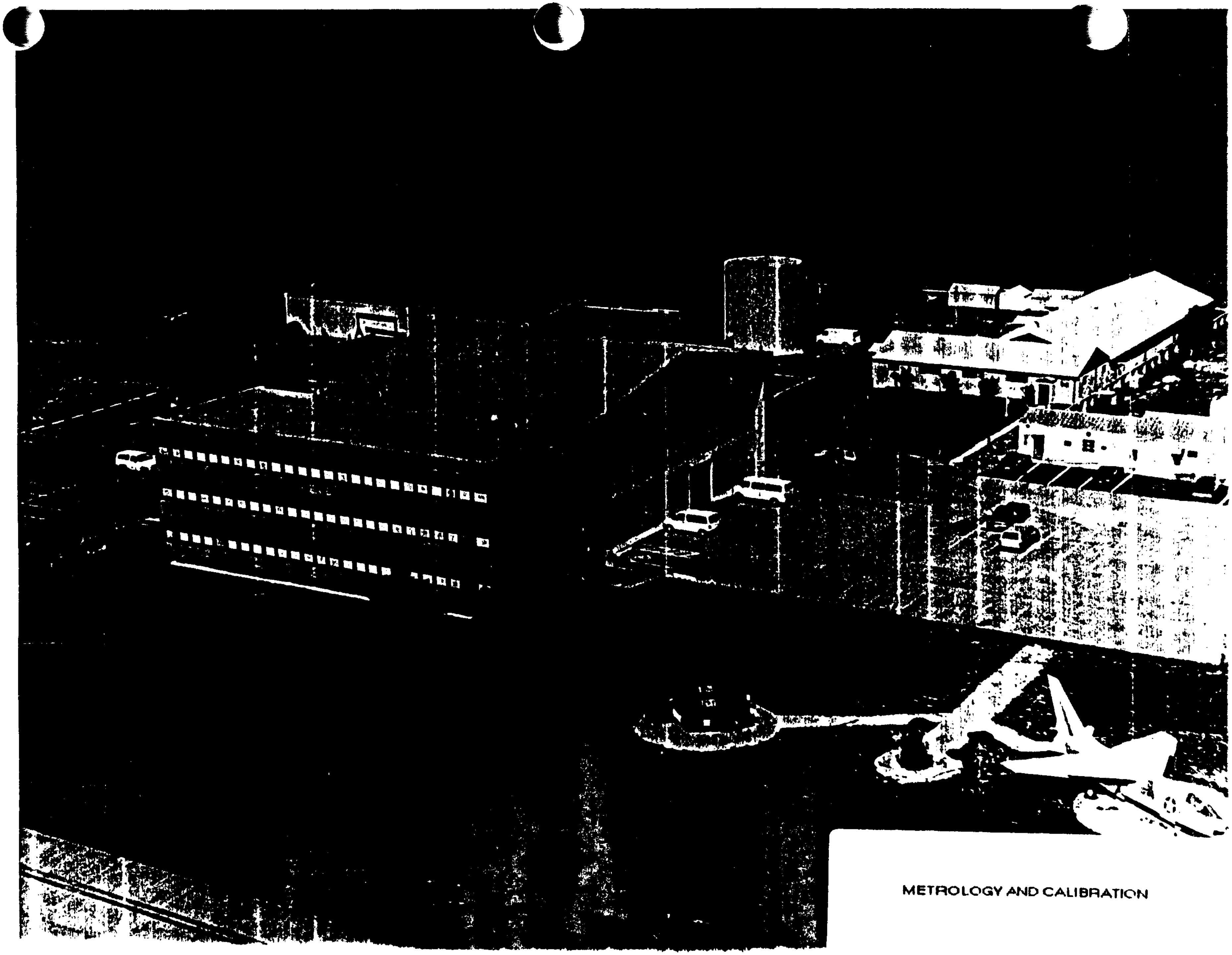
ARTICULATED MOTION PLATFORM



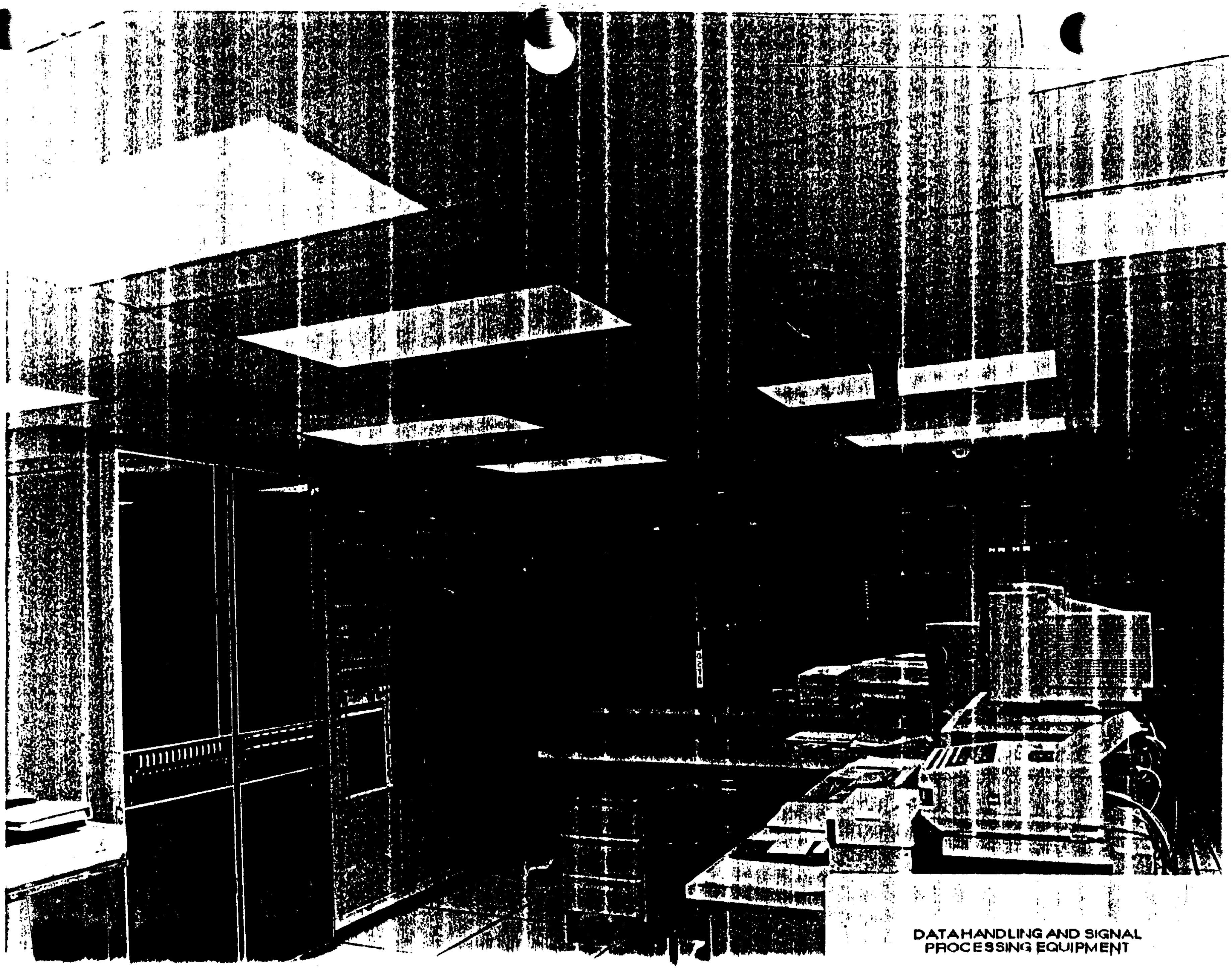
ENVIRONMENTAL TEST LAB



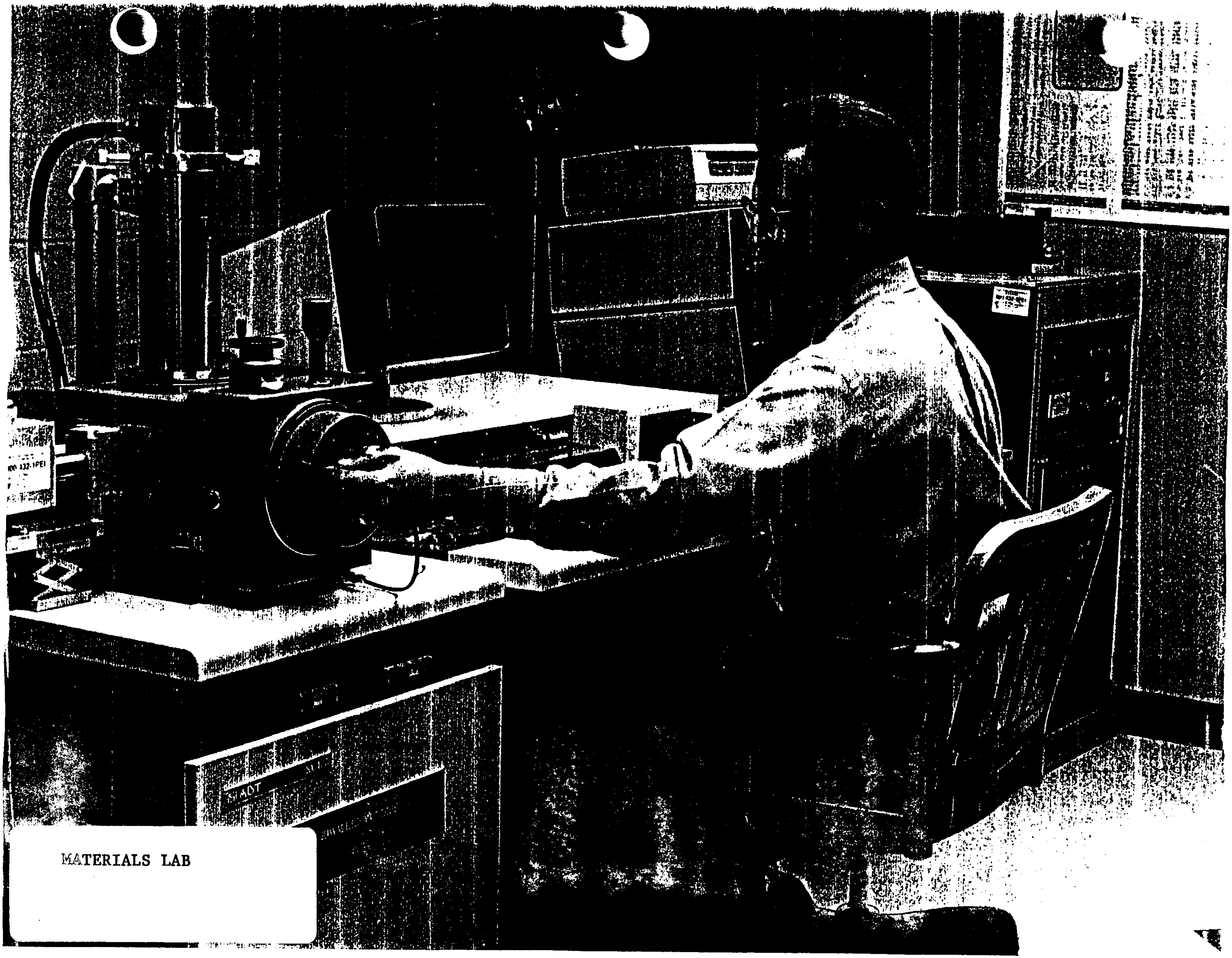
ELECTRO MAGNETIC INTERFERENCE LABORATORY

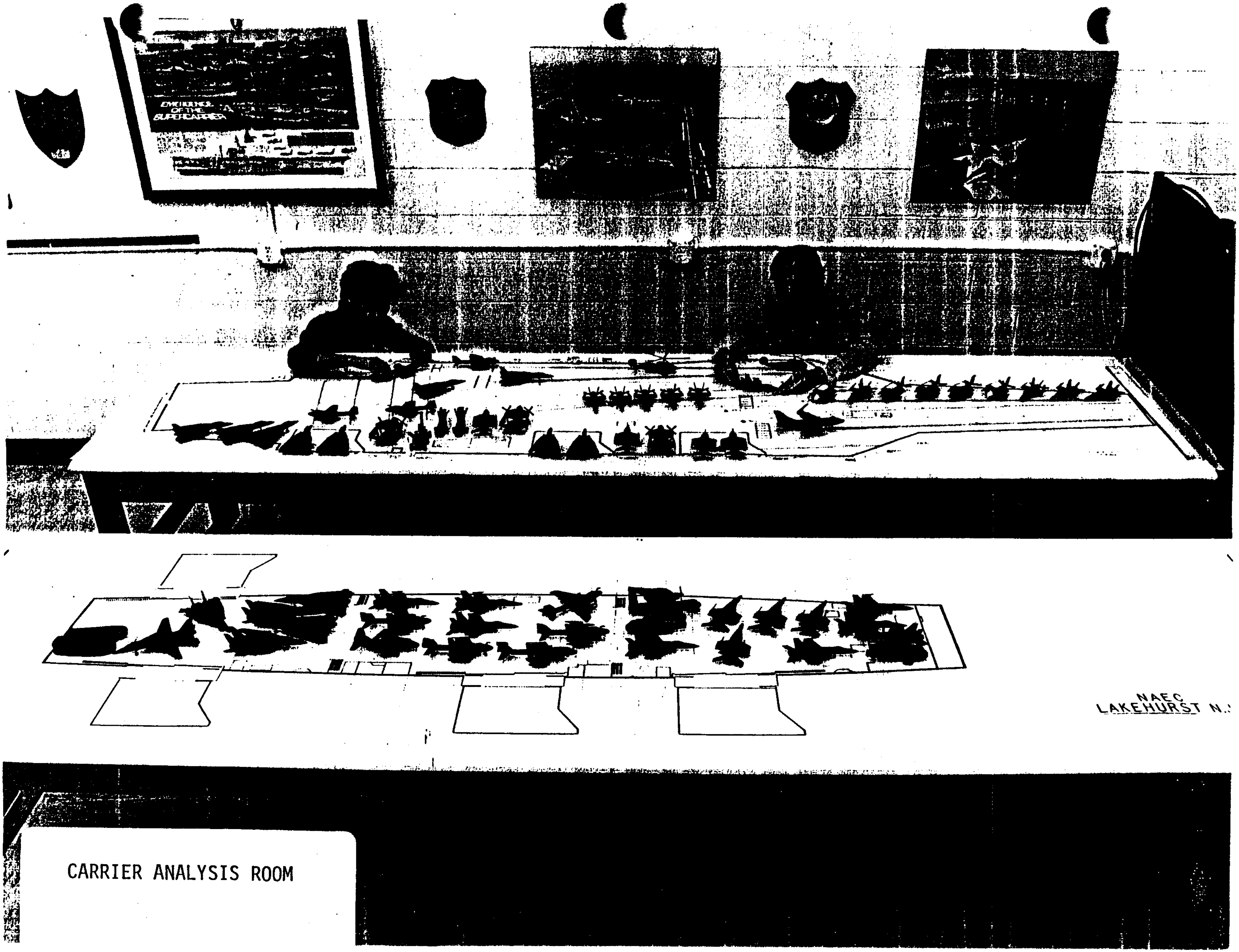


METROLOGY AND CALIBRATION



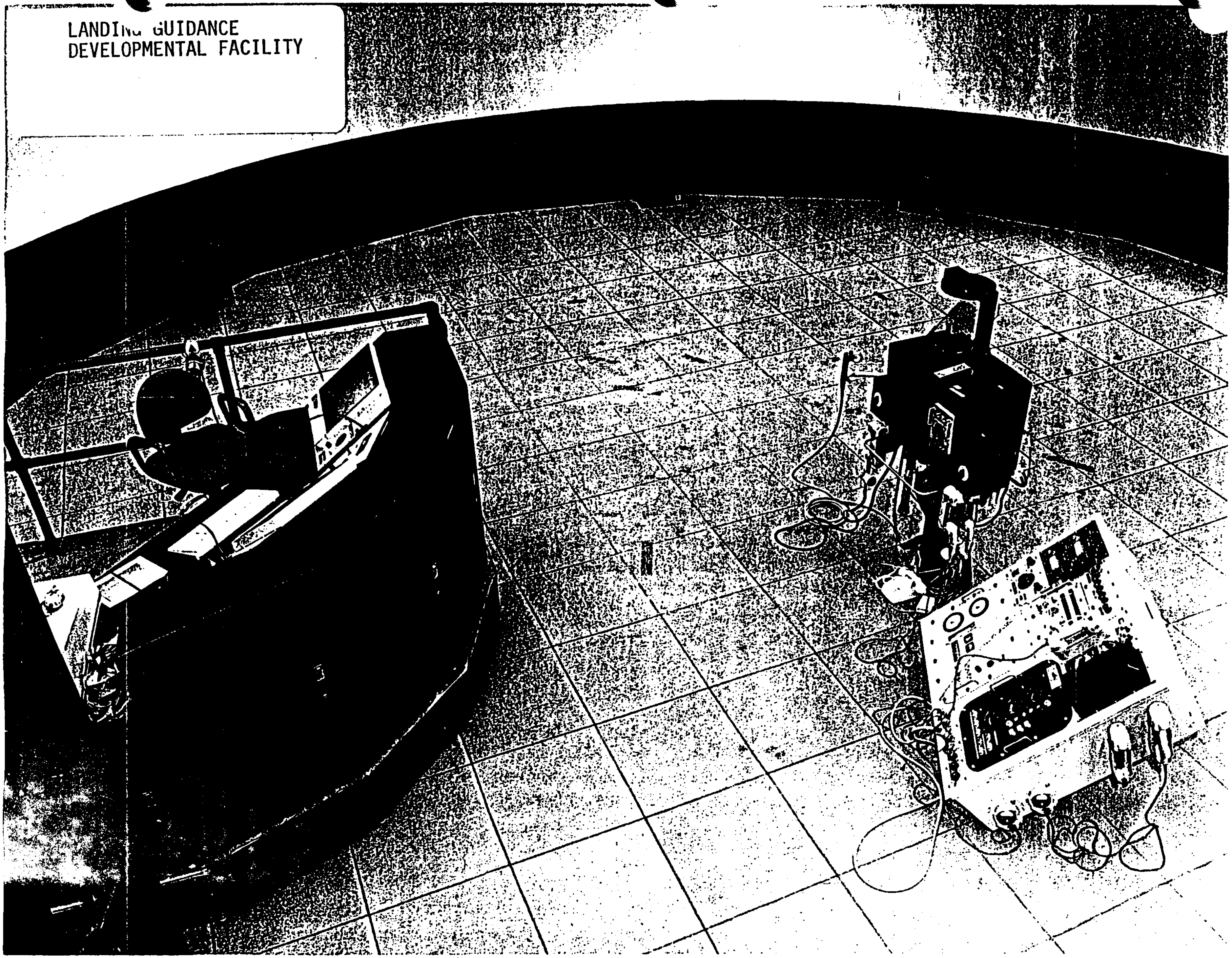
DATA HANDLING AND SIGNAL
PROCESSING EQUIPMENT


