



Westinghouse
Electric Corporation

Power Systems
Company

Advanced Energy Systems Division

Box 10864
Pittsburgh Pennsylvania 15236
(412) 892 5600

July 30, 1980

Mr. R. Tedesco
Assistant Director for Licensing
Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

This division of Westinghouse has facilities/capabilities to test and environmentally qualify safety-related equipment to IEEE323-71 and 323-74 Guidelines and the latest DOR Guidelines or NUREG 0588, where applicable.

As a result of the NRC's latest order and deadlines for evaluating and installing qualified equipment -- particularly safety-related electrical equipment exposed to harsh environments -- a step-up in test activity is expected and, in fact, has already begun.

This letter is to let you know that we may be able to help you with your qualification programs if they require testing -- and even those involving analysis, although test is our first priority and interest.

Attached is a brochure describing the Advanced Energy Systems Division's many activities including testing. If you have the need of our services, please call me or Mr. Joe Sucevic. Thank you.

Sincerely,


J. P. Cooper, Marketing Manager
Operations Products & Services

Attachment

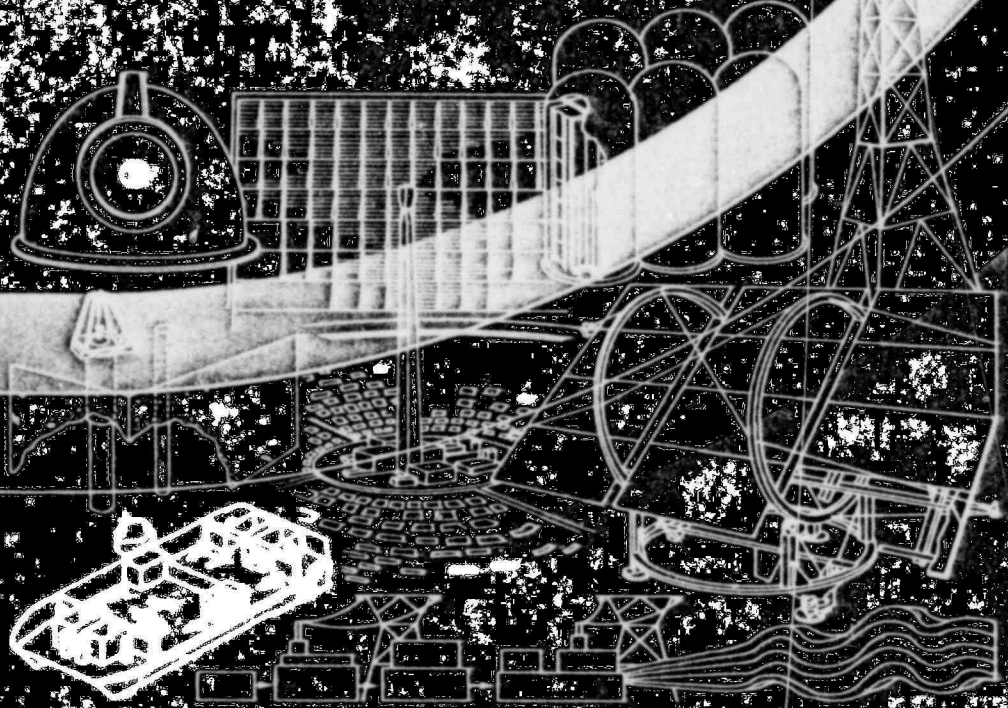
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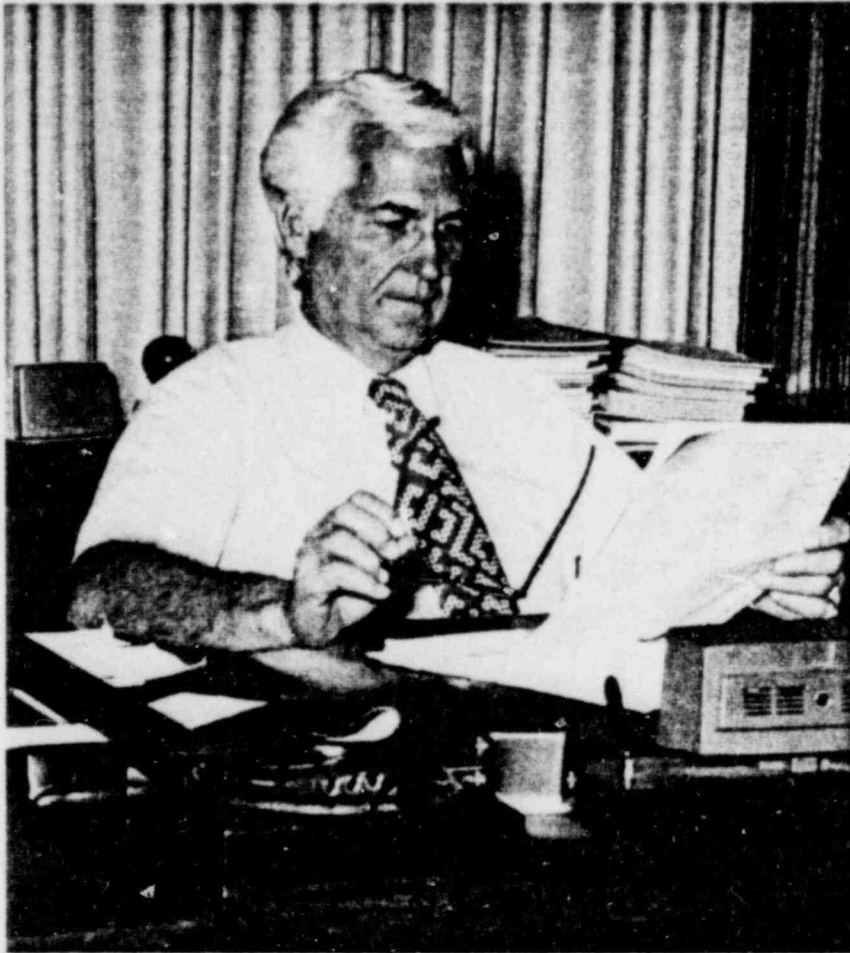
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Advanced Energy Systems Division