MATERIALS LAB

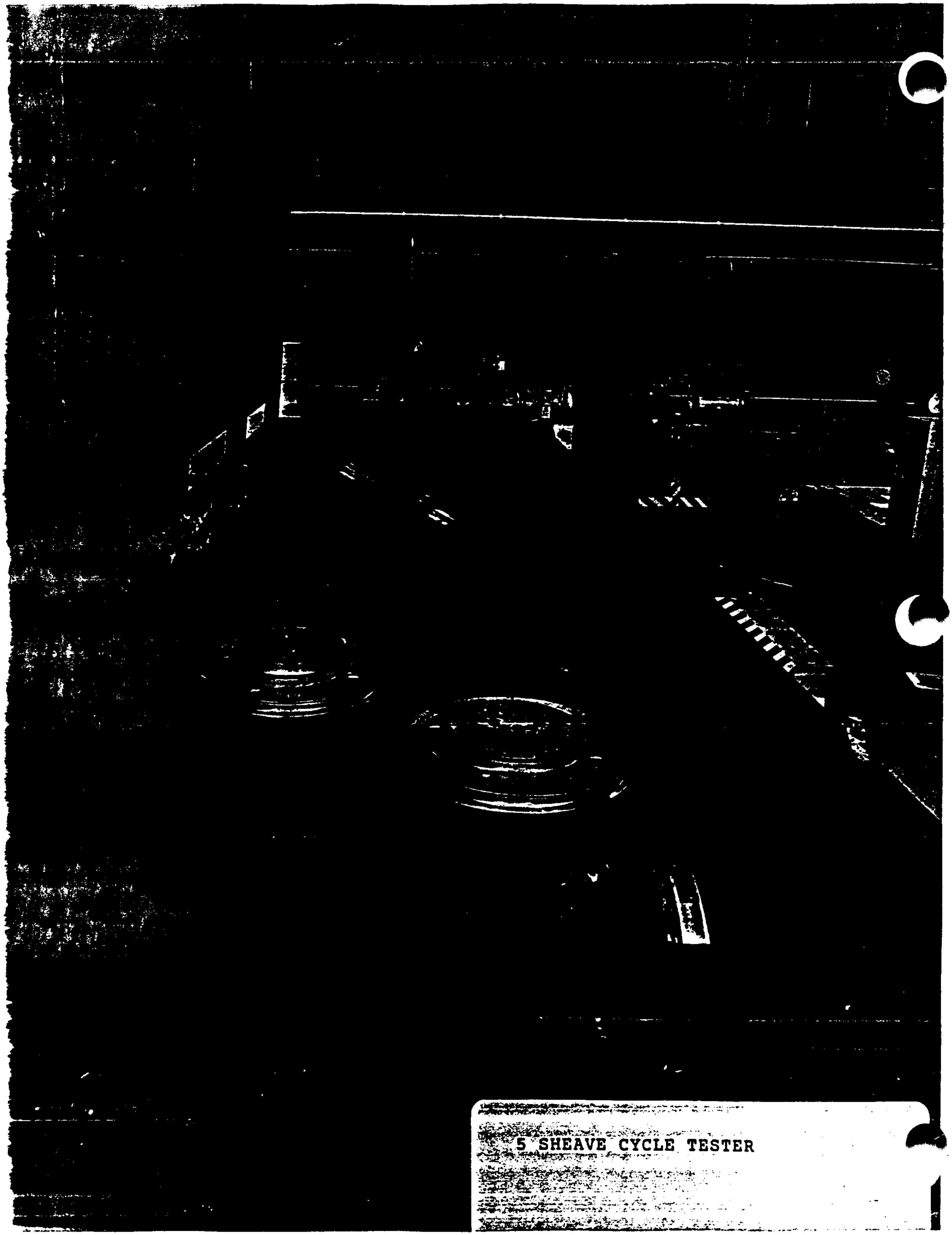


CARRIER ANALYSIS ROOM

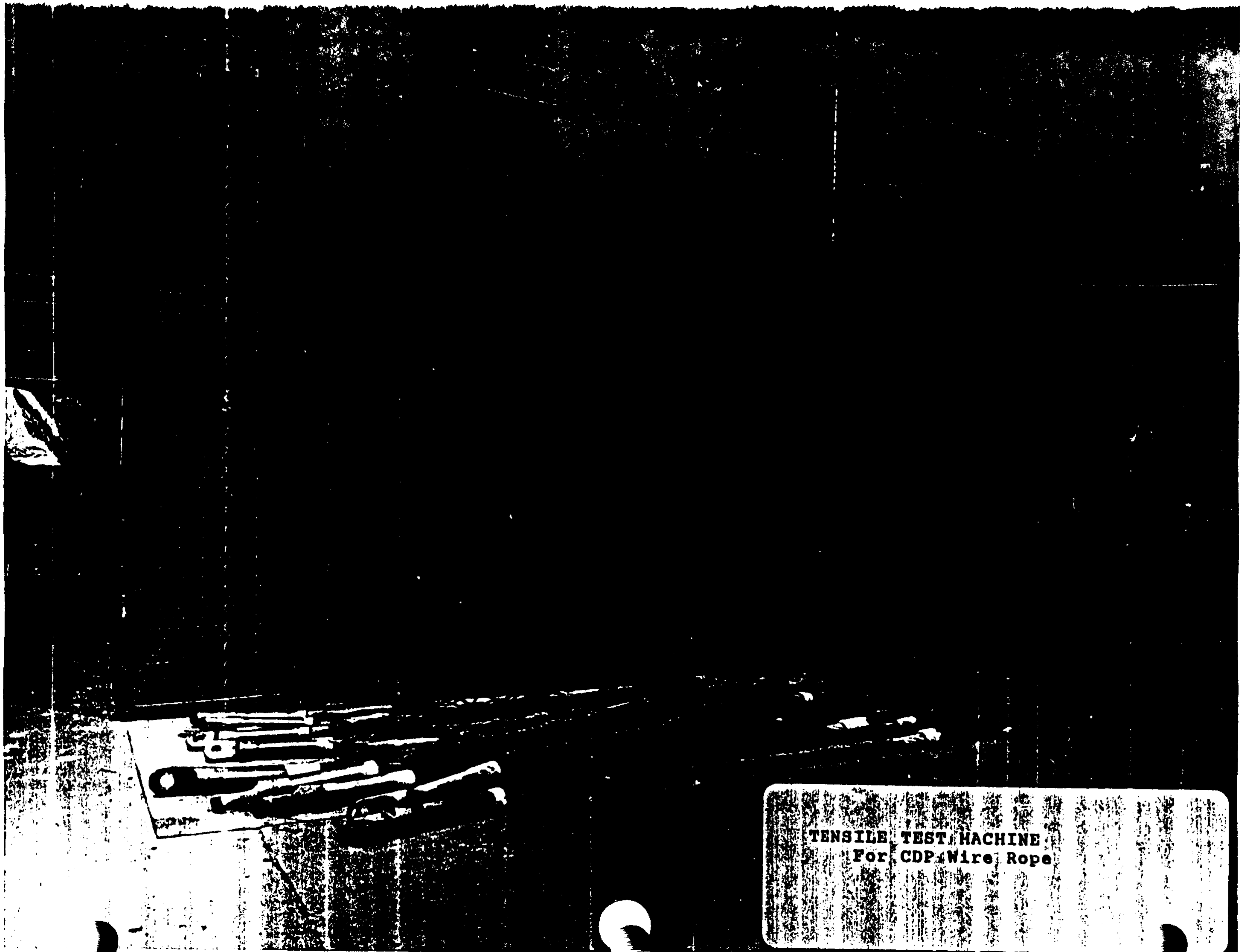
LANDING GUIDANCE
DEVELOPMENTAL FACILITY



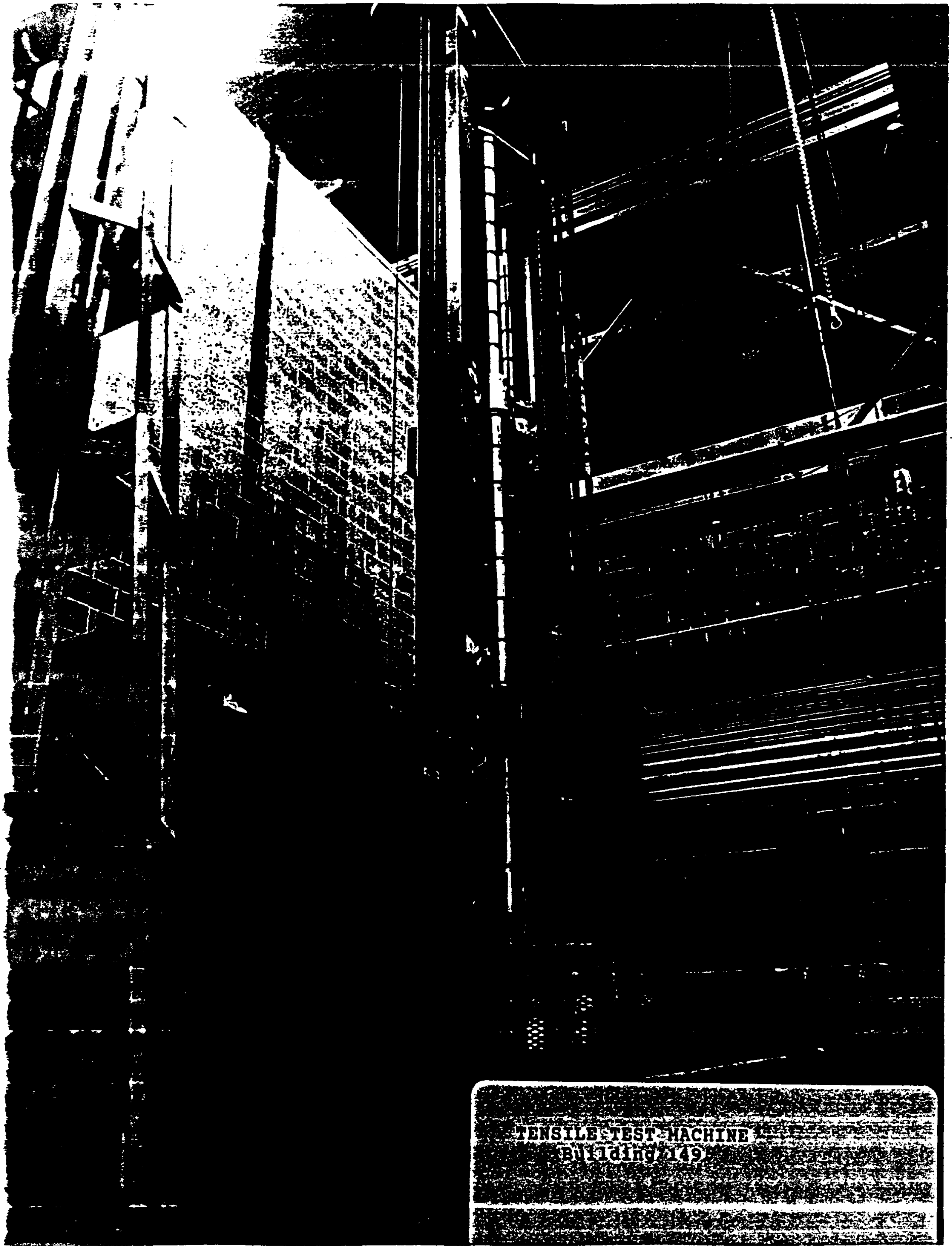
2 SHEAVE CYCLE TEST MACHINES
For Purchase Cable Acceptance
Testing



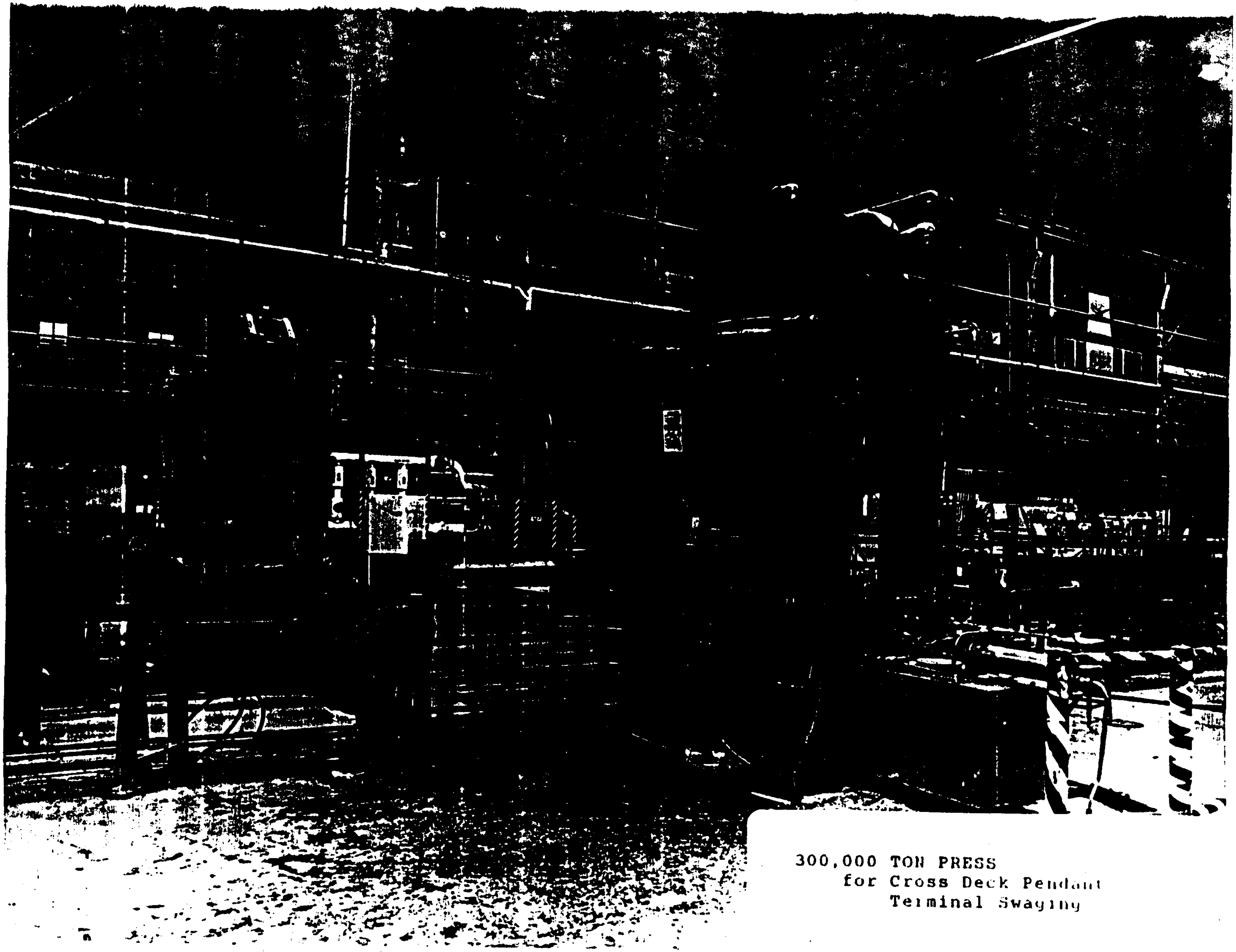
5 SHEAVE CYCLE TESTER



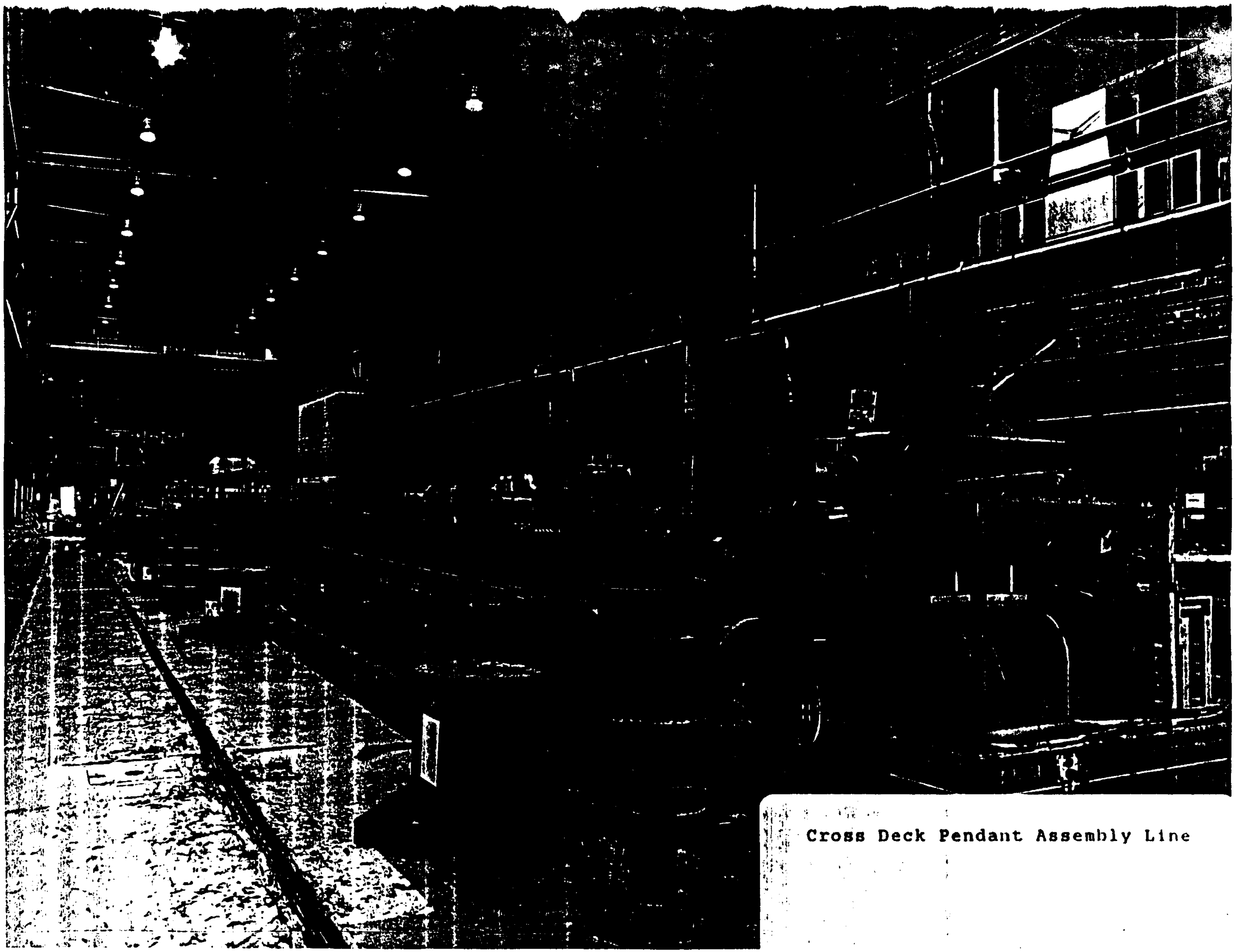
TENSILE TEST MACHINE
For CDP Wire Rope



TENSILE TEST MACHINE
Building 149

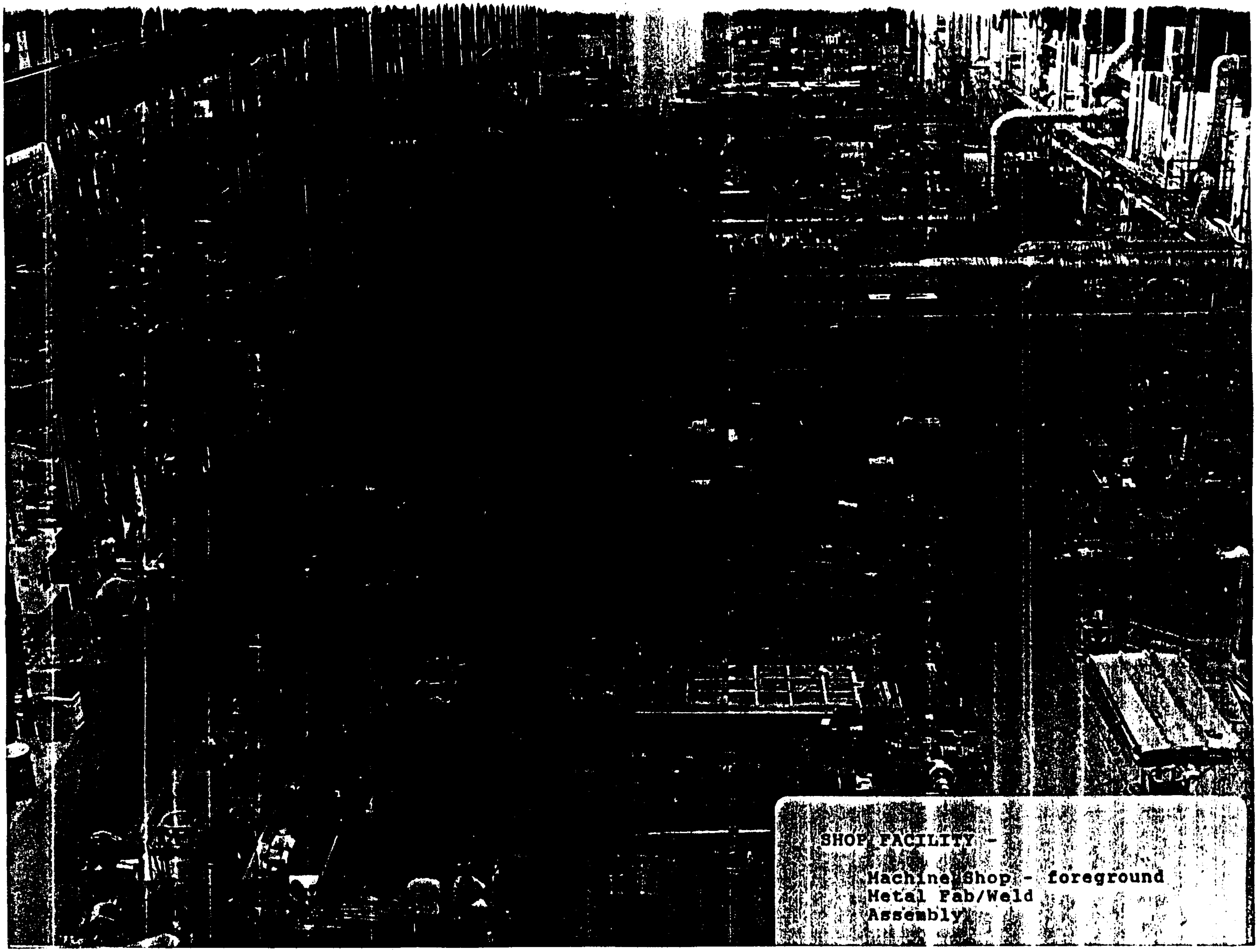


300,000 TON PRESS
for Cross Deck Pendant
Terminal Swaging



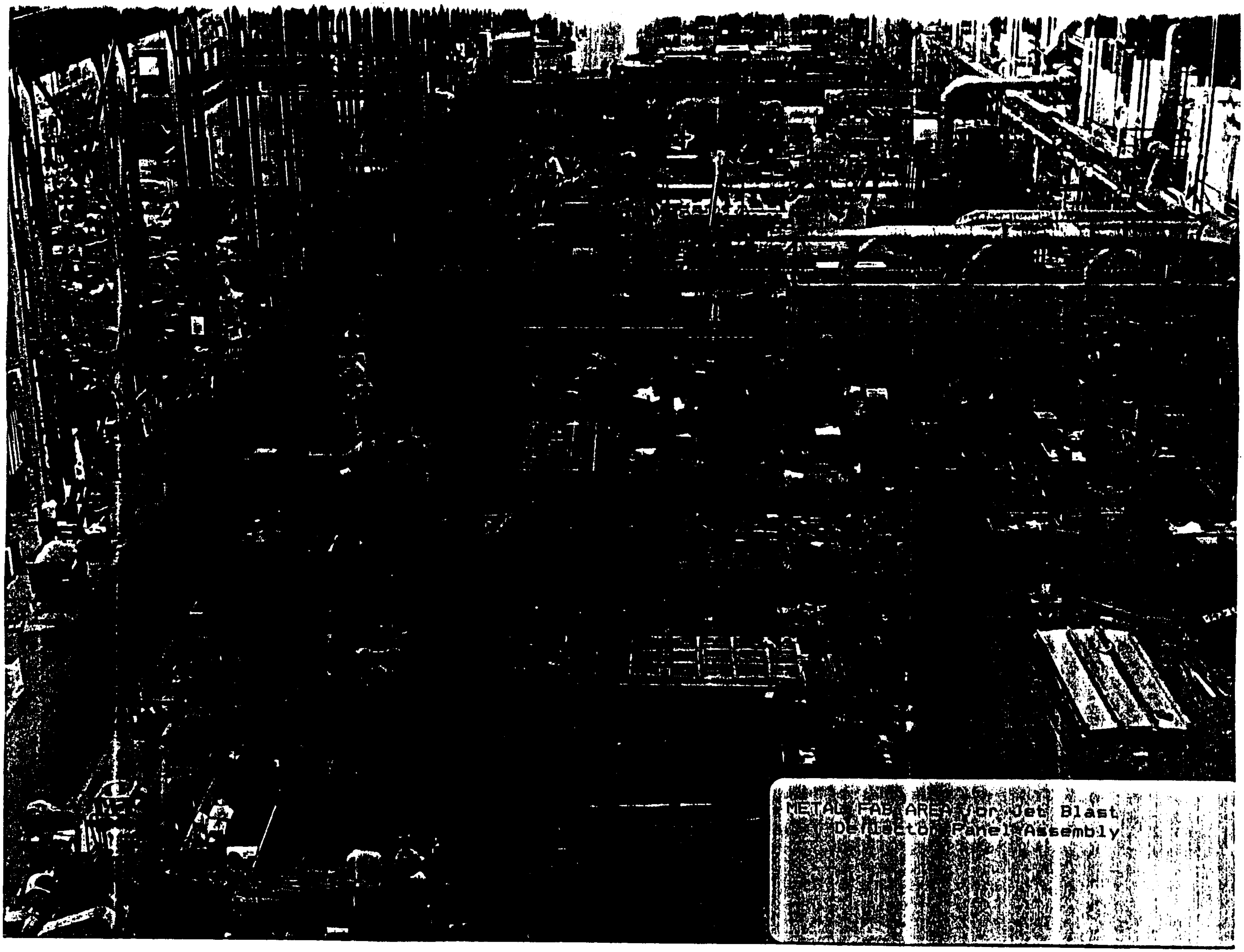
Cross Deck Pendant Assembly Line

Cross Deck Pendant Assembly Line

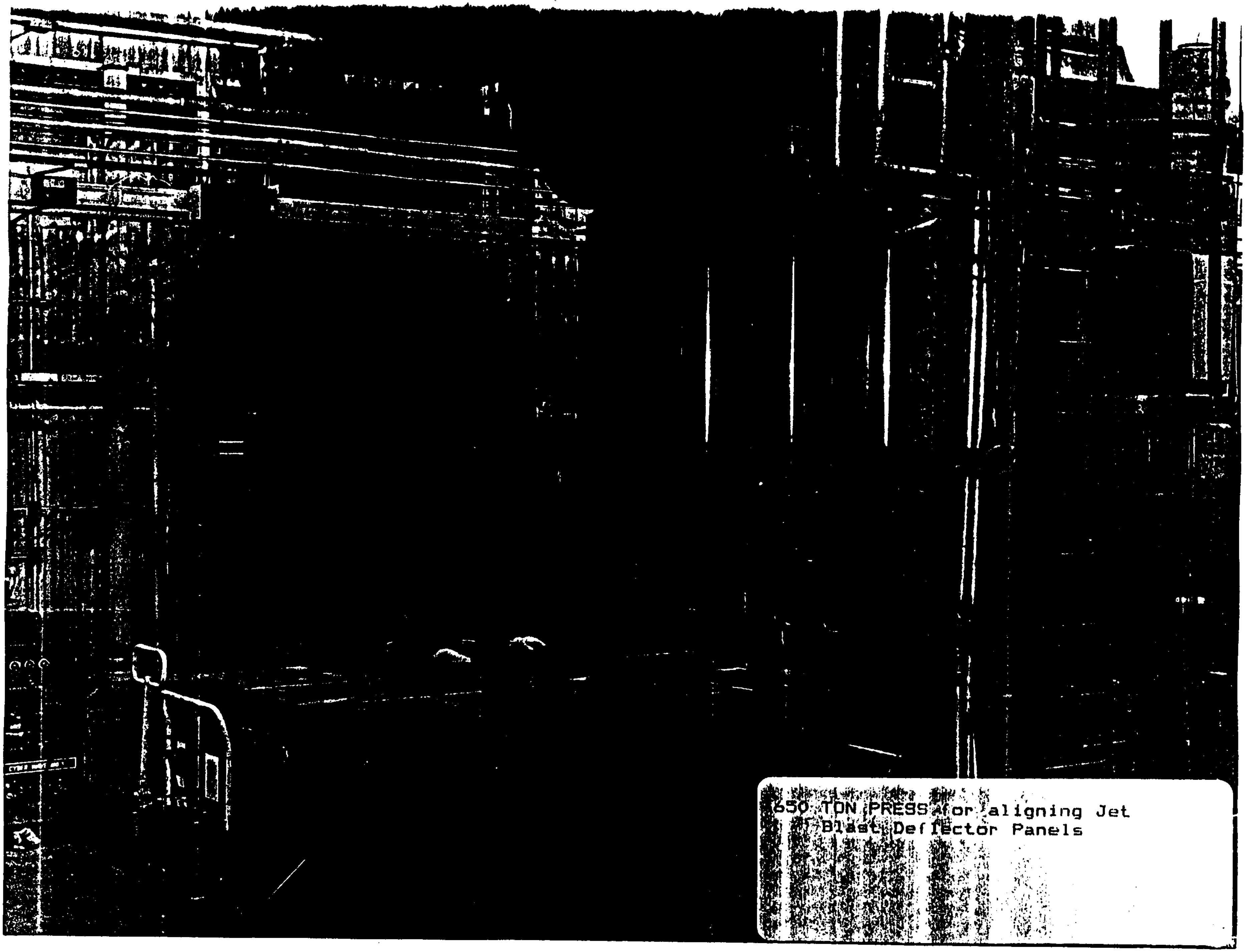


SHOP FACILITY -

Machine Shop - foreground
Metal Fab/Weld
Assembly



METAL FAB AREA for Jet Blast Deflector Panel Assembly

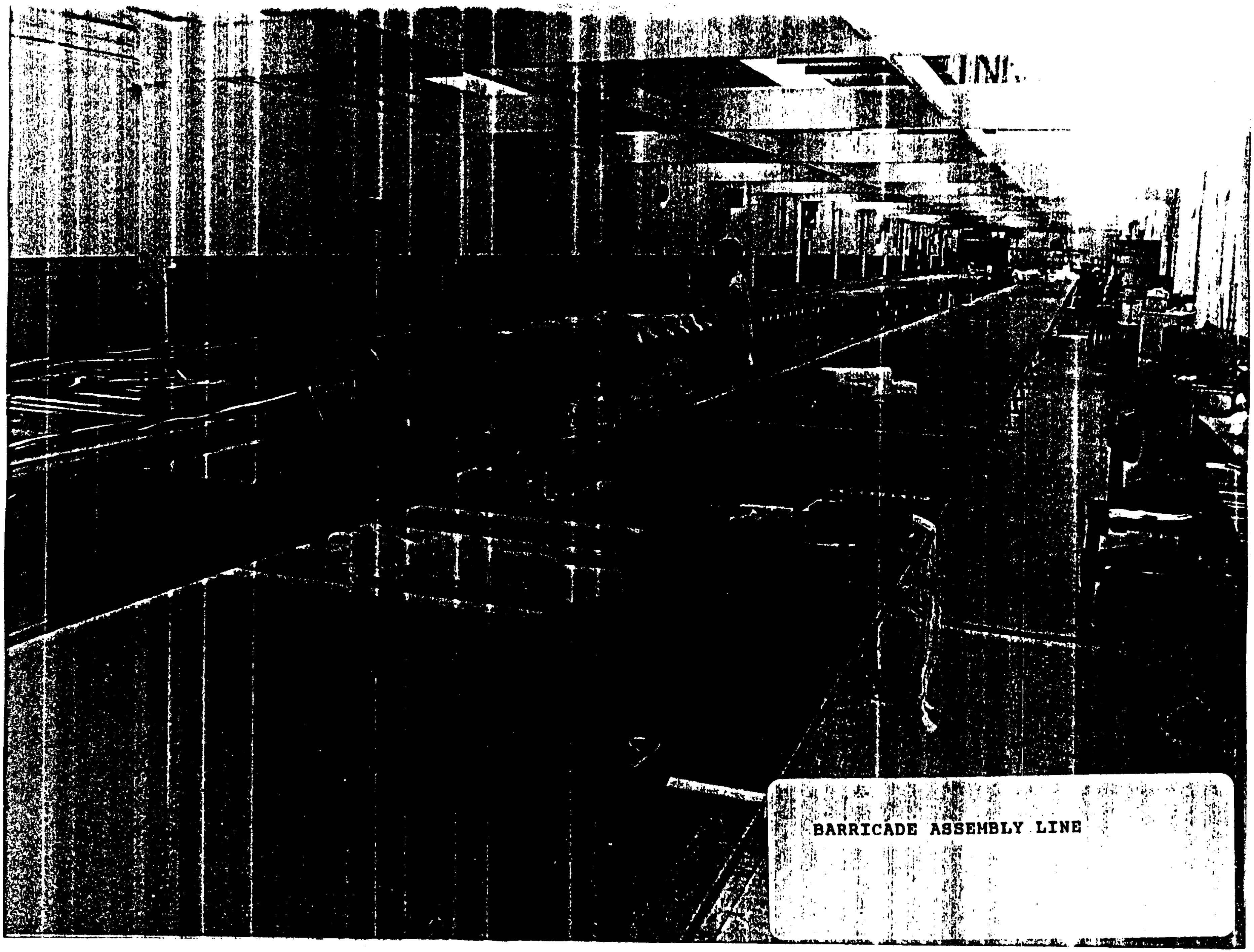


650 TON PRESS for aligning Jet Blast Deflector Panels

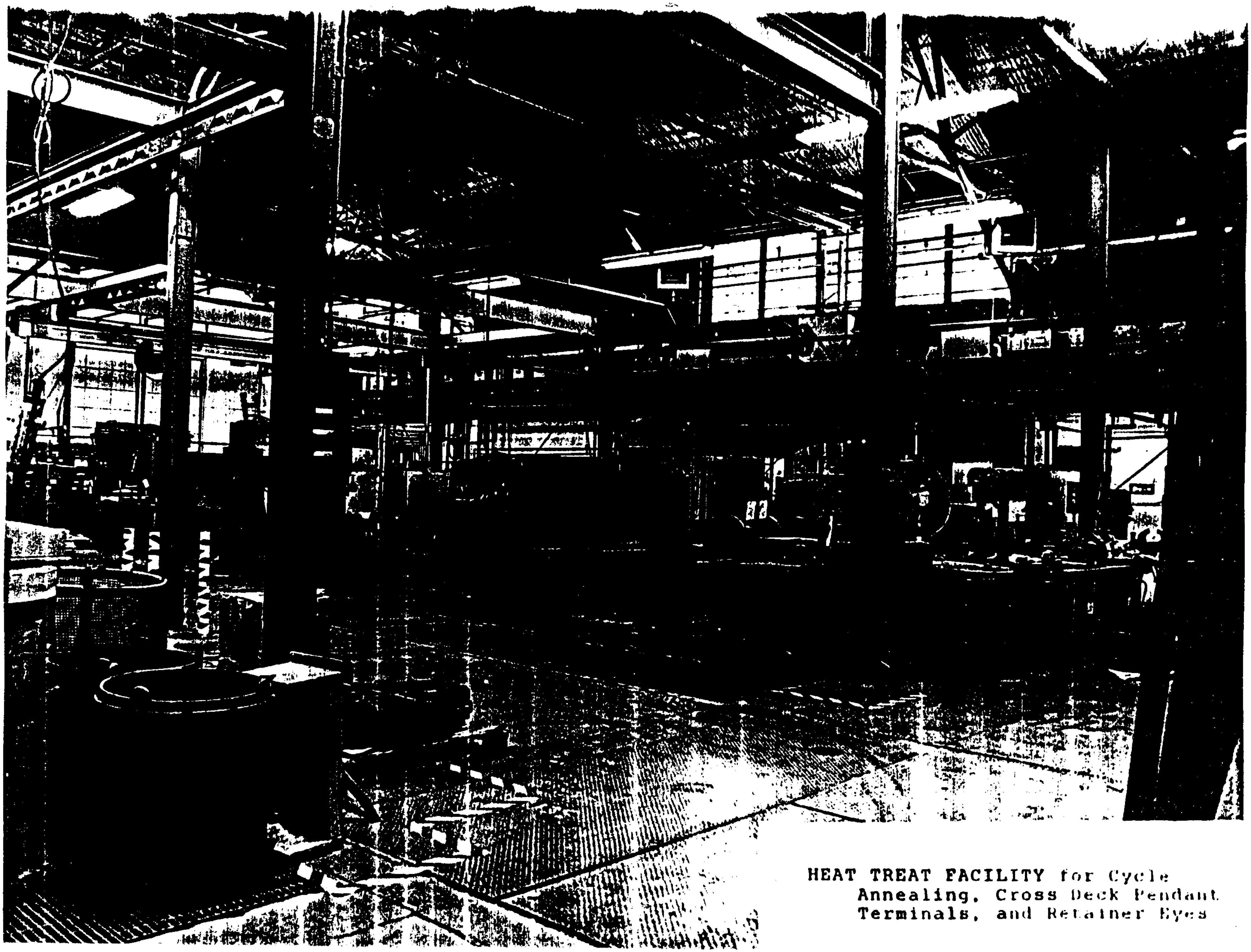
METAL FAB AREA for Jet Blast Deflector Panel Assembly

JET BLAST DEFLECTOR
WELD/POSITIONERS
Building 99

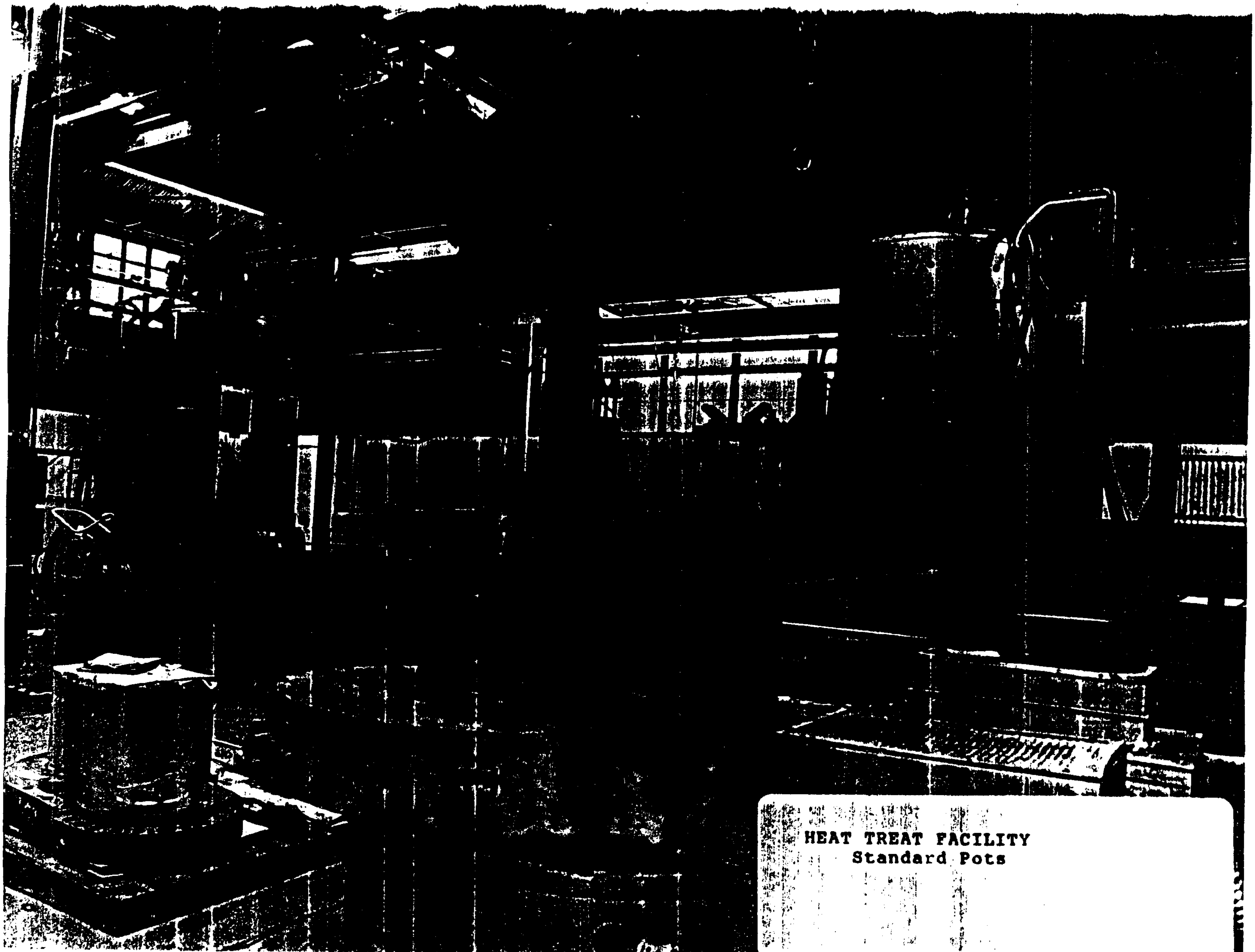
Assembly of Barricade in Progress



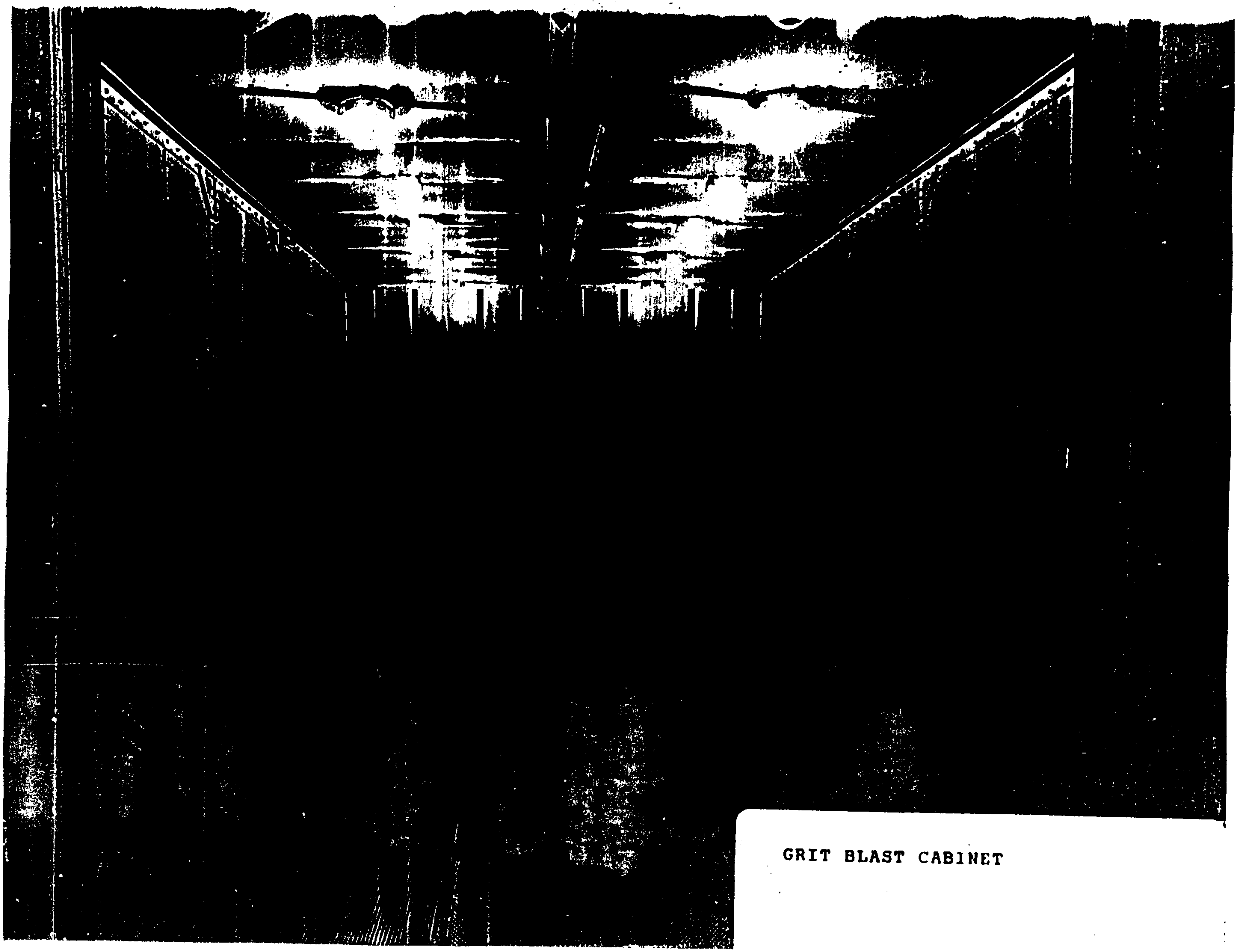
BARRICADE ASSEMBLY LINE



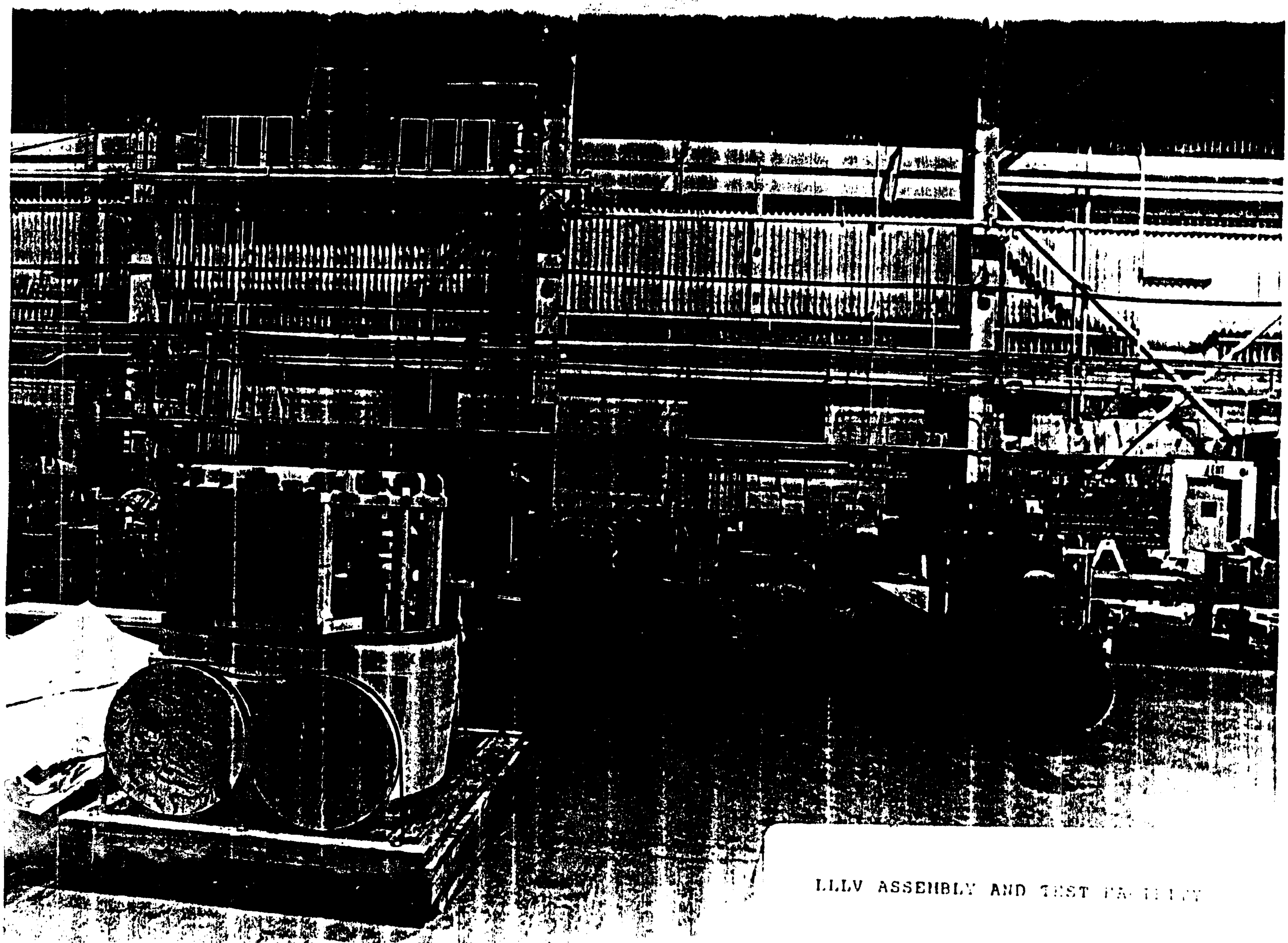
HEAT TREAT FACILITY for Cycle Annealing, Cross Deck Pendant Terminals, and Retainer Eyes



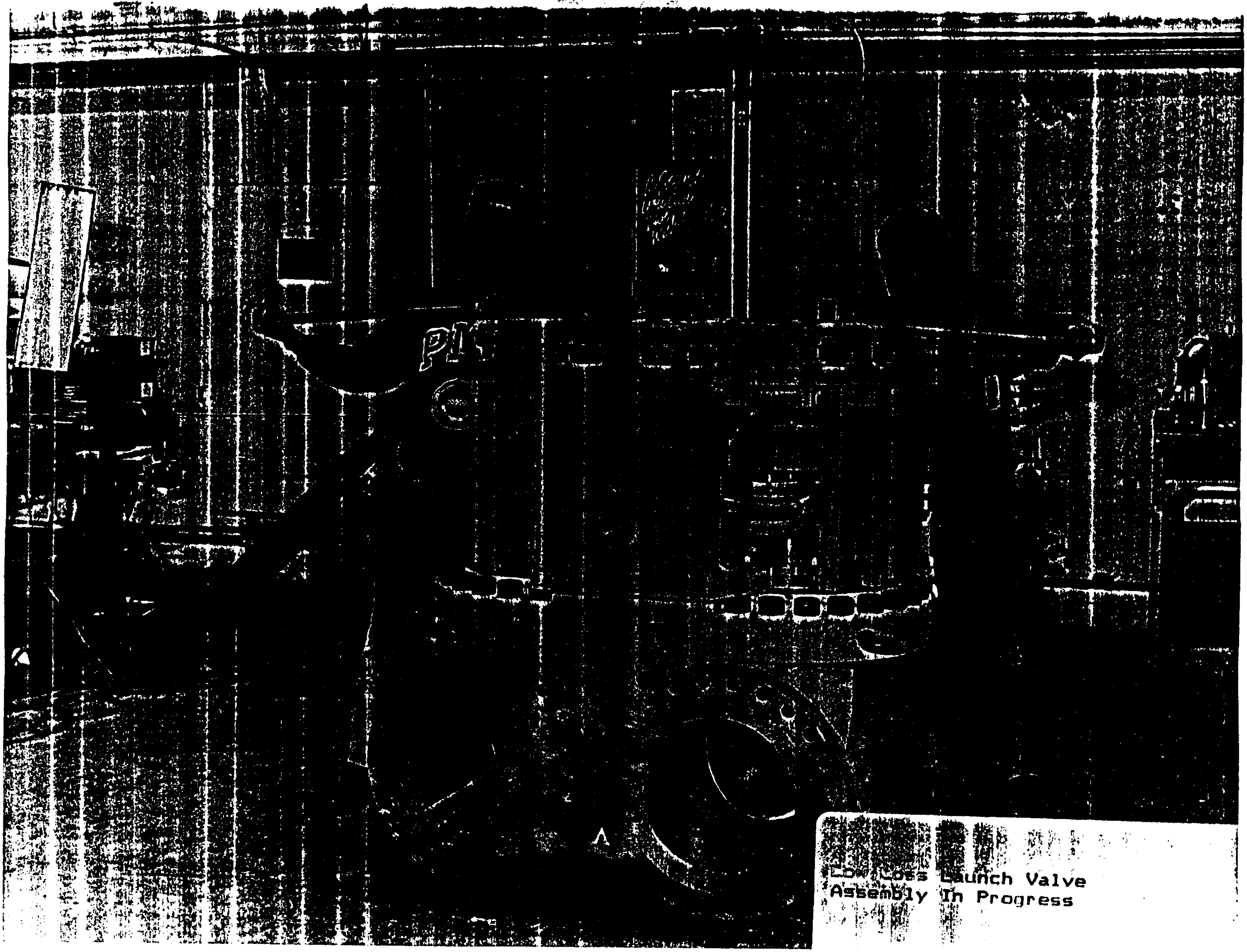
HEAT TREAT FACILITY
Standard Pots



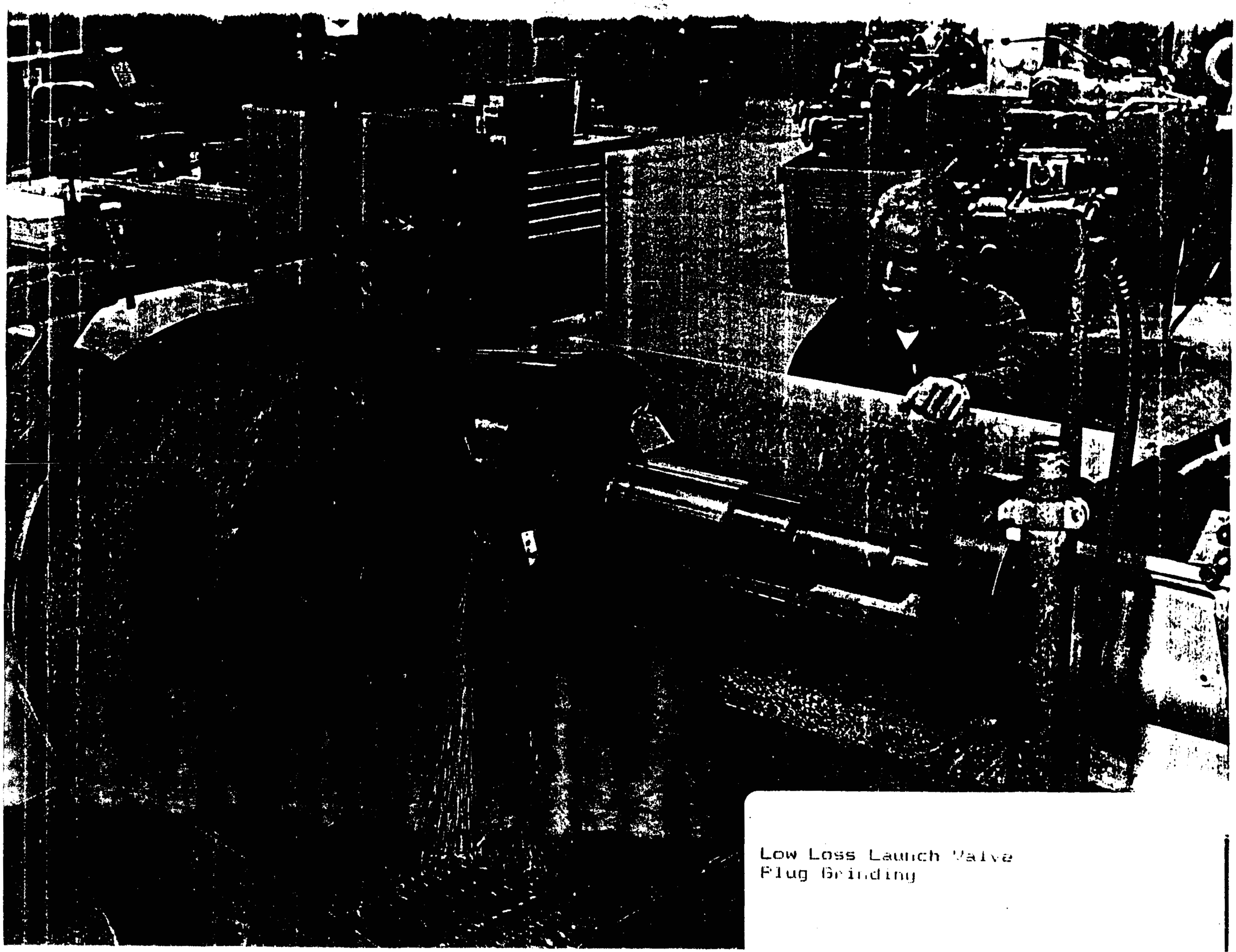
GRIT BLAST CABINET



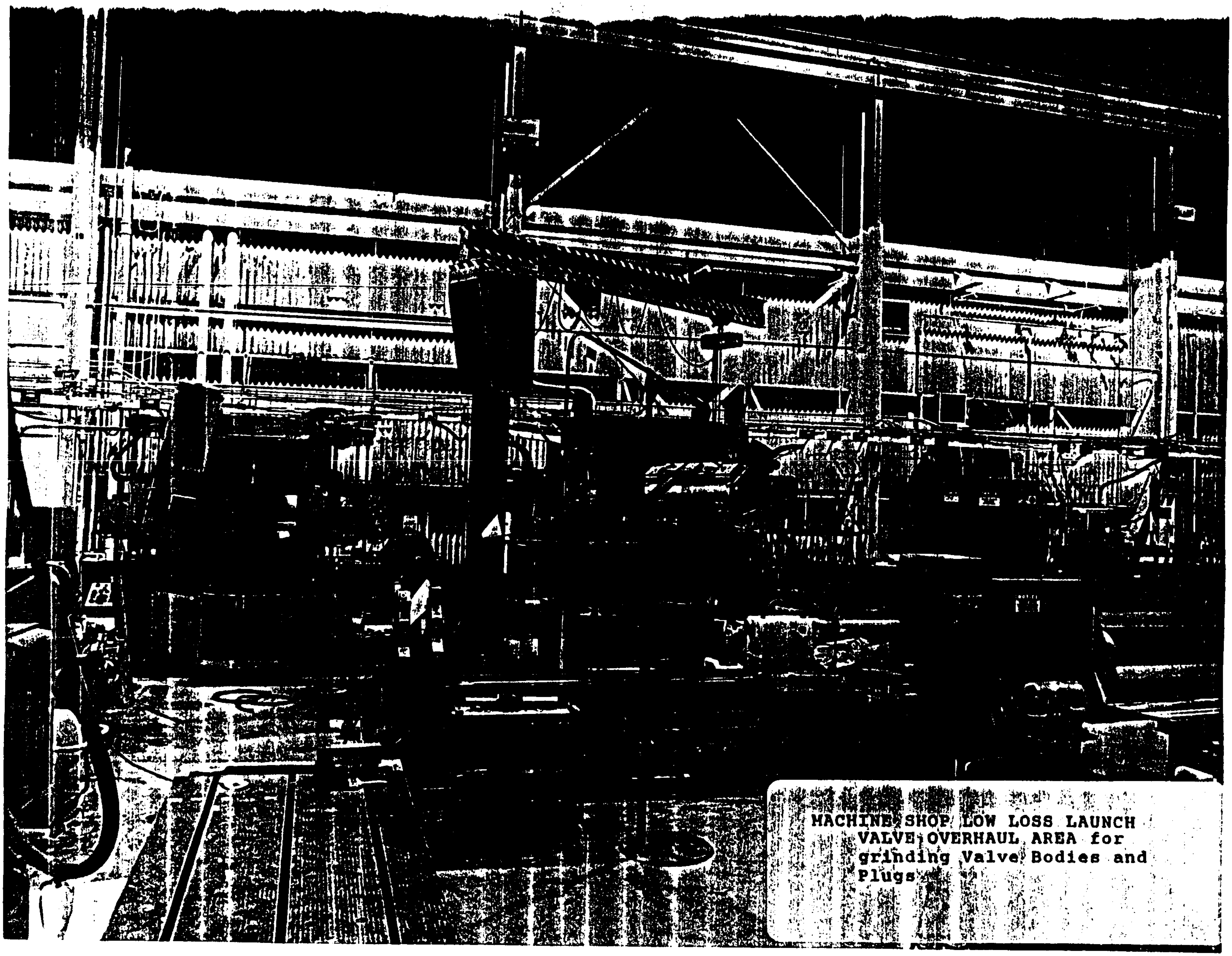
LLLV ASSEMBLY AND TEST FACILITY



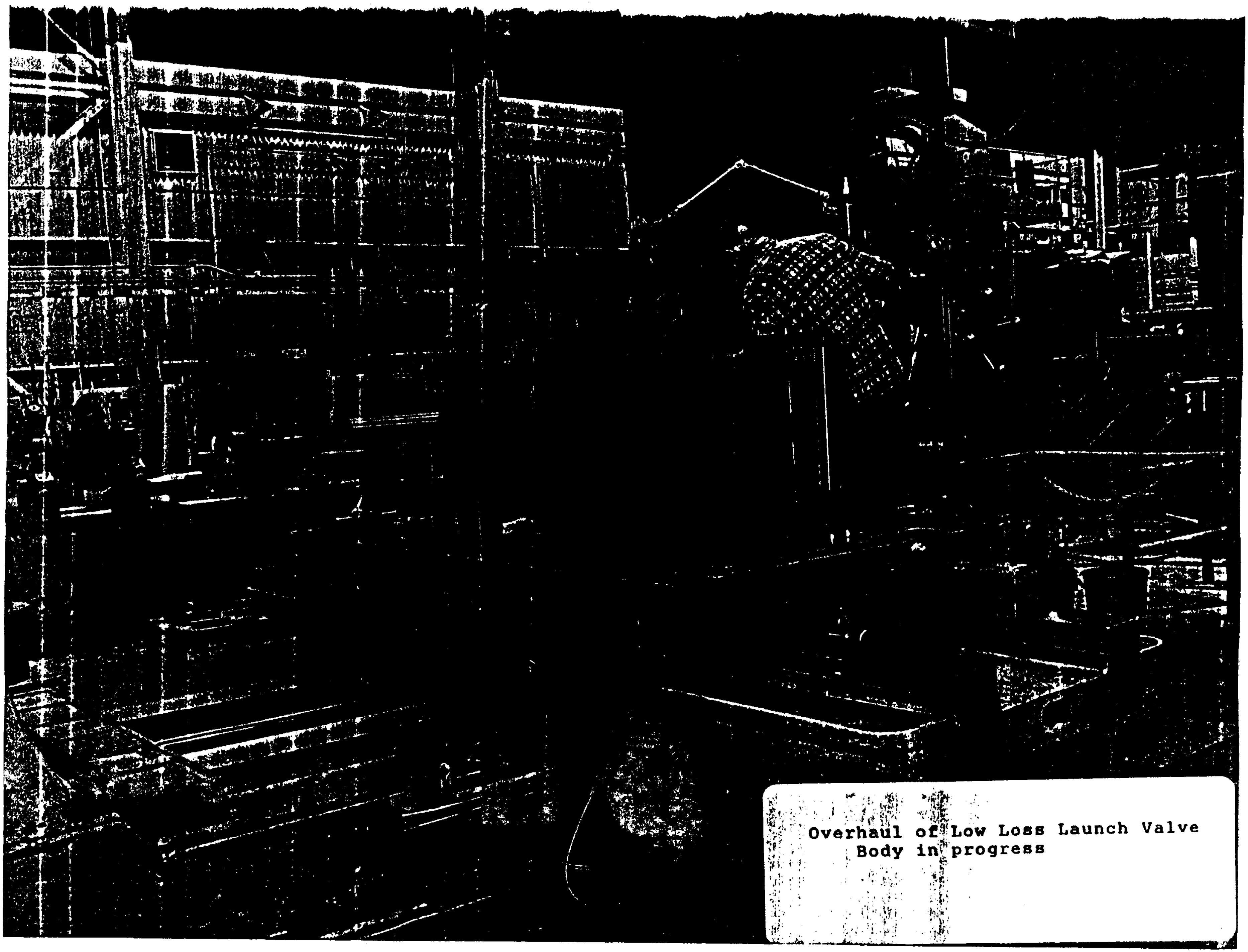
Low Loss Launch Valve
Assembly In Progress



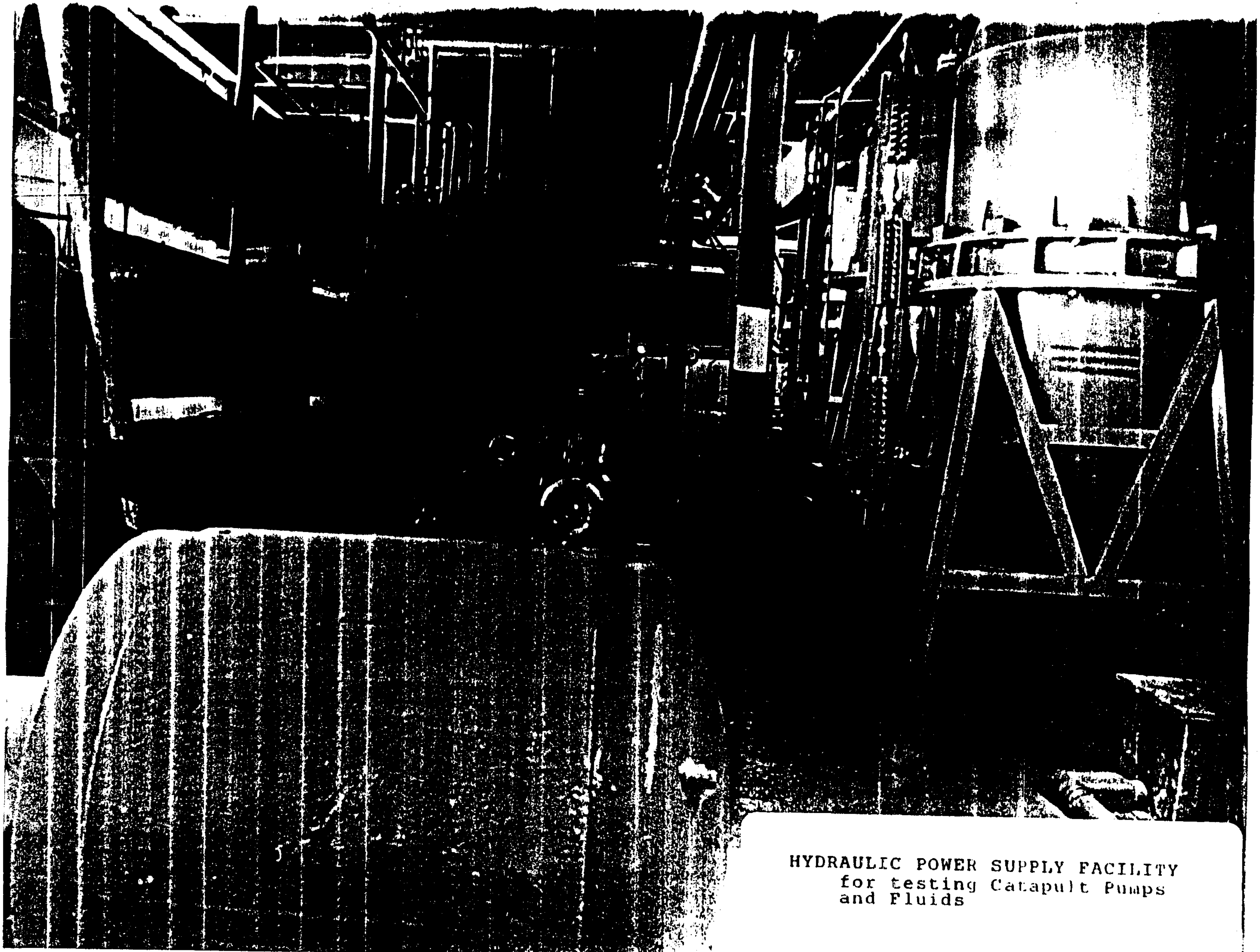
Low Loss Launch Valve
Plug Grinding



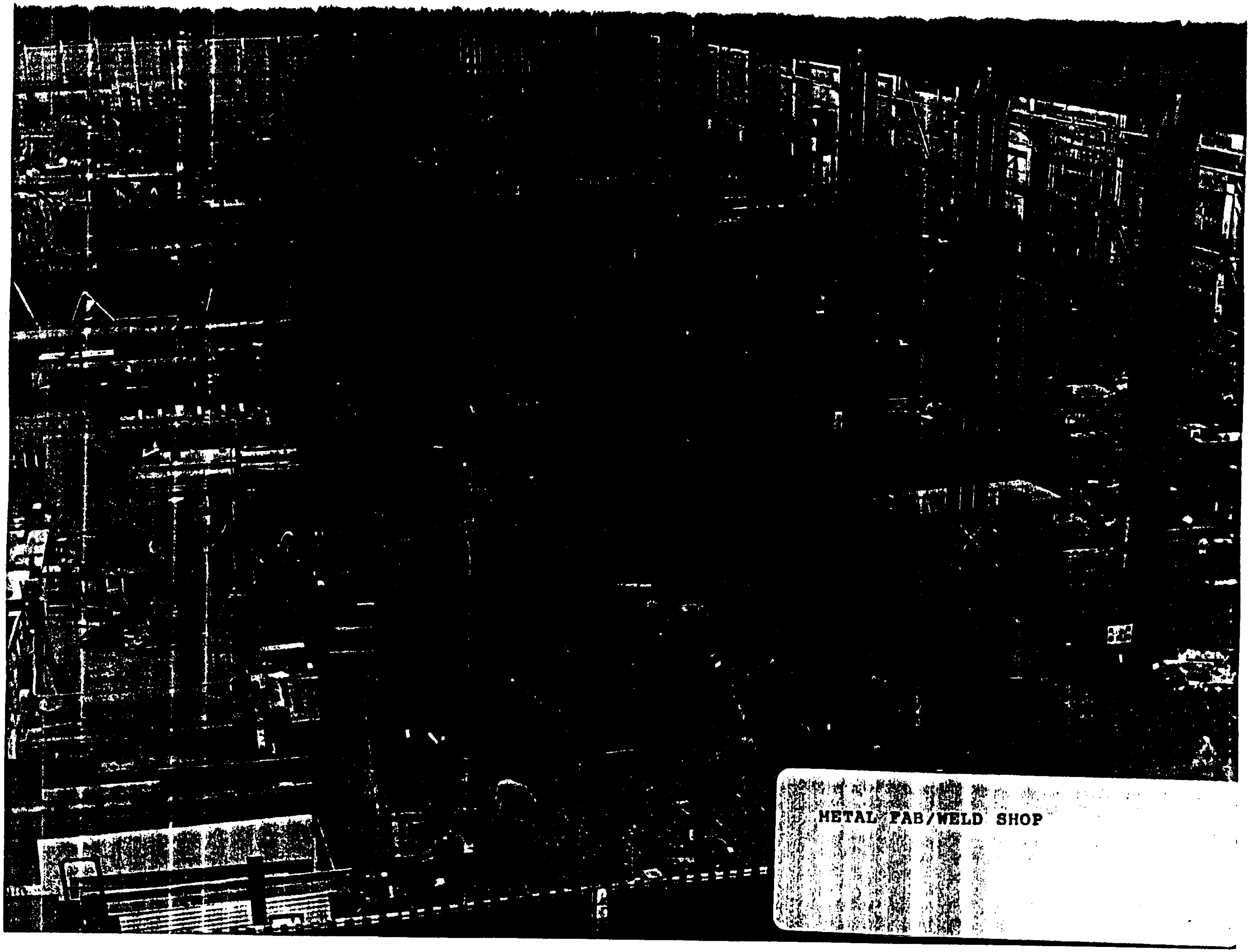
MACHINE SHOP LOW LOSS LAUNCH VALVE OVERHAUL AREA for grinding Valve Bodies and Plugs

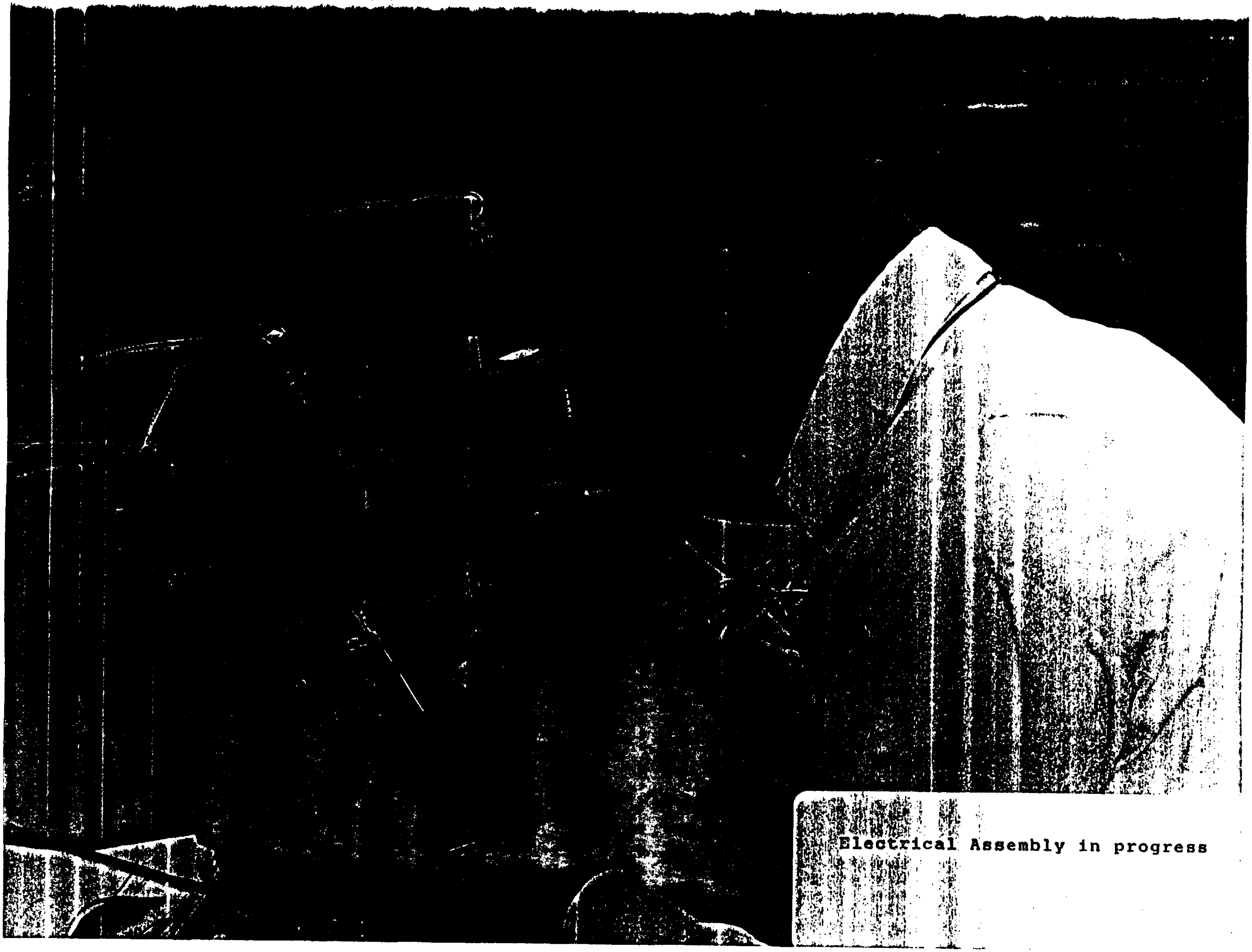


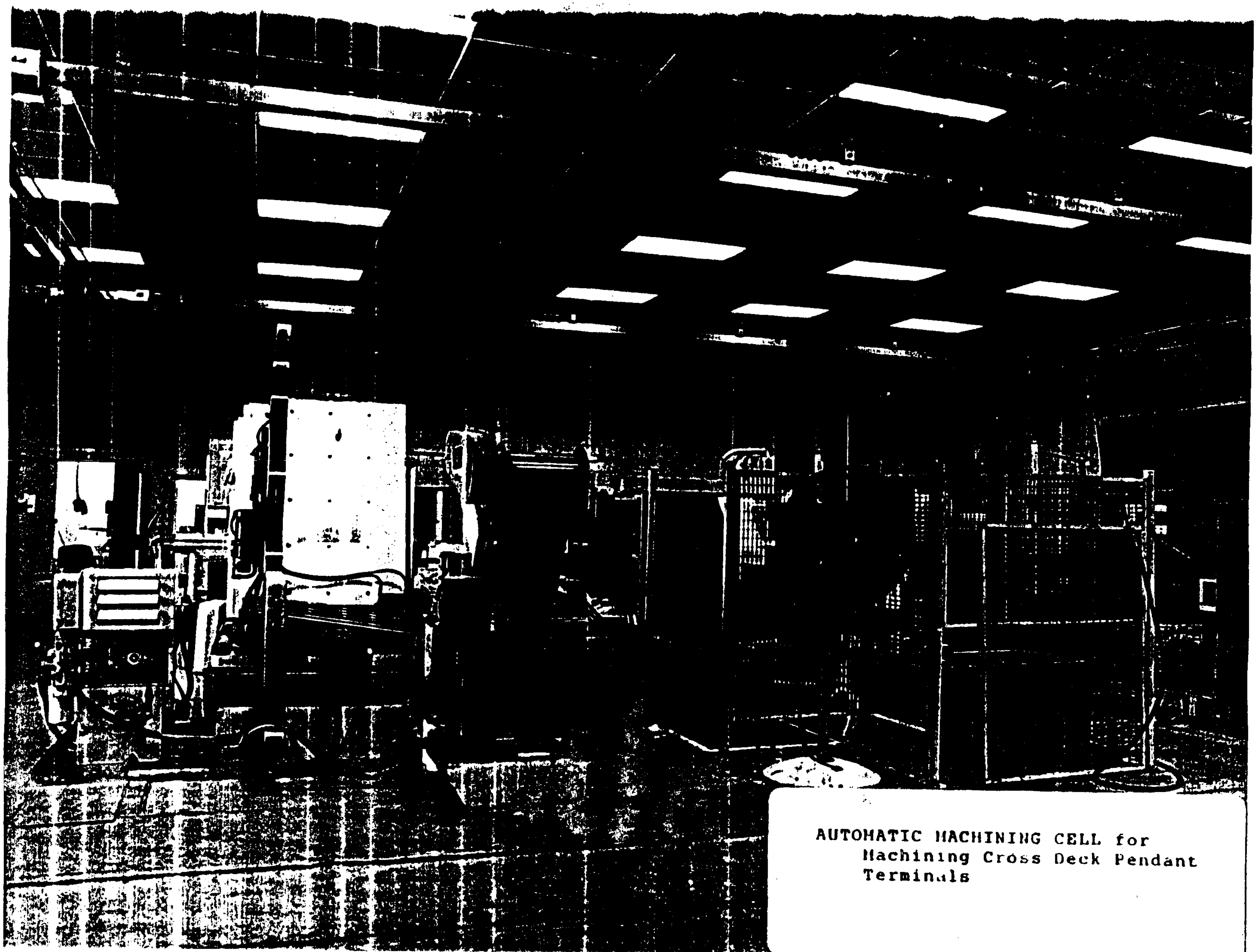
Overhaul of Low Loss Launch Valve Body in progress



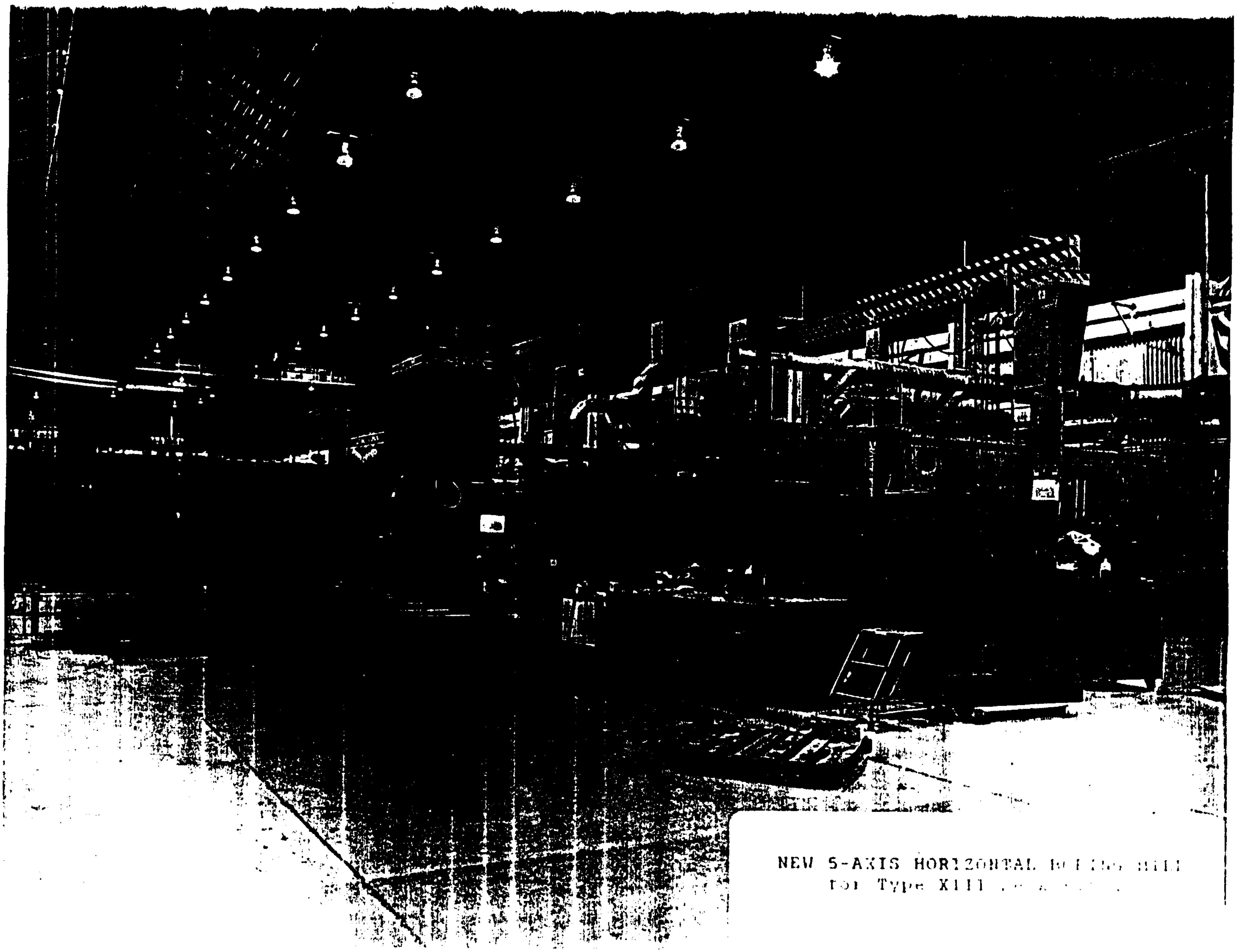
HYDRAULIC POWER SUPPLY FACILITY
for testing Catapult Pumps
and Fluids


METAL FAB/WELD SHOP

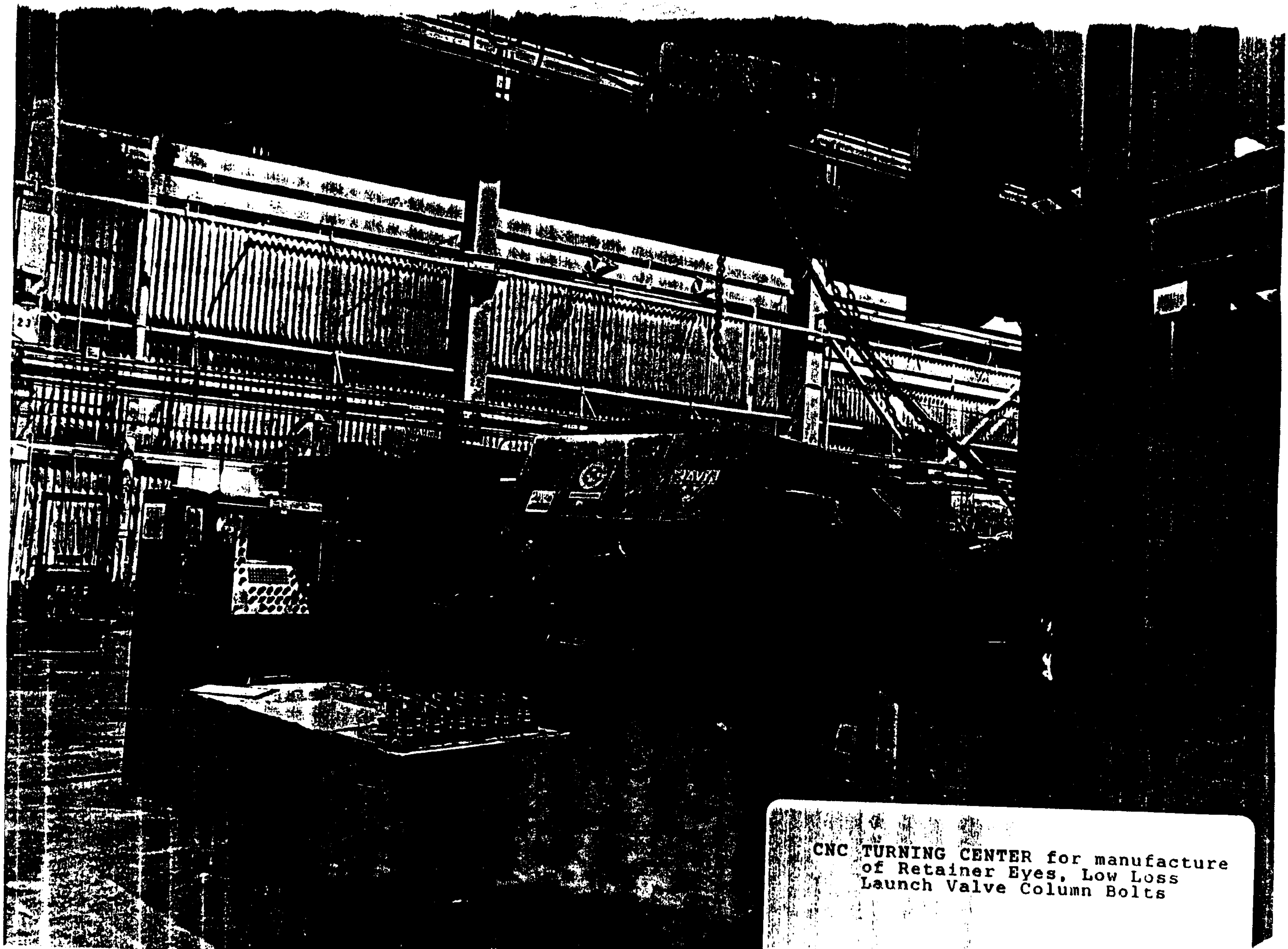

Electrical Assembly in progress



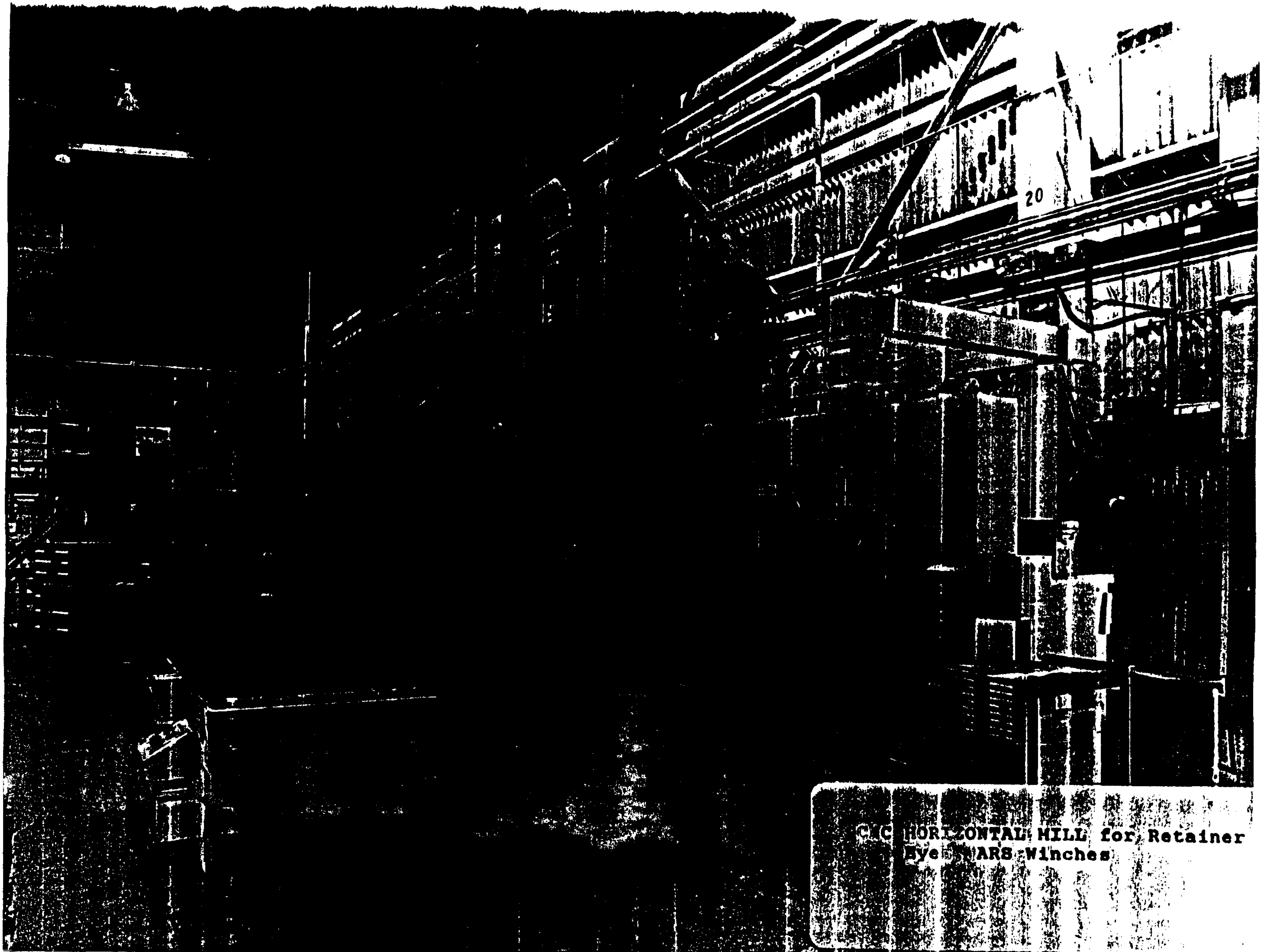
AUTOMATIC MACHINING CELL for Machining Cross Deck Pendant Terminals



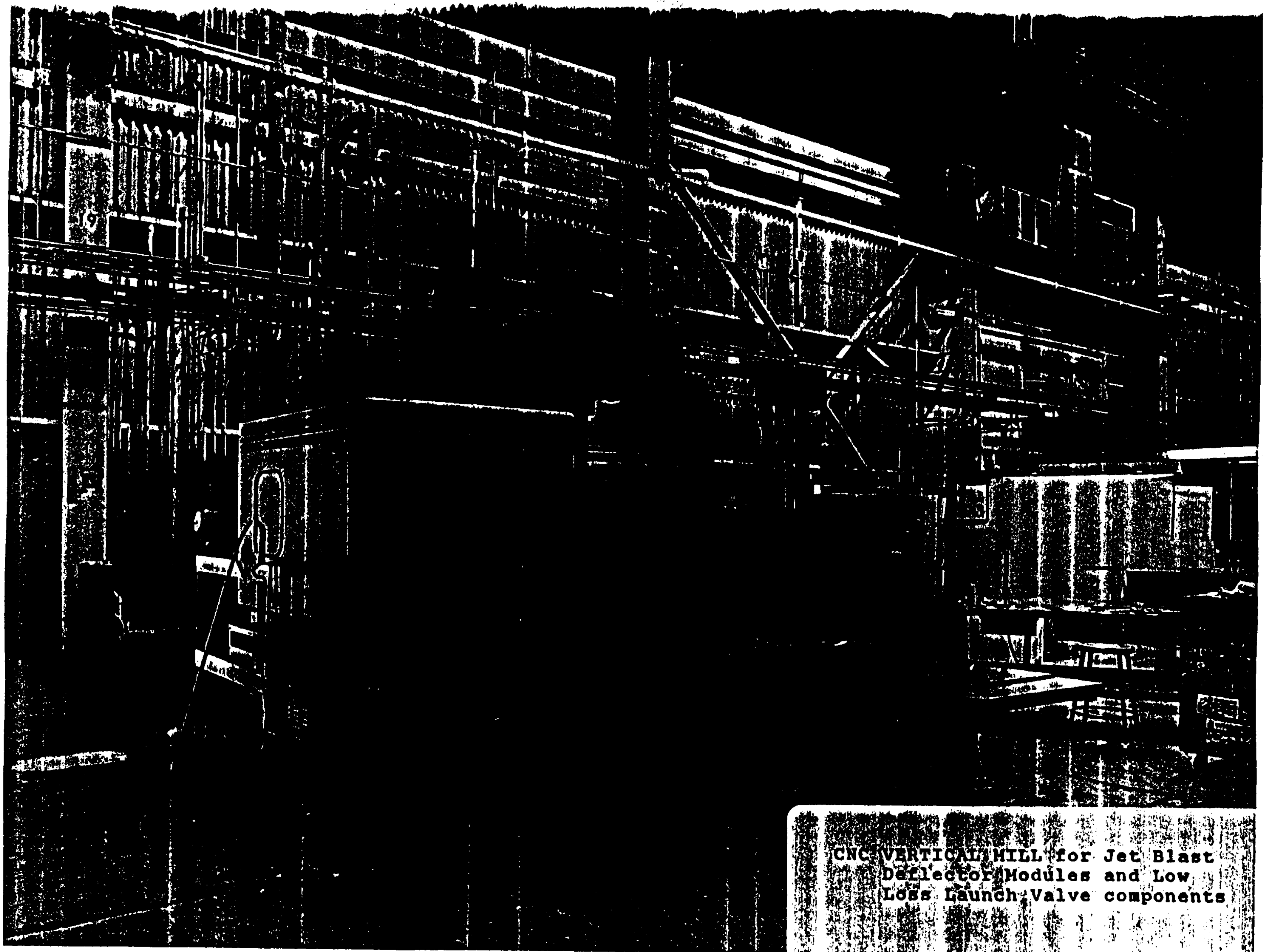
NEW 5-AXIS HORIZONTAL [illegible]
for Type XIII [illegible]



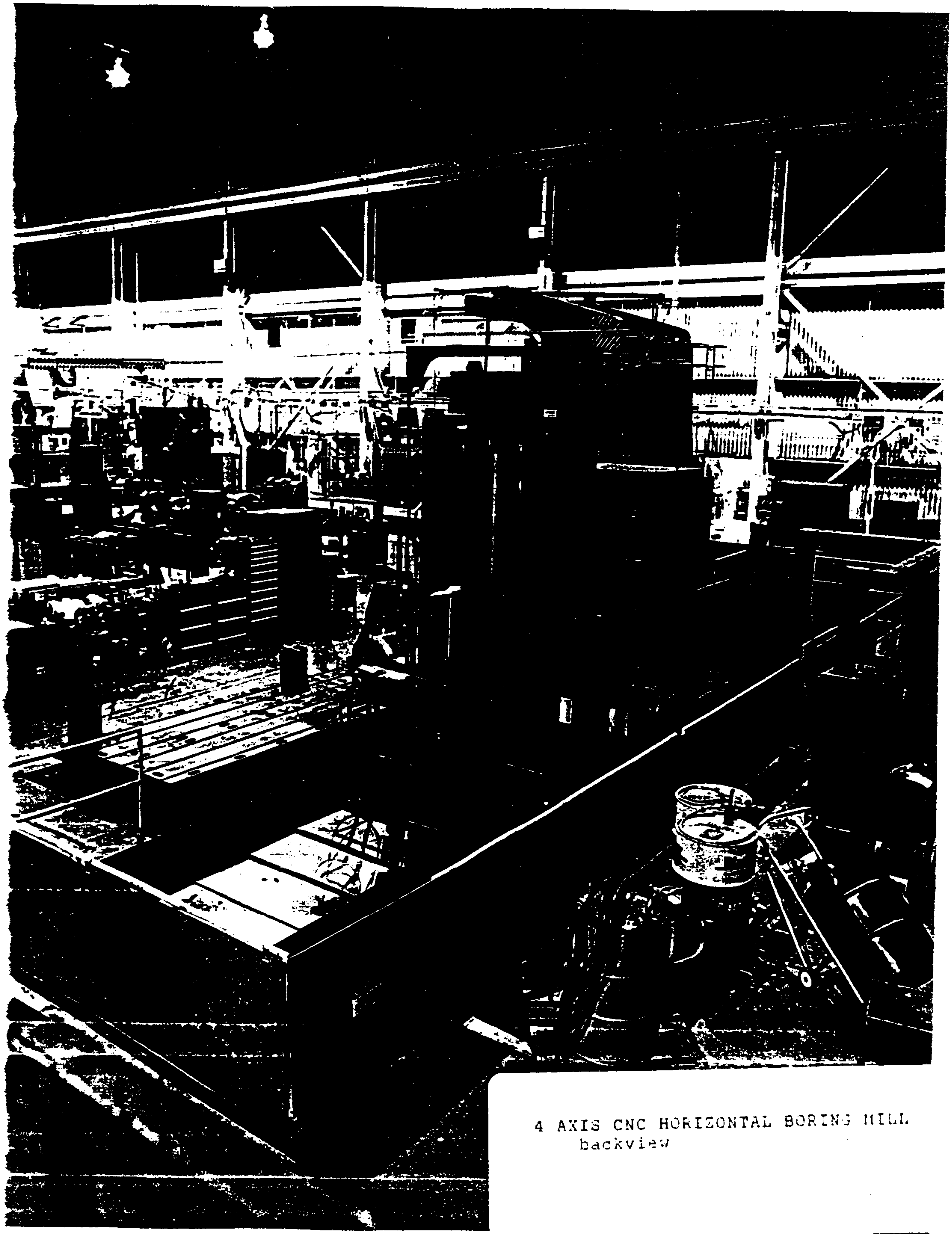
CNC TURNING CENTER for manufacture of Retainer Eyes, Low Loss Launch Valve Column Bolts



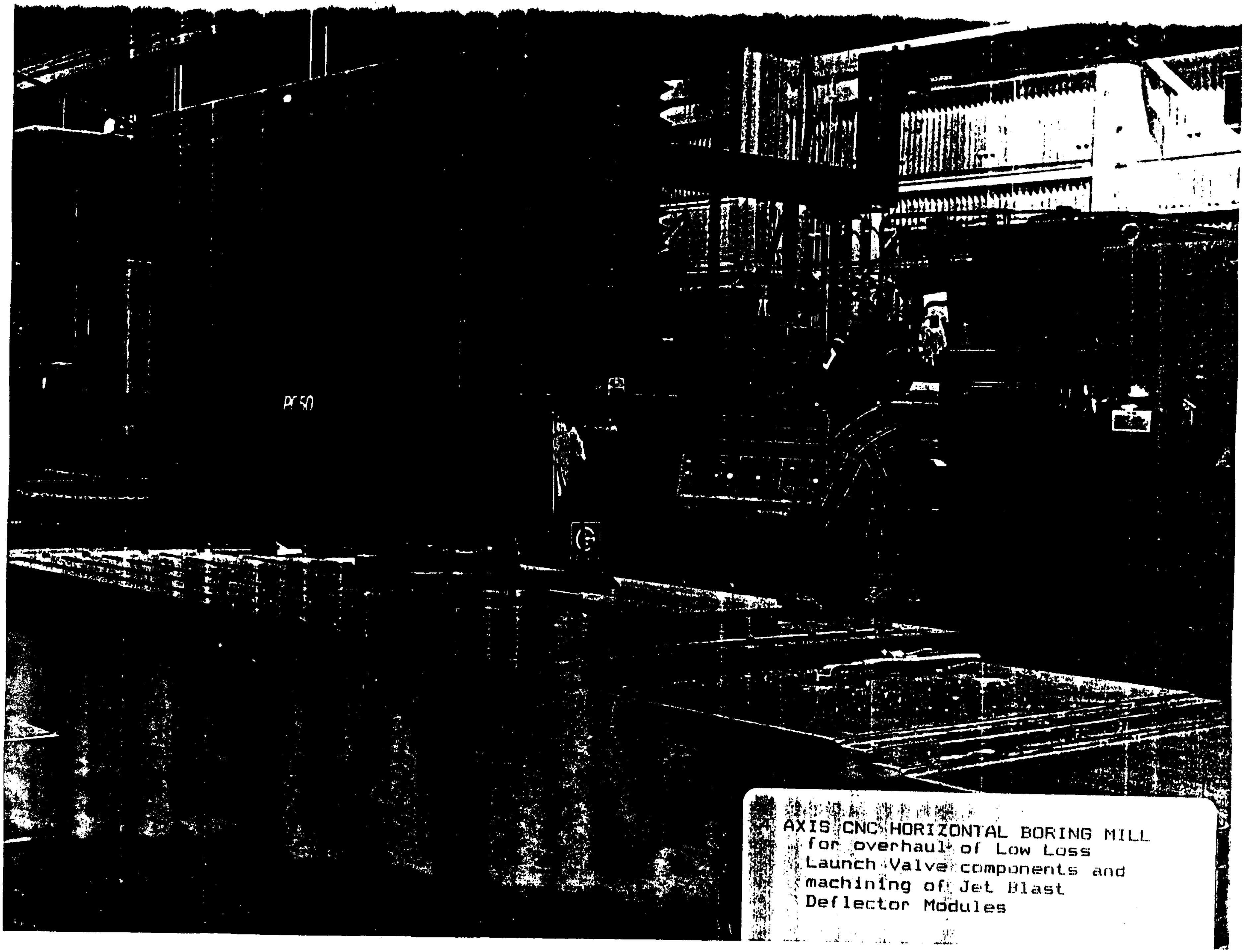
C C HORIZONTAL MILL for Retainer
Eye [illegible]ARS Winches



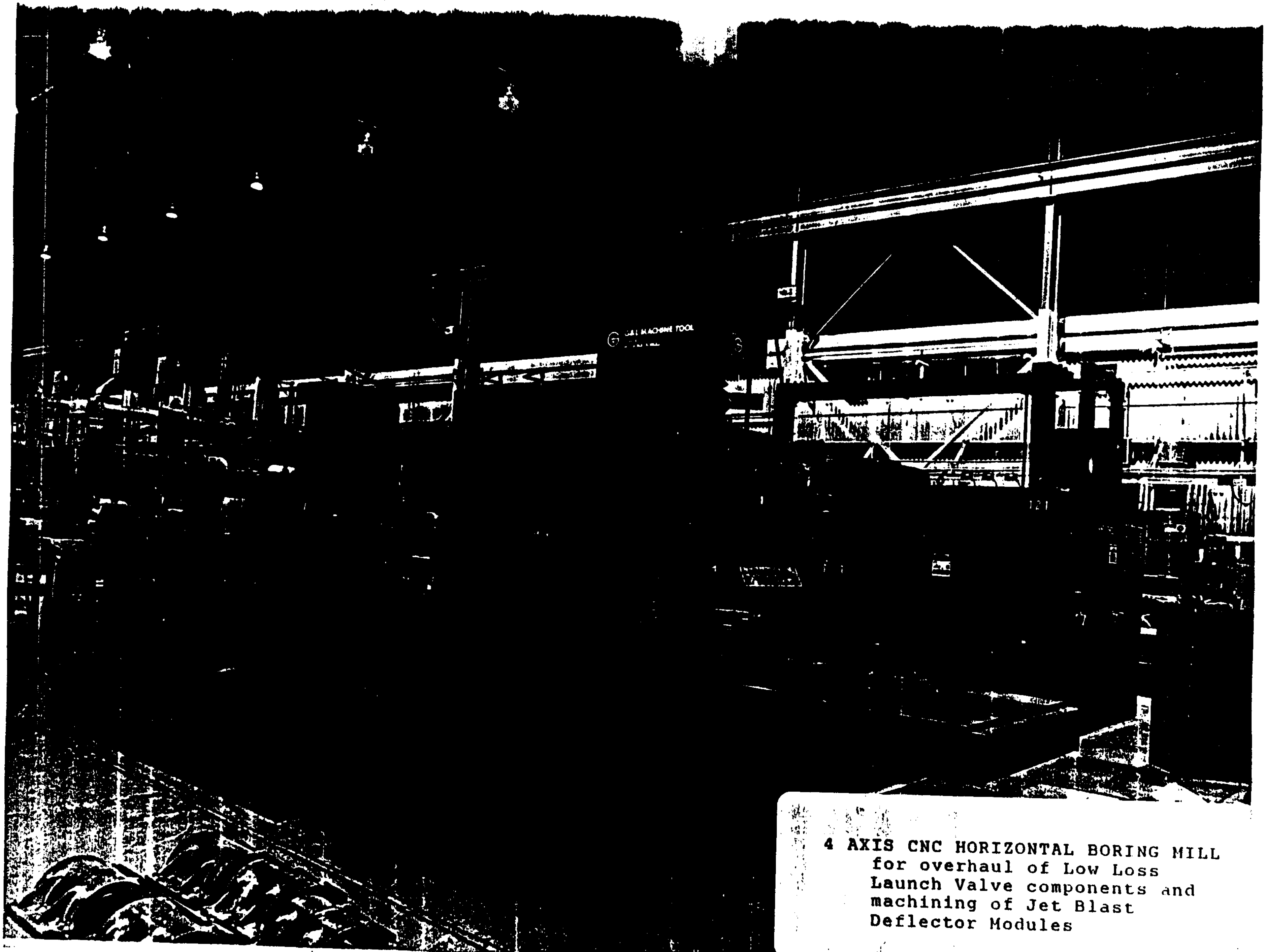
CNC VERTICAL MILL for Jet Blast Deflector Modules and Low Loss Launch Valve components



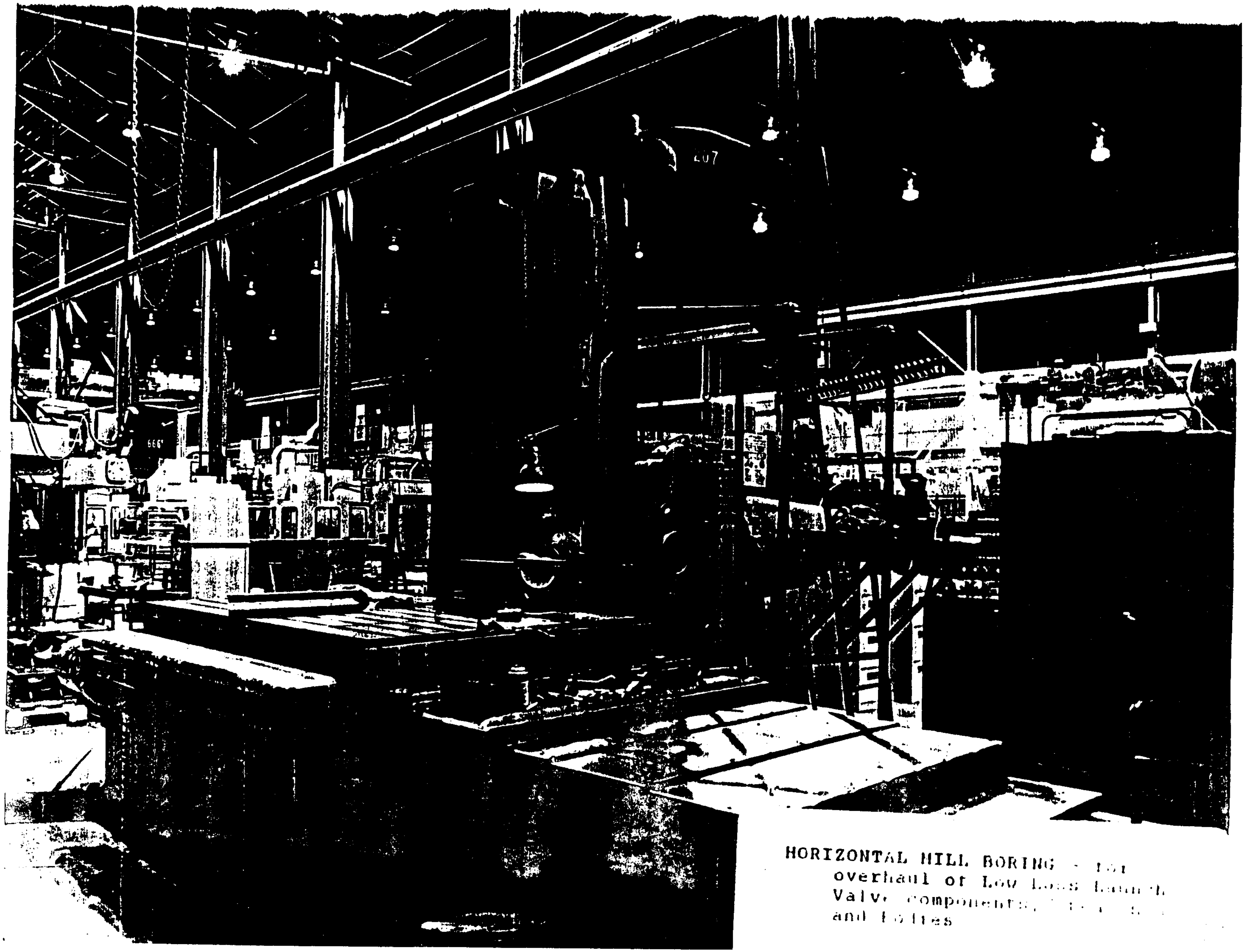
4 AXIS CNC HORIZONTAL BORING MILL
backview



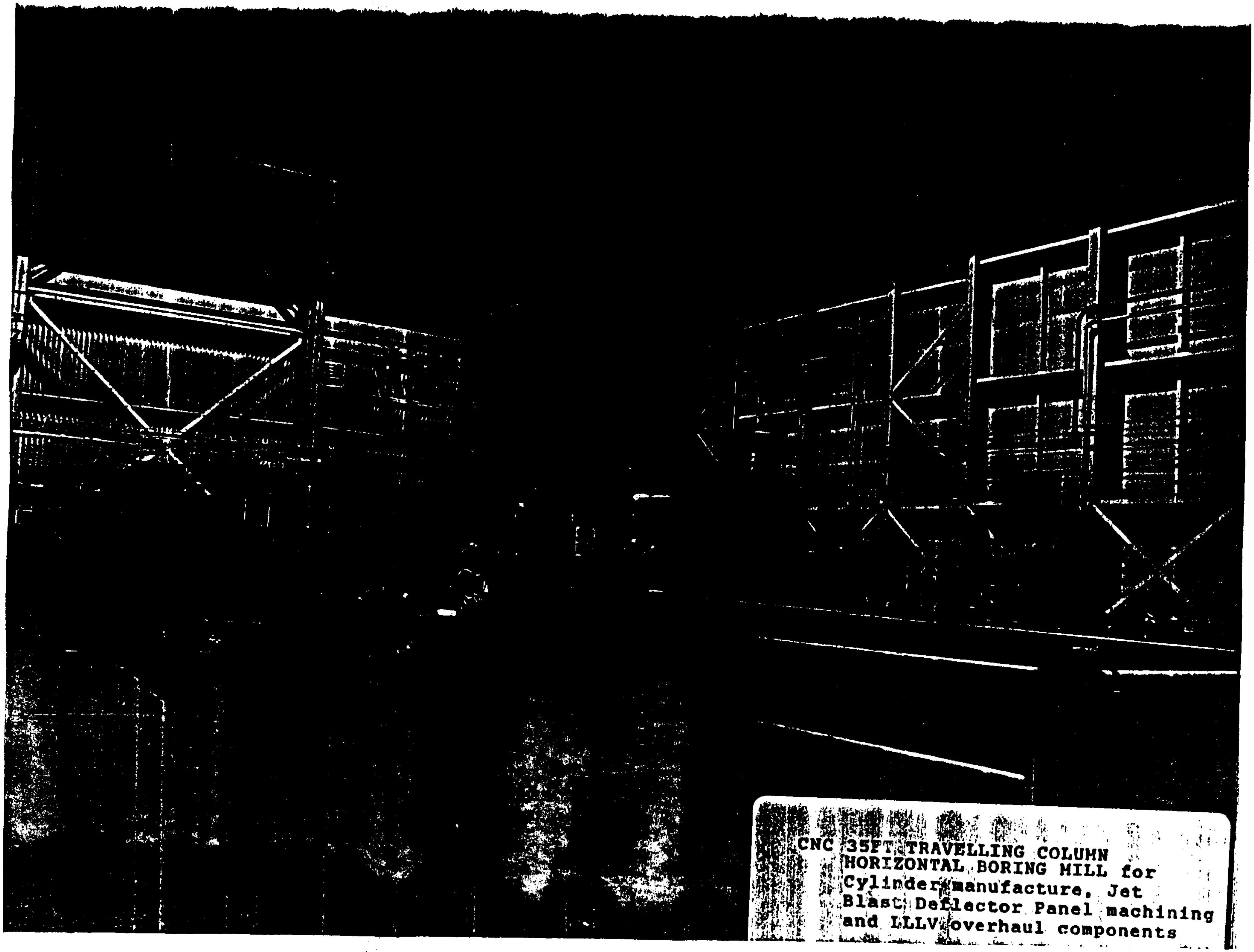
AXIS CNC HORIZONTAL BORING MILL for overhaul of Low Loss Launch Valve components and machining of Jet Blast Deflector Modules



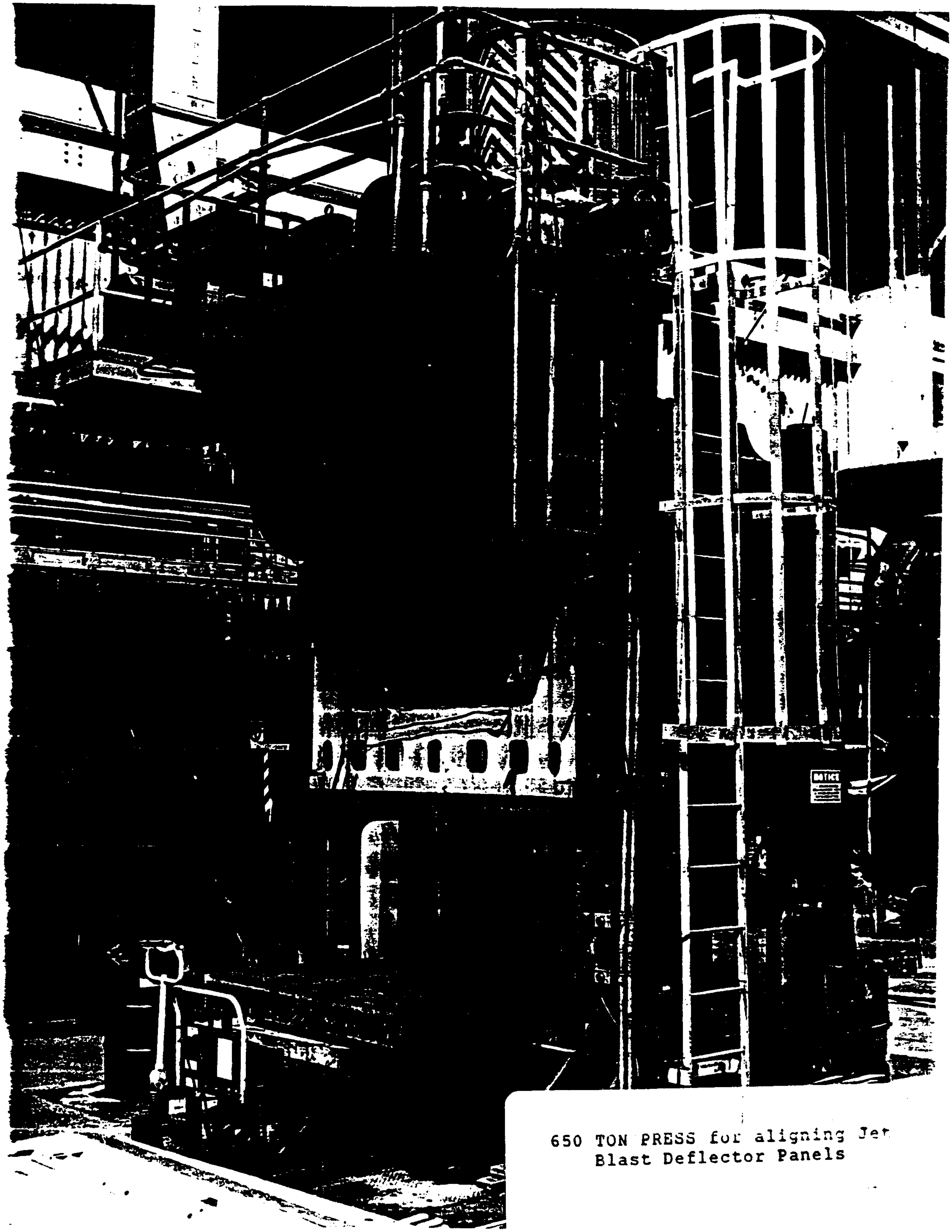
4 AXIS CNC HORIZONTAL BORING MILL for overhaul of Low Loss Launch Valve components and machining of Jet Blast Deflector Modules



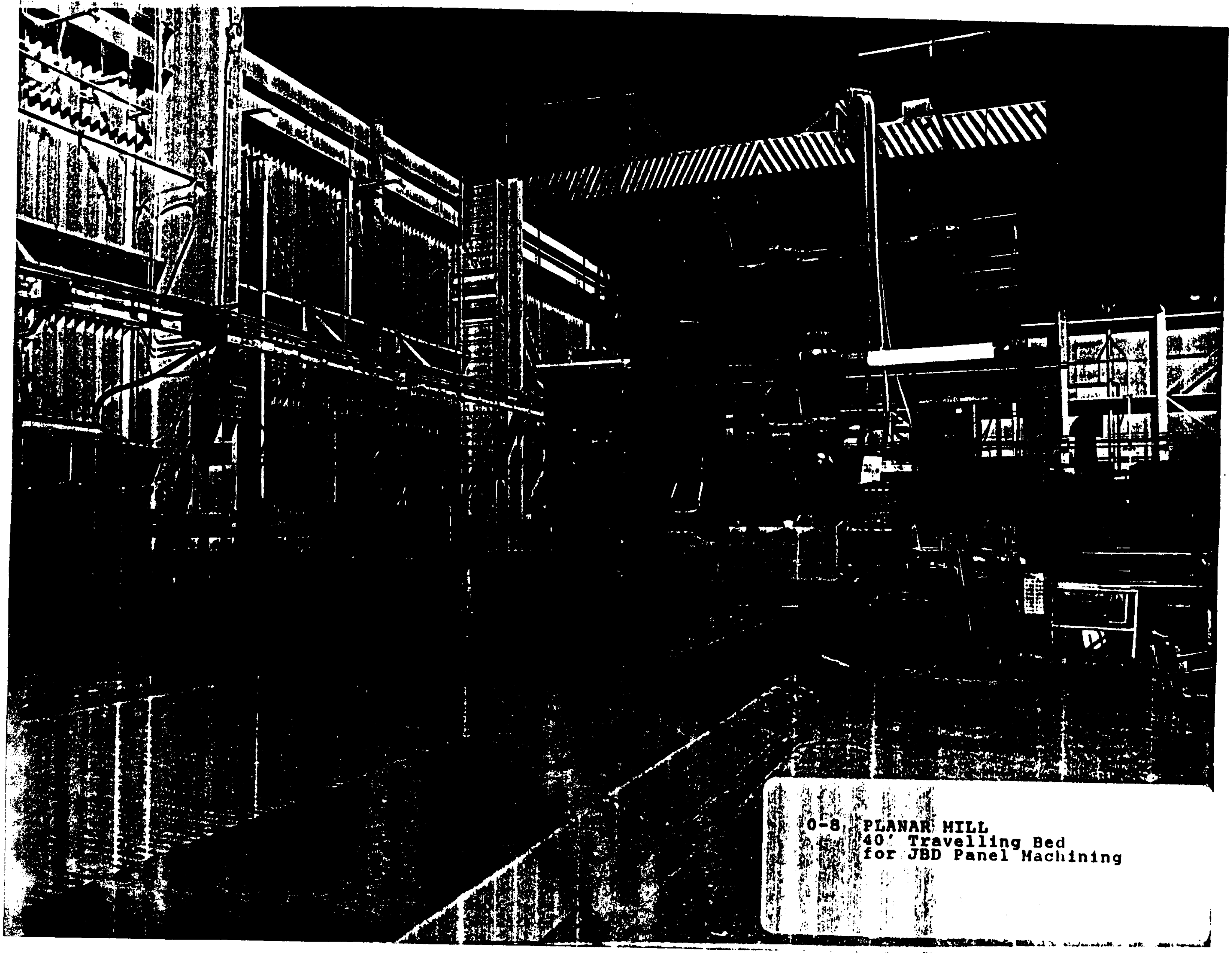
HORIZONTAL HILL BORING - for
overhaul of Low Loss Launch
Valve components, [illegible]
and [illegible]



CNC 35FT TRAVELLING COLUMN HORIZONTAL BORING MILL for Cylinder manufacture, Jet Blast Deflector Panel machining and LLLV overhaul components



650 TON PRESS for aligning Jet Blast Deflector Panels



0-8 PLANAR MILL
40' Travelling Bed
for JBD Panel Machining

Audit Changes
Lakehurst

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

L. L. LUNDBERG

NAME (Please type or print)

Signature

ACTING COMMANDER

Title

9/19/94

Date

NAVAL AIR WARFARE CENTER

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print)

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

W. C. BOWES, VADM, USN

NAME (Please type or print)

Signature

COMMANDER

Title

20 Sep 94

Date

NAVAL AIR SYSTEMS COMMAND

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER

NAME (Please type or print)

Signature

Title

9/21/94

Date

DEPARTMENT OF THE NAVY
NAVAL AIR WARFARE CENTER
NAVAL AIR WARFARE CENTER HEADQUARTERS
1421 JEFFERSON DAVIS HWY
ARLINGTON VA 22243

IN REPLY REFER TO

1000
Ser NAWC-21C/

SEP 16 1994

From: Commander, Naval Air Warfare Center
To: Distribution

Subj: RELEASE OF BASE REALIGNMENT AND CLOSURE DATA CALL IN THE ABSENCE OF THE COMMANDER

1. During the period 19-21 September I will be on travel.

2. Mr. Lewis L. Lundberg, Technical Director, Naval Air Warfare Center, is designated as acting as Acting Commander during this period. As such, he is authorized to release completed Base Realignment and Closure Data Calls and to provide certification for the data calls.

W E Newman
W. E. NEWMAN

Distribution:
COMNAVAIRWARCENWPNDIV
COMNAVAIRWARCENACDIV
NAVAIRWARTRASYSDIV

DATA CALL #12
BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 8 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

CAPTAIN JOHN B. PATTERSON
NAME (Please type or print)

J. B. Patterson
Signature

ACTING COMMANDER
Title

SEP 16 1994
Date

NAVAL AIR WARFARE CENTER AIRCRAFT DIVISION LAKEHURST, NJ

E

0197 12 Aug 94 Transmittal #1

JOINT CROSS SERVICE GROUP LABORATORIES DATA CALL

DATA CALL #12

Carderock Site
Carderock Division
Naval Surface Warfare Center

WC

 Transmittal

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 Workload. Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	198	204	209	200	199	201	232	232	233	250	280	255
Total Actual Funds ($M)	190	169	175	193	239	239	251	311				
Programmed Workyears	2110	2187	2071	2091	2054	2063	1979	1790	1725	1660	1607	1692
Actual Workyears	2162	2048	2080	2052	2084	1985	2037	2000				

Note 1: **The Carderock Site does not have any on-site FFRDC or SETA personnel at any location. Funding actuals and budget do not include direct cites.**

Note:2 **The Carderock Division management information system tracks funding and labor (work years) according to organizational code. Because a number of organizational codes are split across the Carderock and Annapolis Sites, actual funding and actual work year data are somewhat inaccurate, while budget information for FY94-97 have been computed to reflect BRAC91 realignment guidance. In addition, funds managed at one site may be executed at the other site. It is not possible to reconstruct the funding information. An estimate of the correct work years may be made by subtracting 107 work years from the Carderock Site and adding it to the Annapolis Site. This correction addresses only the error due to split codes. An additional number of work years should also be added to Annapolis due to cross-servicing of project funding; however, this varies from year to year and is not easily represented by a single number.**

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an

Transmittal

aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
  -- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
  -- Projected at each activity = Estimated at FY97

Excess Capacity of the Carderock Site = 2162 - 1692 = 470

Note 3. **BRAC91 directed the realignment of approximately 340 work years from the Annapolis Detachment to the Carderock Site of the Carderock Division. Therefore, the "excess capacity" calculation algorithm should demonstrate:**

Excess Capacity of the Carderock Site = 2162 - (1692 + 340) = 130

Note 4. **To correct for the error in work years attributable to the management information system characteristics discussed in Note 2. above, 107 work years must be subjected from the actual work years from FY86 to FY93 as follows:**

Excess Capacity of the Carderock Site = (2162-107) - (1692 + 340)
= +23

Transmittal

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

The Carderock Site provides some capabilities in support of the Product Function "Air Vehicles, Rotary, Structures.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

The Sea Based Aviation Office of the Carderock Site, Carderock Division, Naval Surface Warfare Center, has technical personnel with extensive background and depth of experience in design, analysis and testing of the V-22 aircraft. This experience has been developed through active support of the V-22 Full-Scale Development Program during the period FY-84 through FY-94. This expertise continues to be required to assure that the trade-off studies, subsequent design modifications, and testing performed by the contractor during the EMD program correctly supports certification and fleet requirements.

Carderock personnel also have extensive experience in analysis, design and testing of advanced VTOL and VSTOL vehicles. These capabilities enable the Division to provide engineering support to NAVAIR for investigation of rotor loads, dynamic response of helicopters, and the aircraft Structural Life Surveillance (ASLS) Program.

3.1 Location

None.

3.1.1 **Geographic/Climatological Features:** Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

None.

3.1.2 **Licenses & permits:** Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

None.

 Transmittal

3.1.3 **Environmental constraints:** Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt) buildings. (BRAC Criteria II)

None.

3.1.4 **Special Support Infrastructure:** List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

None.

3.1.5. **Proximity to Mission-Related organizations:** List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity
Air Vehicle	University	University	15 Miles	3.8	1.0
Rotary	of				
Structures	Maryland				

The Army Center of Excellence for Rotorcraft Education and Research at the University of Maryland is recognized as a leader in rotary-wing research. A computer code, UMARC, was developed by Dr. I. Chopra (at U of M) and will be used by Division engineers to support NAVAIR in rotary-wing fault detection. The close proximity of U of M to Carderock allows frequent interaction to successfully utilize and modify the UMARC program for this effort without incurring large travel expenses.

 Transm. #a1

3.2 Personnel:

3.2.1 **Total Personnel:** What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	8	0	0	0
Management (Supv)	0	0	0	0
Other	0	0	0	0

3.2.2 **Education:** What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	0	0	0
Associates	0	0	0
Bachelor	5	0	0
Masters	2	0	0
Doctorate (include Med/Vet/etc.)	1	0	0

 Transmittal #1

3.2.3 **Experience:** What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 years	3-10 years	11-15 years	16-20 years	More than 20 years
Technical	0	1	5	0	2
Management (Supv)	0	0	0	0	0
Total	0	1	5	0	2

3.2.4 **Accomplishments During FY91-93:** For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

None.

CSF	Disclosures	Awarded	Patent Titles (List)	
	None	None		
Total				

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

CSF	Number Published	Paper Titles (List)
Air Vehicle, Rotary, Structures	8	**See list below.**
TOTAL	8	

1. "Prediction of Yaw Control Effectiveness and Tail Rotor Loads", Proceedings of the 19th European Rotorcraft Forum, 14-16 September 1993.
2. "Analytical Investigation of Flight Conditions Leading to Unanticipated Right Yaw", Proceedings of the American Helicopter Society Aeromechanics Specialists Conference, 19-21 January 1994.
3. "Simulation of V-22 Rotorcraft Hover Flowfield", Proceedings of the AIAA International Powered Lift Conference, 1-3 December 1993.
4. "Stabilizing Pylon Whirl Flutter on a Tilt-Rotor Aircraft", Proceedings of the AIAA-ASME-ASCE-AHS-ASC Structures, Structural Dynamics, and Materials Conference, 8-10 April 1991.
5. "Helicopter Flight Data Feature Extraction for Component Load Monitoring", Proceedings of the AIAA-ASME-ASCE-AHS-ASC Structures, Structural Dynamics, and Materials Conference, 18-20 April 1994.
6. "Prediction of Helicopter Component Loads Using Neural Networks", AIAA Structures, Structural Dynamics, and Materials Conference, 19-22 April 1993.
7. "Identification of Helicopter Component Loads Using Multiple Regression", Proceedings of the AIAA Dynamics Specialists Conference, 16-17 April 1992.
8. "Determination of Helicopter Flight Loads from Fixed System Measurements", Proceedings AIAA 32nd Structural Dynamics and Materials Conference, 8-10 April 1991.

WC

Transmittal

3.3 Workload

3.3.1 **FY93 Workload**

3.3.1.1 **Work Year and Lifecycle:** Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	0	0	0	0
Engineering Development	1.7	0	0	0
In-Service Engineering	2.1	0	0	0

 Transmittal 1

3.3.1.2 **Engineering Development By ACAT:** For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:
- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	(None)			
ACAT ID	V-22 Engineer-ing Support	1.7	$300K (A511-5115/010D/2 H1425)	(See text below)
ACAT II	(None)			
ACAT III/IV	0			
Other	0			

V-22 Engineering Support. The V-22 provides the Navy, Army, Air Force and Marine Corps the ability to conduct combat missions requiring vertical/short field take-off and landing capabilities not currently available. Application to each service mission needs will be accomplished by a common air vehicle with service-unique mission equipment. Primary missions are: amphibious/land assault, troop lift and external cargo (Marines), combat search and rescue (Navy), and special operations (Air Force).

Transmittal

3.3.1.3 **In-Service Engineering:** For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
Air Vehicle, Rotary, Structures	Rotorcraft Loads and Dynamics Engineering, Aircraft Structural Life Surveillance	$280K (A5602530/ 010-4/2660)	2.1	All Navy Rotorcraft in the Fleet--SH-60, H-53E, AH-1W, H-46, SH-2, H-3

3.3.2 **Projected Funding**

3.3.2.1 **Direct Funding:** For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

Not Applicable.

CSF	FY94	FY95	FY96	FY97
	0	0	0	0

Transmittal

3.3.2.2 **Other Obligation Authority:** For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Air Vehicle, Rotary, Structures	$540.4K	$666K	$960K	$977K

3.4 Facilities and Equipment

3.4.1 **Major Equipment and Facilities:** Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

None.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	
	None				

Transmittal

3.5 Expansion Potential

3.5.1 **Laboratory Facilities:** Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Air Vehicle, Rotary, Structures	**CCN 311**	**Technical**	**0.48**	**0.48**	**0**

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

The Carderock Site has a gross building space of 1,533 KSF of which 79.9 KSF is in CCN 311, Aircraft Labs. The Site has approximately 10.9 KSF which could be made available for expansion with little or no modifications and an additional 124.6 KSF which could be made available with major modifications to existing buildings. Considering new construction a total of 557.1 KSF could be made available to absorb additional work years.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

As shown in Table 3.3.2.2 above, about 4 additional work years in this common support function are planned by FY1997. These work years can be accommodated within existing space or by reassignment of existing personnel currently on-site.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

None.

Transmittal

3.5.2 **Land Use:** Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

98.1 Acres at the Carderock Site are available for new construction without restrictions.

3.5.3 **Utilities:** Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

Natural Gas.	**No known limitations.**
Sewage.	**Excess capacity above normal steady state load of 1,040,000 GPD or above peak demand of 716,000 GPD.**
Water.	**Excess capacity above normal steady state load of 1,040,000 GPD or above peak demand of 716,000 GPD.**
Electricity.	**Excess capacity above normal steady state load of 11,500 KWH or above peak demand of 3,000 KWH.**

Transmittal

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

NAME (Please type or print

Signature

Title

Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (Sel) D. P. Sargent, Jr.
NAME (Please type of print

D P Sargent
Signature

Commander
Title

7/28/94
Date

Naval Surface Warfare Center
Activity

In certify that the information herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print

G. R. Sterner
Signature

8/5/94
Date

Title
Commander
Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type of print

W A Earner
Signature

Title

8/18/94
Date

DATA CALL #12
CARDEROCK SITE

Transmittal

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

D.K. Kruse; Captain, USN
NAME (Please type or print)

DK Kruse
Signature

Commander
Title

7/21/94
Date

Carderock Division; NSWC
Activity

Provides a correction due to improper site reference on page 3, and provides complete Section III data on pages 4 through 14 and adds page 7A as a result of BSAT guidance on the level-of-effort threshold for data submission.

DATA CALL #12
CARDEROCK SITE
REVISION A – 21 JULY 94

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

James E. Baskerville; Captain USN
NAME (Please type or print)

Signature

Commander
Title

14 SEP 94
Date

Carderock Division, USN
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

D. P. Sargent, Jr.; RADM (Sel), USN
NAME (Please type or print)

Signature

Commander
Title

9/15/94
Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)
G. R. STERNER

Signature

9/19/94
Date

~~Commander~~
Title Naval Sea Systems Command

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

7/19/94
Date

Title

Activity

DATA CALL #12
CARDEROCK SITE

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

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I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

J. S. Chlebanowski, Commander	J. S. Chlebanowski Jr.
NAME (Please type or print)	Signature
Officer-in-Charge (Acting)	9/14/94
Title	Date
Carderock Division; NSWC	
Activity	

Ref: BSAT FAX from J. Trick of 12 Sep 94. Additional information provided as requested for Question 3.2.4.2. No change required to Question 3.3.1.2.

DATA CALL #12
CARDEROCK SITE

198 2 Aug 94 Transmittal

JOINT CROSS SERVICE GROUP LABORATORIES DATA CALL

DATA CALL #12

Naval Surface Warfare Center
Carderock Division Detachment
Annapolis, Maryland

Revision A (22JUL94) submitted to include the Environmental Quality program work conducted at NSWC-Annapolis

WC

Transmittal

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 Workload. Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV).

Information Required	Fiscal Year											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	79	86	86	78	70	80	94	87	72	102	120	74
Total Actual Funds ($M)	76	71	72	75	84	96	101	117				
Programmed Workyears	791	823	780	798	778	795	735	674	728	756	693	444
Actual Workyears	810	771	783	783	789	765	756	753				

Note 1: The NSWC-Annapolis does not have any on-site FFRDC or SETA personnel at any location. Actual and budget funding amounts do not include direct cites.

Note 2: The Carderock Division management information system tracks funding and labor (work years) according to organizational code. Because a number of organizational codes are split between the Carderock and Annapolis sites, actual funding and actual workyear data are somewhat inaccurate, while budget information for the FY94-97 has been computed to reflect BRAC-91 realignment guidance. In addition, funds managed at one site may be executed at the other site. It is not possible to reconstruct the funding information. An estimate of the correct workyears may be made by subtracting 107 workyears from the Carderock site and adding it to the Annapolis site. This correction addresses only the error due to split codes. An additional number of workyears should also be added to Annapolis due to cross-servicing of project funding; however, this amount varies from year to year and is not easily represented by a single number.

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETA

2.2 Excess "Lab" Capacity -- Measured at the DOD Component Level

Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears

Transm. II-1

-- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
-- Projected at each activity = Estimated at FY97

Excess Capacity of NSWC-Annapolis: 810 - 444 = 366

Note 3: **BRAC-91 directed the realignment of approximately 376 workyears from Annapolis to other sites within the Carderock Division. Therefore, the "excess capacity" calculation algorithm should demonstrate:**

Excess Capacity of NSWC-Annapolis: 810 - (444+376) = -10

Note 4: **To correct for the error in work years attributable to the management information system characteristics discussed in Note 2, 107 workyears must be added to the actual work years from FY86 to FY93 as follows:**

Excess Capacity of NSWC-Annapolis: (810 + 107) - (444+376) = 97

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

Pervasive Function - Environmental Quality.

NSWC-Annapolis performs work consistent with the definition of Environmental Quality. The S&T program encompasses technologies to:

(1) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance)

(2) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention).

3.1 Location

3.1.1 Geographic/Climatological Features: Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

None.

3.1.2 Licenses & permits: Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

None.

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3.1.3 **Environmental constraints:** Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (nongovt) buildings. (BRAC Criteria II)

None.

3.1.4 Special Support Infrastructure: List and describe the importance of any mission related special support infrastructure (e.g., utilities) present at your location for your activity. (BRAC Criteria I)

None.

3.1.5 Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission - e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Activity	Workyears Funded by Your Activity
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

3.2 Personnel

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

Types of Personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical	15	0	0	0
Management (Supv)	0	0	0	0
Other	0	0	0	0

The total number of workyears attributed to S&T (Environmental Quality) is 5.9 workyears, but the S&T effort is accomplished by 15 personnel who, in addition

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to their S&T work, perform work on Navy Shipboard Environmental Quality RDT&E, Acquistion, and Life Cycle Programs. These additional areas total in excess of $40.3M and 114 workyears.

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

Type of Degree/Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less	2	0	0
Associate	0	0	0
Bachelor	4	0	0
Masters	8	0	0
Doctorate (include Med/Vet/etc.)	1	0	0

3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

Type of Position	Years of Government and/or Military Service				
	Less than 3 yrs	3-10 yrs	11-15 yrs	16-20 yrs	More than 20 yrs
Technical	0	7	2	3	3
Management (Supv)	0	0	0	0	0
Total	0	7	2	3	3

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

CSF	Disclosures	Awarded	Patent Titles (List)
Environmental Quality	0	1	Low Flow Fluid Separator, Navy Case No. 71542 (March 1994)
Total	0	1	

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
CARDEROCK DIVISION

ANNAPOLIS DETACHMENT
ANNAPOLIS, MD 21402-5067

IN REPLY REFER TO:

12 Sep 94

MEMORANDUM

From: Officer In Charge, Naval Surface Warfare Center, Carderock Division Detachment, Annapolis
To: Base Structure Analysis Team, ATTN: Mr. John J. Trick, Jr.

Subj: CLARIFICATION/CORRECTION DATA CALL #12

Ref: (a) Your facsimile message of 12 SEP 1994 on same subject

1. The following data is provided as the Naval Surface Warfare Center, Carderock Division Detachment, Annapolis, response to your querry. The revised criteria has resulted in no change to the data previously provided.

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I) *For each paper listed, provide both the title of the article and the journal in which it was published, and the month and year of publication.*

CSF	Number Published	Paper Titles (List)
Environmental Quality	0	Not Applicable
Total	0	

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide: - For each ACAT IC, ID, and II program (as defined in DODI 5000.2): - The name of the program - A brief program description - For each ACAT III and IV programs: - The number of such programs - A list of program names - For each program not an ACAT I, II, III, IV: - The number of such programs - A list of program names - For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

When reporting ACAT systems, restrict your response to hardware or software programs / systems which are listed as ACAT Programs in the ASN(RDA) " "Acquistion Program Data Base" or in other Military Departments ACAT listings for FY1993.

WL

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	0	0	None
ACATID	None	0	0	None
ACAT II	None	0	0	None
ACAT III/IV	None	0	0	None
Other	None	0	0	None

Since NSWC-Annapolis responed to Data Call #12 on the basis of a pervasive technology in Environmental Quality, no response to this question is appropriate.

LRWalker

L. R. WALKER

Transmittal

3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

SEE PAGE 6A

CSF	Number Published	Paper Titles (List)
Environmental Quality	0	Not Applicable
Total	0	

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

CSF: Pervasive Function - Environmental Quality.

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology	5.9	0	0	0
Engineering Development	0	0	0	0
In-Service Engineering	0	0	0	0

SEE PAGE 6A & 6B

3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide: - For each ACAT IC, ID, and II program (as defined in DODI 5000.2): - The name of the program - A brief program description - For each ACAT III and IV programs: - The number of such programs - A list of program names - For each program not an ACAT I, II, III, IV: - The number of such programs - A list of program names - For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	None	0	0	None
ACATID	None	0	0	None
ACAT II	None	0	0	None
ACAT III/IV	None	0	0	None
Other	None	0	0	None

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3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

Common Support Functions	In-Service Engineering Efforts (list)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	
None	None	None	None	None

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Environmental Quality	0	0	0	0

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

CSF	FY94	FY95	FY96	FY97
Environmental Quality	Reimbursable $2.2M Direct Cite $0	Reimbursable $2.5M Direct Cite $0	Reimbursable $7.0M Direct Cite $0	Reimbursable $7.2M Direct Cite $0

Tom Smith

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

Common Support Function	Major Facility or Equipment Description	Unique to			Replacement Cost ($K)
		DoD	Federal Gov't	U.S.	
Environmental Quality	Environmental Quality Laboratories	No	No	No	$8.0M

The S&T (Pervasive Function - Environmental Quality) effort is part of the Carderock Division, Naval Surface Warfare Center, Technical Capability - RDT&E, and Acquisition and Lifetime Support for Environmental Quality Science and Engineering and shares the aforementioned facility. The S&T effort uses the above facility approximately 10% of the total time.

The Carderock Division, Naval Surface Warfare Center provides the Navy with unique expertise and facilities to conduct research and development, shipboard simulated full-scale test and evaluation, numerical modeling, and laboratory experiments from pilot plant developmental stage through prototyping and preproduction model evaluation. This capability does not exist in private industry since there is no significant market or need for shipboard pollution abatement systems which must meet rigorous Navy design requirements. The environmental quality systems engineering design and development process from Level I through Levels II and III leads directly to systems acquisition (Milestone III decisions) and ship deployment of materials, processes, and systems into the present Fleet and new construction. The Carderock Division experts contribute to establishing Navy policy by providing technical and operational advice on marine related environmental issues to NAVSEA, SECNAV, OPNAV, and the Fleets and assure in-house Navy capability to always "buy smart." The concurrent availability of full scale test systems in the laboratory during formal Navy Technical Evaluations and Operational Evaluations aboard ship significantly enhances the quality, efficiency, and effectiveness of the developmental process.

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The Environmental Quality Science and Systems Engineering capability has facilities which support this technical capability:

Environmental Quality Laboratories - The facility consists of five laboratories that allow research, development, test and evaluation of materials, processes, and systems for shipboard applications leading to full compliance with regional, national and international environmental regulatory requirements. The capabilities these facilities provide allow for the development and evaluation of both pilot-plant size processes and full-scale waste treatment systems for processing non-oily and oily waste fluids, solid, plastics, medical waste disposal, and thermal destruction hardware and systems. The facilities have the capability of selecting flushing water (fresh and brackish water) for use in commodes and urinals providing a realistic waste stream to processing equipment. The test and evaluation facility for oily waste fluids consists of piping and ancillary equipment used for developing and evaluating bilge and ballast oily waste processing systems. Processing compartment mock ups provide for simulated ship installations of prototype and engineering development models undergoing test and evaluation prior to Fleet-wide deployment. These facilities and capabilities are unique because no other activity, public or private, conducts pollution abatement research for military vessels with their unique operational and logistical requirements.

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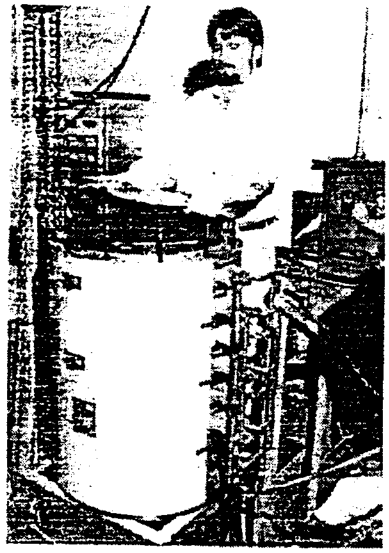
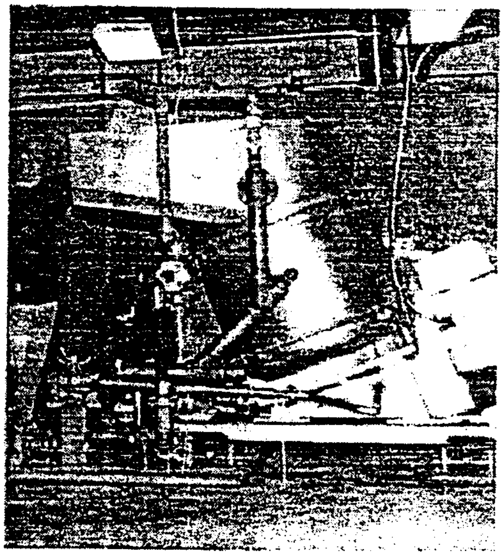
ENVIRONMENTAL QUALITY





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3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

The Environmental Quality laboratory spaces are currently filled to in excess of capacity. While there is physically room for expansion at NSWC-Annapolis (available real estate), any such expansion would require construction of additional buildings. Since this function is scheduled to migrate to the Carderock site as a result of BRAC-91, no such expansion is planned or anticipated.

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

No additional space is being developed for nor are personnel being hired in the Environmental Quality at least until after the migration (BRAC-91) to Carderock is completed.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

Not applicable.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

None

3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

There are 13.1 unrestricted acres and 4.4 restricted acres available for construction at NSWC-Annapolis. There are an additional 10.8 unrestricted acres available at the NIKE Site Annex.

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3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g., KWH of electricity. (BRAC Criteria II)

NSWC-Annapolis has a capacity to absorb an additional electrical load of 6,400 KW above the peak load ever experienced at the site. The site has a capacity for an additional demand of 200,000 CFH of natural gas. The site has a capacity for an additional potable water demand in excess of 1,000,000 GPD.

Transmittal

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

D. K. Kruse; Captain, USN
NAME (Please type or print)

Signature

Commander
Title

7/27/94
Date

Carderock Division, USN
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

D. P. Sargent, Jr.; RADM (Sel), USN
NAME (Please type or print)

Signature

Commander
Title

7/28/94
Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print)

Signature

8/5/94
Date

Title Commander

Naval Sea Systems Command
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

8/8/94
Date

Title

Transmittal

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

L. R. WALKER	LRWalker
NAME (Please type or print)	Signature
CDR USN, Officer in Charge	22 JUL 1994
Title	Date

Naval Surface Warfare Center, Carderock
Division Detachment, Annapolis MD
Activity

Data Call 12: **Joint Service Group Laboratories Data Call, Revision A (22JUL94)**

A complete revision of Data Call #12 is submitted as a result of the BSAT's denial of the Carderock Division's request for exclusion of the Environmental Quality Pervasive Function under the DDR&E Decision of 18 Mar 1994 related to the Carderock Division's Ship Material Technology Facility at Carderock, Maryland.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

James E. Baskerville; Captain USN
NAME (Please type or print)

Signature

Commander
Title

14 SEP 94
Date

Carderock Division, USN
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

D. P. Sargent, Jr.; RADM (Sel), USN
NAME (Please type or print)

Signature

Commander
Title

9/15/94
Date

Naval Surface Warfare Center
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

NAME (Please type or print)
G. R. STERNER

Signature

Commander
Title Naval Sea Systems Command

9/19/94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

W. A. EARNER
NAME (Please type or print)

Signature

9/19/94
Title

Date

Activity

DATA CALL #12
ANNAPOLIS DETACHMENT

BRAC-95 CERTIFICATION

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon, a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

L. R. WALKER
NAME (Please type or print)

LRWalker
Signature

CDR USN, Officer in Charge
Title

12 SEP 1994
Date

Naval Surface Warfare Center, Carderock
Division Detachment, Annapolis MD
Activity

BSAT Querry on Data Call #12

200

FOR OFFICIAL USE ONLY

Complete Revision

DATA CALL #12

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

COASTAL SYSTEMS STATION

DAHLGREN DIVISION

NAVAL SURFACE WARFARE CENTER

WC

31 March 1994

FOR OFFICIAL USE ONLY

Submission for
UIC **N61331**

"LAB" JOINT CROSS-SERVICE GROUP GUIDANCE PACKAGE

COASTAL SYSTEMS STATION
DAHLGREN DIVISION
NAVAL SURFACE WARFARE CENTER

Submission for
UIC **N61331**

SECTION I: TASKING

In accordance with the Deputy Secretary of Defense memorandum dated 7 Jan 94, the Laboratory Joint Cross-Service Group (LJCSG) with DOD components should, where operationally and cost effective, strive to: retain in only one Service militarily unique capabilities used by two or more Services; consolidate workload across the Service to reduce capacity; and assign operational units from more than one Service to a single base. Specifically, the purpose of the LJCSG is:

- Determine common support functions and bases to be addressed by LJCSG
- Establish guidelines, standards, assumptions, measures of merit, data elements and milestone schedules for DOD Component conduct of cross-service analysis of common support functions
- Review excess capacity analysis
- Develop closure or realignment alternatives
- Analyze cross-service trade-offs

The following information identifies to the Services common support functions and data element requirements necessary to support the cross-service analysis of these common support functions.

1.1 Guidelines

Because the DOD components are organized differently, "Lab" activities are considered to be those involved in the following life cycle efforts: Science and technology, and/or engineering development, and/or in-service engineering.

Service missions and force structure will be as stipulated in the FY1995-2000 Defense Planning Guidance and Interim Force Structure Plan.

The Military Departments will use the projected funding in the FY95 President's Budget Submission (Future Years Defense Plan -- FYDP) and an estimate of funds that will be received from outside the military department for execution.

If "lab" excess capacity exists, the Military Departments will start to reduce it where operationally and cost effective through a combination of downsizing in place within the departments, internal service consolidation, and cross service alternatives.

The Military Departments will gather, exchange, and analyze data collected per this guidance call for Common Support Functions (Appendix C) at "lab" activities (Appendix B) in accordance with the milestones and schedule dates identified in Appendix A.

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Cross-service alternatives will result in an aggregate reduction in the overall "lab" infrastructure across the Military Departments -- personnel/funding/facilities and equipment.

Common cross-service Measures of Merit will be consistently applied for all cross-service alternatives.

Integration of weapon systems/components into operational forces will remain with the individual Military Departments responsible for those forces.

1.2 Standards

Evaluation of cross-service alternatives will be consistent with PL 101-510 (as amended) and the eight BRAC criteria. Only certified data will be used.

The COBRA cost model will be used to calculate estimated costs, estimated savings, and Return on Investment (ROI) of alternatives leading to proposed closures and realignments. Common inputs will be used for Military COBRA runs incorporating cross-service alternatives.

Military value analysis will be conducted by the Military Departments IAW Title 10, USC responsibilities.

1.3 Assumptions

"Lab" Common Support Functions and activities identified herein represent the major opportunities for developing cross-service alternatives. The Military Departments are not precluded from proposing other cross-service alternatives to reduce excess capacity as they assess the full complement of "lab" functions.

Previous BRAC decisions will be factored into cross-service alternatives.

"Lab" capacity will be based on budgeted workyears. A workyear is considered to be 2080 hours adjusted for time not on the job (e.g. sick leave, annual leave, etc.)

1.4 Measures of Merit

The following Measures of Merit represent the outcome from the DOD component final realignment and closure recommendations that are supported by the capabilities data which will be gathered by activity and common support function in Section III of this guidance.

- Reduction of "lab" infrastructure
- Return on investment (COBRA)

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UIC **N61331**

- Military value (BRAC criteria 1-4) -- the composite assessment of the quality of the remaining "lab" infrastructure

1.5 Activities

The Military Departments will collect capacity data for each "lab" activity identified in Appendix B. The "lab" activities were selected by considering all individual aggregates of personnel and facilities located at one base, under the same commander, performing predominantly science and technology (S&T), engineering development, and/or in-service engineering work. Small subelements of these "lab" activities were included with the activity. Larger subelements were broken out and defined as separate activities. The list of activities was then narrowed down to the list in Appendix B based on a joint Military Department assessment of common support functions with cross-service potential.

1.6 Common Support Functions

The common support functions (CSFs) were selected as shown in Appendix C based on a joint Military Department assessment of commonalty and cross-servicing potential. Common support functions which were already consolidated and being cross serviced were not included.

Common Support Functions are divided into two categories: product and pervasive. Product functions include all S&T, engineering development, and in-service engineering efforts associated with a product from all funding sources. Pervasive functions only include those efforts that are S&T funded, i.e. Technology Base (6.1)/Exploratory Development (6.2)/Advanced Development (6.3).

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UIC **N61331**

SECTION II: CAPACITY OF DOD COMPONENTS

2.1 **Workload.** Use the following table to describe historic and projected workload at each activity in terms of funding and workyears. Assume previous BRAC closures and realignments are implemented on schedule. Projected funding will be derived from FY95 President's Budget Submission (Then year dollars). Past fiscal year data shall begin with FY86 or at the inception of the activity as it existed on 1 Oct 93. (BRAC Criteria I & IV)

Information Required	Fiscal Years											
	86	87	88	89	90	91	92	93	94	95	96	97
Total Funds Programmed ($M)	88.8	106.5	113.3	120.2	123.8	161.8	148.0	161.1	153.4	178.1	173.3	169.9
Total Actual Funds ($M)	96.6	84.1	104.9	122.9	154.4	181.3	180.2	185.6				
Programmed Workyears	1210	1207	1300	1333	1246	1242	1300	1211	1245	1352	1250	1156
Actual Workyears	1211	1214	1286	1348	1380	1358	1342	1291				

- Budgeted workyears are the selected indicator of the "lab" infrastructure's capacity at an aggregate level for each Military Department. They include both workyears funded directly by the Military Department and the workyears funded from organizations outside the Military Department.

Workyears = government personnel and on-site FFRDCs and SETAs

2.2 **Excess "Lab" Capacity -- Measured at the DOD Component Level**

- Excess "Lab" Capacity = Sum of the Peak Workyears - Sum of the Projected Workyears
  - -- Peak at each activity = Highest value between FY86 (or since inception of organization) and FY93
  - -- Projected at each activity = Estimated at FY97

Submission for
UIC N61331

SECTION III: CAPABILITY OF ACTIVITIES TO PERFORM COMMON SUPPORT FUNCTIONS (CSFs): Provide the information described for each common support function listed in Appendix C in which you are actively engaged.

3.0 Mission: Describe the major capabilities at your activity contributing to the common support function in bulletized format. Describe any relationship and interconnectivity with other functions (common or otherwise) in support of the overall activity mission.

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.1 Location

3.1.1 Geographic/Climatological Features: Describe any geographic/climatological features in and around your activity that are relevant to each CSF. Indicate and justify those that are required versus those that just serve to enhance accomplishing the mission of the activity. For example, clear air at high altitude that increases quality of atmospheric, ground-based laser experiments in support of the weapons CSF. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.1.2 Licenses & permits: Describe and list the licenses or permits (e.g., environmental, safety, etc.) that your activity currently holds and justify why they are required to allow tests, experiments, or other special capabilities at your location for each CSF. For example, permit to store and use high explosives. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.1.3 Environmental constraints: Describe and list the environmental or land use constraints present at your activity which limit or restrict your current scope for each CSF, i.e., would not allow increased "volume" or "spectrum" for the CSF. Example -- Volume: frequency of a type of experiment. Example -- Spectrum: Current permit to detonate high explosives will not allow detonation or storage of increased quantity of explosives without legal waiver (state law) or relocation of surrounding (non-govt) buildings. (BRAC Criteria II)

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A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.1.4 Special Support Infrastructure: List and describe the importance of any mission related special support infrastructure (e.g. utilities) present at your location for your activity. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.1.5. Proximity to Mission-Related organizations: List and describe the importance and impact of not having nearby organizations which facilitate accomplishing or performing your mission -- e.g. operational units, FFRDCs, universities/colleges, other government organizations, and commercial activities. Restrict your response to the top five. Complete the following: (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Common Support Functions	Name	Type of Organization	Distance	Workyears Performed by Your Activity	Workyears Funded by Your Activity

3.2 Personnel:

3.2.1 Total Personnel: What is the total number of government (military and civilian), on-site federally funded research and development center (FFRDC), and on-site system engineering technical assistance (SETA) personnel engaged in science and technology (S&T), engineering development and in-service engineering activities as of end FY93? For individuals that predominantly work in CSFs, involved in more than one CSF, account for those individuals in the CSF that represents the preponderance of their effort. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has

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been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Types of personnel	Number of Personnel			
	Government		On-Site FFRDC	On-Site SETA
	Civilian	Military		
Technical				
Management (Supv)				
Other				

3.2.2 Education: What is the number of government personnel actively engaged in S&T, engineering development and in-service engineering activities by highest degree and type of position? Provide the data in the following table: (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Type of Degree/ Diploma	Number of Government Personnel by Type of Position		
	Technical	Management (Supv)	Other
High School or Less			
Associates			
Bachelor			
Masters			
Doctorate (include Med/Vet/etc.)			

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3.2.3 Experience: What is the experience level of government personnel? Fill in the number of government personnel in the appropriate boxes of the following table. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

	Years of Government and/or Military Service				
Type of Position	**Less than 3 years**	**3-10 years**	**11-15 years**	**16-20 years**	**More than 20 years**
Technical					182
Management (Supv)					64
Total					246

3.2.4 Accomplishments During FY91-93: For government personnel answer the following questions.

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.2.4.1 How many patents were awarded and patent disclosures (only count disclosures with issued disclosure numbers) were made? (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

CSF	Disclosures	Awarded	Patent Titles (List)
Total			

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3.2.4.2 How many papers were published in peer reviewed journals? (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

CSF	Number Published	Paper Titles (List)
TOTAL		

3.3 Workload

3.3.1 FY93 Workload

3.3.1.1 Work Year and Lifecycle: Identify the number of actual workyears executed for each applicable CSF in FY93 for each of the following: government civilian; military; on-site FFRDCs; and on-site SETAs. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

"LAB"	Fiscal Year 1993 Actual			
	Civilian	Military	FFRDC	SETA
Science & Technology				
Engineering Development				
In-Service Engineering				

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3.3.1.2 Engineering Development By ACAT: For each Common Support Function (e.g. airborne C4I) at each activity engaged in engineering development, provide:
- For each ACAT IC, ID, and II program (as defined in DODI 5000.2):
  - The name of the program
  - A brief program description
- For each ACAT III and IV programs:
  - The number of such programs
  - A list of program names
- For each program not an ACAT I, II, III, IV:
  - The number of such programs
  - A list of program names
- For the purpose of this question, any program between Milestone I and IV and containing demonstration and validation (Dem/Val 6.4)/Engineering and Manufacturing Development (EMD 6.5) funds in the FY95 PBS is considered to be engaged in engineering development (BRAC Criteria I).

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Engineering Development	Name or Number	Workyears (FY93 Actual)	FY93 Funds Received (Obligation Authority)	Narrative
ACAT IC	(Name)			(Description)
ACAT ID	(Name)			(Description)
ACAT II	(Name)			(Description)
ACAT III/IV	(Number)			(List)
Other	(Number)			(List)

3.3.1.3 In-Service Engineering: For each Common Support Function at each activity engaged in in-service engineering, list the in-service engineering efforts, the FY93 funds (from all sources) obligated for these efforts, the FY93 workyears for these efforts, and the weapon system(s) supported by these efforts. In-service engineering consists of all engineering support of fielded and/or out of production systems and includes efforts to

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improve cost, throughput, and schedule to support customer requirements as well as mods and upgrades for reliability, maintainability, and performance enhancements. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Common Support Functions	In-Service Engineering Efforts (List)	FY93 Actual		Weapon System(s) Supported
		Funds Received (Obligation Authority)	Workyears	

3.3.2 Projected Funding

3.3.2.1 Direct Funding: For each applicable CSF, identify direct mission funding by appropriation from FY94 to FY97. Use FY95 PBS for FY95-FY97. (BRAC Criteria I)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

CSF	FY94	FY95	FY96	FY97

3.3.2.2 Other Obligation Authority: For each applicable CSF, identify reimbursable and direct-cite funding (other obligation authority expected) from FY94 to FY97. Funding allocation must be traceable to FY95 PBS. (BRAC Criteria I)

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A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

CSF	FY94	FY95	FY96	FY97

3.4 Facilities and Equipment

3.4.1 Major Equipment and Facilities: Describe major facilities and equipment necessary to support each Common Support Function (include SCIFs). If the facilities and equipment are shared with other functions, identify those functions and the percentage of total time used by each of the functions. Provide labeled photographs that picture the breadth and scope of the equipment and facilities described. If it is unique to DOD, to the Federal Government, or to the US, describe why it is unique. Insert the replacement cost. For this exercise, Replacement cost = (Initial cost + capital investment) multiplied by the inflation factor for the original year of construction. (BRAC Criteria II)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Common Support Function	Major Facility or Equipment Description	Unique To			Replacement Cost ($K)
		DOD	Federal Gov't	U. S.	

3.5 Expansion Potential

3.5.1 Laboratory Facilities: Use facilities records as of fourth-quarter FY93 in answering the following (in sq ft) for each CSF: (BRAC Criteria II)

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A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

Common Support Function	Facility or Equipment Description	Type of Space*	Space Capacity (KSF)		
			Current	Used	Excess

* Administrative, Technical, Storage, Utility

3.5.1.1 Describe the capacity of your activity to absorb additional similar workyears categorized in the same common support function with minor facility modification. If major modification is required, describe to what extent the facilities would have to be modified. (Use FY97 workyears as your requirement) (BRAC Criteria III)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.5.1.2 If there is capacity to absorb additional workyears, how many additional workyears can be supported? (BRAC Criteria III)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

3.5.1.3 For 3.5.1.1 and 3.5.1.2 (above) describe the impact of military construction programs or other alteration projects programmed in the FY95 PBS. (BRAC Criteria II)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

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3.5.2 Land Use: Provide number of buildable acres for additional laboratory/administrative support construction at your installation. (BRAC Criteria II)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

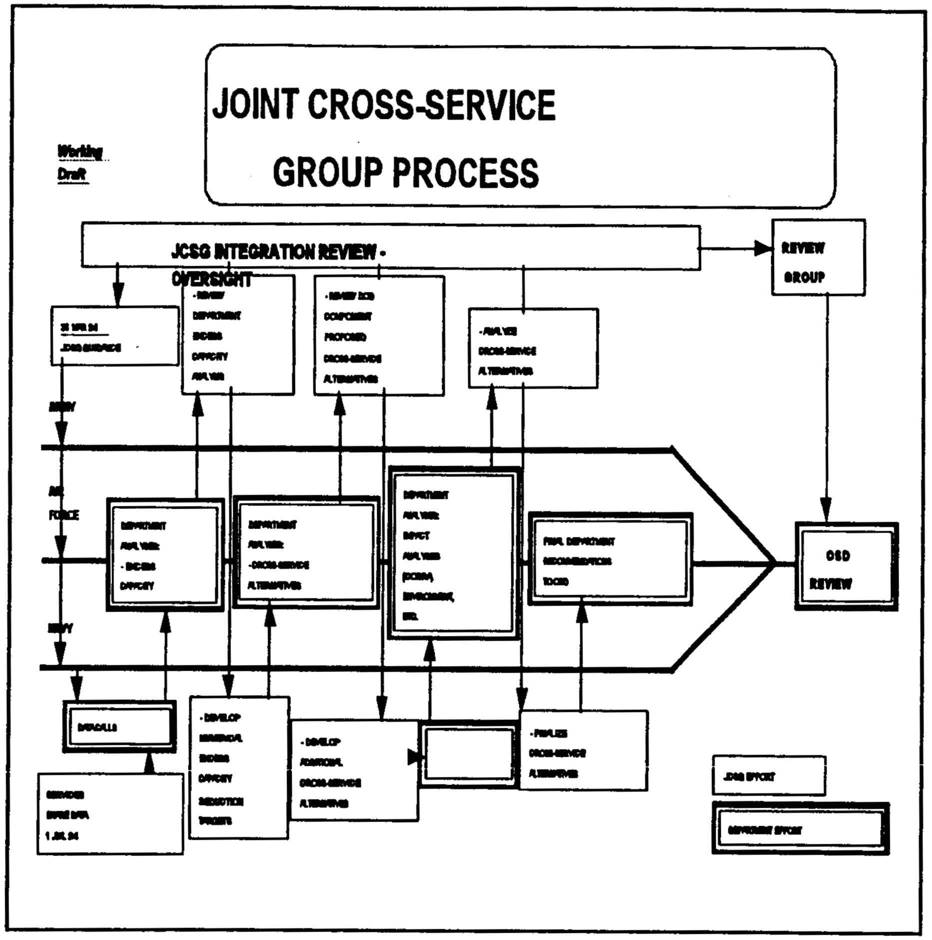
3.5.3 Utilities: Provide an estimate of your installation's capability to expand or procure additional utility services (electric, gas, water). Estimates should be provided in appropriate units -- e.g. KWH of electricity. (BRAC Criteria II)

A thorough review of the common support functions listed in Appendix C has been made. The Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station is not actively engaged in the common support functions listed.

SECTION IV: APPENDICES

A. Macro Process/Schedule
B. List of Activities
C. Common Support Functions

APPENDIX A



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APPENDIX B

LIST OF ACTIVITIES

AIR FORCE

1. Armstrong Lab, Brooks AFB
2. Armstrong Lab, Tyndall AFB
3. Armstrong Lab, Wright-Patterson AFB
4. Armstrong Lab, Williams AFB
5. Human Systems Center, Brooks AFB
6. Wright Lab, Wright-Patterson AFB
7. Wright Lab, Eglin AFB
8. Aeronautical Systems Center, Wright-Patterson AFB
9. Aeronautical Systems Center, Eglin AFB
10. Oklahoma City Air Logistics Center, Tinker AFB (In-service engineering)
11. Ogden Air Logistics Center, Hill AFB (In-service engineering)
12. San Antonio Air Logistics Center, Kelly AFB (In-service engineering)
13. Sacramento Air Logistics Center, McClellan AFB (In-service engineering)
14. Warner-Robins Air Logistics Center, Robins AFB (In-service engineering)
15. Phillips Lab, Kirtland AFB
16. Phillips Lab, Hanscom AFB
17. Phillips Lab, Edwards AFB
18. Space & Missile Center, Los Angeles AFB
19. Space & Missile Center, Norton AFB
20. Sacramento Air Logistics Center, Peterson AFB
21. Rome Lab, Griffiss AFB
22. Rome Lab, Hanscom AFB
23. Electronic Systems Center, Hanscom AFB
24. Sacramento Air Logistics Center, Peterson AFB (In-service engineering)

ARMY

1. Army Research Lab (ARL), Adelphi, MD
2. ARL, Aberdeen Proving Grounds (APG), MD
3. ARL, White Sands Missile Range, NM
4. ARL, NASA Langley, VA
5. ARL, NASA Lewis, OH
6. Natick Research, Development and Engineering Center, Natick, MA
7. Aviation Research, Development and Engineering Center, St Louis, MO
8. Aviation Troop Command, Aeroflight Dynamics Directorate, Moffitt Field, CA

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9. Aviation Troop Command, Aviation Applied Technology Directorate, Fort Eustis, VA
10. Edgewood Research, Development and Engineering Center, Aberdeen Proving Ground, MD
11. Communications Electronics Command Research, Development and Engineering Center, Ft Mammoth, NJ
12. Communication Electronics Command Research, Development and Engineering Center - Night Vision EO Directorate, Ft Belvoir, VA
13. Missile Research, Development and Engineering Center, Redstone Arsenal, AL
14. Armaments Research, Development and Engineering Center, Picatinny Arsenal, NJ
15. Armaments Research, Development and Engineering Center, Benet Labs, Watervliet Arsenal, NY
16. Tank-Automotive Command Research, Development and Engineering Center, Warren, MI
17. USA Research Institute of Infectious Diseases, Ft Detrick, MD
18. Walter Reed Army Institute of Research, Washington D.C.
19. USA Institute of Surgical Research, Ft Sam Houston, TX
20. USA Aeromedical Research Lab, Ft Rucker, AL
21. Medical Research Institute of Chemical Defense Aberdeen Proving Grounds, MD
22. USA Research Institute of Environmental Medicine, Natick, MA
23. Construction Engineering Research Laboratory, Champaign, IL
24. Cold Regions Research and Engineering Lab, Hanover, NH
25. Topographic Engineering Center, Alexandria, VA
26. Waterways Experiment Station, Vicksburg, MS
27. USA Research Institute for Behavioral & Social Sciences, Alexandria, VA
28. Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

NAVY

1. Naval Air Warfare Center, Weapons Division, China Lake
2. Naval Air Warfare Center, Weapons Division, Point Mugu
3. Naval Air Warfare Center, Aircraft Division, Patuxent River
4. Naval Air Warfare Center, Aircraft Division, Indianapolis
5. Naval Air Warfare Center, Aircraft Division, Lakehurst
6. Naval Research Lab, Washington D.C.
7. Naval Research Lab Detachment, Bay St Louis
8. Naval Surface Warfare Center, Carderock Division, Bethesda
9. Naval Surface Warfare Center, Carderock Detachment, Annapolis
10. Naval Surface Warfare Center, Crane Division
11. Naval Surface Warfare Center, Crane Detachment, Louisville
12. Naval Surface Warfare Center, Dahlgren Division
13. Naval Surface Warfare Center, Dahlgren Detachment, Panama City
14. Naval Surface Warfare Center, Indian Head Division
15. Naval Surface Warfare Center, Port Hueneme Division

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16. Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, San Diego
17. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering, West Coast Division, San Diego
18. Naval Command, Control, and Ocean Surveillance Center, In-Service Engineering Division, Charleston
19. Naval Aerospace Medical Research Center, Pensacola
20. Naval Biodynamics Lab, New Orleans
21. Naval Dental Research Lab, Great Lakes
22. Naval Health Research Center, San Diego
23. Naval Medical Research Institute, Bethesda
24. Naval Undersea Warfare Center, Keyport Division, WA
25. Naval Surface Warfare Center, Carderock, Philadelphia Detachment
26. Naval Undersea Warfare Center, Newport, RI
27. Naval Undersea Warfare Center (Newport), New London, CT
28. Naval Personnel Research and Development Center, San Diego, CA

DEPARTMENT OF DEFENSE

1. Armed Forces Radiobiology Research Institute (AFRRI), Bethesda, MD

APPENDIX C

COMMON SUPPORT FUNCTIONS
(DEFINITIONS LISTED FOLLOWING PAGES)

Product Functions

1. Air Vehicles
   - Fixed
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems
   - Rotary
     -- Structure
     -- Propulsion
     -- Avionics
     -- Flight Subsystems

2. Weapons
   - ICBMs/SLBMs
   - Conventional Missiles/Rockets
   - Cruise Missiles
   - Guided Projectiles
   - Bombs
   - Guns and Ammunition
   - Directed Energy
   - Chemical/Biological

3. Space Systems
   - Launch Vehicles
   - Satellites
   - Ground Control Systems

4. C4I Systems
   - Airborne C4I
   - Fixed Ground-Based C4I
   - Ground Mobile C4I

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Pervasive Functions

1. Electronic Devices
2. Environmental Sciences
3. Infectious Diseases
4. Human Systems
5. Manpower and Personnel
6. Training Systems
7. Environmental Quality
8. Advanced Materials

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DEFINITIONS

COMMON SUPPORT FUNCTIONS

Product Functions

1. Air Vehicles. Air vehicles are broken out into common support functions for fixed wing and rotary wing. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of air vehicles. Included are all air vehicles including their application as UAV's and targets.

- Structures. Includes but not limited to all air vehicles structure technology, engineering and production efforts. Include technology and engineering practices which advance structural design and analysis; advanced structural concepts and fabrication techniques; and structural integrity.

- Propulsion. Includes but not limited to all technology, engineering and production efforts associated with air vehicle propulsion such as turbine engine, rotorcraft power drive, and hypersonic propulsion components. Such components include compressors, inlets and nozzles, turbines, mechanical systems and control, gears, bearings, shafts, and clutches. In addition, include associated subsystems activities such as turborocket, turboramjet and rotorcraft transmissions; and supporting technical and engineering disciplines.

- Avionics. Includes but not limited to all technology, engineering and production efforts associated with the air platform's integrated avionics system. The avionics suite includes but is not limited to weapon delivery systems, electronic warfare, navigation, communications, radar, electro-optic sensors, signal/data processing and associated software system and support. Includes efforts associated with developing the integrated avionics system (i.e. optimizing functional partitioning, distribution and integration of avionics/related functions).

- Flight Subsystems. Includes but not limited to all technology, engineering and production efforts for air vehicle support systems such as landing gear; transparent crew enclosures; egress systems; mechanical equipment integrity; electrical component integrity; subsystem integration; and aircraft power, pressurization, and temperature control systems.

2. Weapons. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of ICBMs/SLBMs, conventional missiles and rockets, cruise missiles, guided projectiles, bombs, guns and ammunition, directed energy and chemical/biological munitions. Include with each weapon as appropriate, all related technology, engineering and

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production activities such as fusing/safe and arm, missile propulsion, warheads and explosives, and guidance and control.

3. Space. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of launch vehicles, satellites and associated ground control systems (satellite control only; ground systems for telemetry of data included in C4I). Include under satellites, all technology, engineering and production activities associated with space communications and space-based surveillance (and associated sensors) and space-based C4I.

4. C4I. Includes but not limited to all science and technology, demonstration and validation, engineering development, and production activities which support employment and in-service engineering of airborne, fixed ground-based and mobile ground based C4I systems. Include all technology, engineering and production activities associated with communications networks, radios and links, distributed information systems, data fusion, decision aids, and associated computer architectures.

Pervasive Functions (6.1, 6.2, and 6.3)

1. Electronic Devices. Includes but not limited to all science and technology activities supporting development of semiconductor and superconductor materials for optoelectronic, acoustic and microwave devices. Include all associated electronic materials/device fabrication and processing.

2. Environmental Sciences. Includes but not limited to all science and technology activities to improve measurement, characterization and modeling of the earth atmosphere and space environment. Examples include global prediction systems, space effects, and celestial backgrounds/astronomical reference sources.

3. Infectious Diseases. Includes but not limited to all science and technology activities which preserve manpower and performance by the prevention and treatment of militarily important infectious diseases that occur naturally worldwide.

4. Human Systems. Includes but not limited to all science and technology activities to enable, protect, sustain and enhance human effectiveness in DOD operations. The focus of this pervasive, multi-disciplinary area is the human and therefore impacts all DOD systems and operations. This area includes: (1) human performance definition, assessment, and aiding; (2) physiologic bioeffects of toxic hazards, ionizing and non-ionizing radiation, biodynamic (bio-mechanical) stress, and extreme environments; (3) military operational medicine; and (4) generic, human-centered design standards/methodologies for crew station subsystems, information management and display, and life support.

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5. **Manpower and Personnel.** Includes but not limited to all science and technology activities which support four broad areas: (1) selection and classification of DOD personnel (including pilots); (2) identification of operational tasks performed and requirements for skills, knowledge, and aptitudes; (3) matching the right people with the jobs they are best suited for according to the needs of DOD, (4) and developing techniques for measuring and enhancing the productivity of the operational force.

6. **Training Systems.** Includes but not limited to all science and technology which support training of personnel, including training strategies, devices and simulators, and computer aided intelligent tutoring systems.

7. **Environmental Quality.** Includes but not limited to all science and technology activities which support the development of technologies to reduce the environmental costs of DOD operations while ensuring mission accomplishment is not jeopardized by adverse environmental impacts. Specifically, this area encompasses technologies to: (1) identify and cleanup sites contaminated with hazardous materials as a result of DOD operations (cleanup); (2) ensure DOD compliance with current and anticipated local, national, and international environmental laws and treaties (compliance); (3) minimize DOD use of hazardous materials and reduce DOD hazardous waste generation (pollution prevention); and (4) provide for protection of natural resources under DOD stewardship (conservation).

8. **Advanced Materials.** Includes but not limited to all science and technology activities related to structural, high temperature, electromagnetic protection, electronic, magnetic, optical, and biomolecular materials. Note: excludes materials areas which were included in DDR&E decision of 18 Mar 94 related to the Army's Materials Research Facility at Aberdeen Proving Ground and the Navy's Materials Facility at Carderock.

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Resubmission of Data Call #12, Naval Surface Warfare Center, Dahlgren Division, Coastal Systems Station

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

N. S. SCOTT, CAPT, USN
NAME (Please type or print)

Signature

COMMANDER
Title

13 June 94
Date

NAVAL SURFACE WARFARE CENTER

DAHLGREN DIVISION
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

NEXT ECHELON LEVEL (if applicable)

RADM (SEL) D. P. SARGENT, JR.
NAME (Please type or print)

Signature

COMMANDER
Title

6/14/94
Date

NAVAL SURFACE WARFARE CENTER
Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

MAJOR CLAIMANT LEVEL

G. R. STERNER
NAME (Please type or print)

Signature

Commander
Naval Sea Systems Command
Title

7-1-94
Date

Activity

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

DEPUTY CHIEF OF NAVAL OPERATIONS (LOGISTICS)
DEPUTY CHIEF OF STAFF (INSTALLATIONS & LOGISTICS)

J. B. GREENE, JR.
NAME (Please type or print)

Signature

ACTING
Title

06 JUL 1994
Date

BRAC-95 CERTIFICATION

DATA CALL #12
PANAMA CITY

Reference: SECNAVNOTE 11000 of 08 December 1993

In accordance with policy set forth by the Secretary of the Navy, personnel of the Department of the Navy, uniformed and civilian, who provide information for use in the BRAC-95 process are required to provide a signed certification that states "I certify that the information contained herein is accurate and complete to the best of my knowledge and belief."

The signing of this certification constitutes a representation that the certifying official has reviewed the information and either (1) personally vouches for its accuracy and completeness or (2) has possession of, and is relying upon; a certification executed by a competent subordinate.

Each individual in your activity generating information for the BRAC-95 process must certify that information. Enclosure (1) is provided for individual certifications and may be duplicated as necessary. You are directed to maintain those certifications at your activity for audit purposes. For purposes of this certification sheet, the commander of the activity will begin the certification process and each reporting senior in the Chain of Command reviewing the information will also sign this certification sheet. This sheet must remain attached to this package and be forwarded up the Chain of Command. Copies must be retained by each level in the Chain of Command for audit purposes.

I certify that the information contained herein is accurate and complete to the best of my knowledge and belief.

ACTIVITY COMMANDER

CAPT D. C. STEERE

NAME (Please type or print)

Signature

Commanding Officer

Title

13 Jun 94

Date

Coastal Systems Station, Dahlgren Division

Activity