Engineering today's science into
tomorrow's power systems





We have before us an energy future that is exciting in its possibilities. Within the next fifty years, our production and consumption of energy will change drastically. Some systems which seem impractical today will have become reality; some methods of energy production used today will be no more than museum models.

But before these changes occur, today's science must be engineered into tomorrow's workable technology. Westinghouse Advanced Energy Systems Division will make sure that those ideas and technologies are ready for the citizens, industries and utilities of tomorrow.

M.T. Johnson

A handwritten signature in cursive script that reads "M.T. Johnson". The signature is fluid and stylized, with the first letters of the first and last names being prominent.

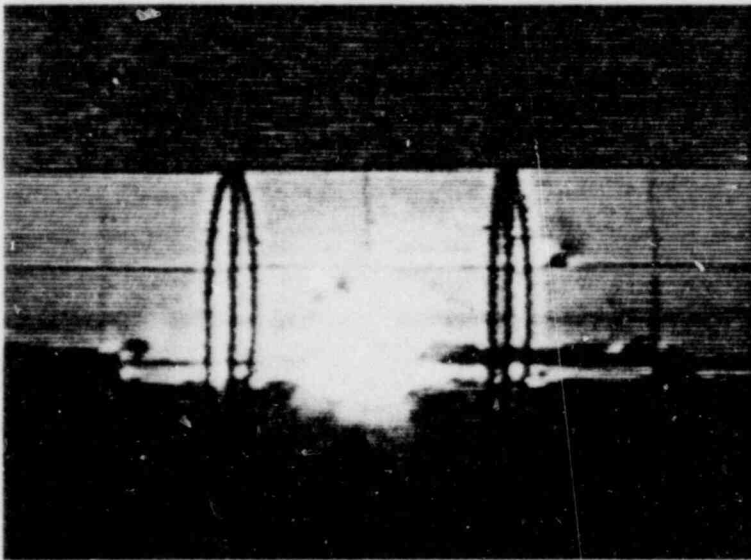
General Manager

Technology means applying scientific principles to practical purposes. WESTINGHOUSE ELECTRIC CORPORATION has grown by turning ideas into practical systems. In 1889, when George Westinghouse recognized the potential of alternating current, he needed to develop a practical transformer before the idea was realistic. Since that time the corporation which bears his name has been a leader in technological breakthroughs which make ideas practical—the first commercial steam generator, the first circuit breaker, and the first commercial atomic power plant are just a few of the milestones in Westinghouse engineering and research.

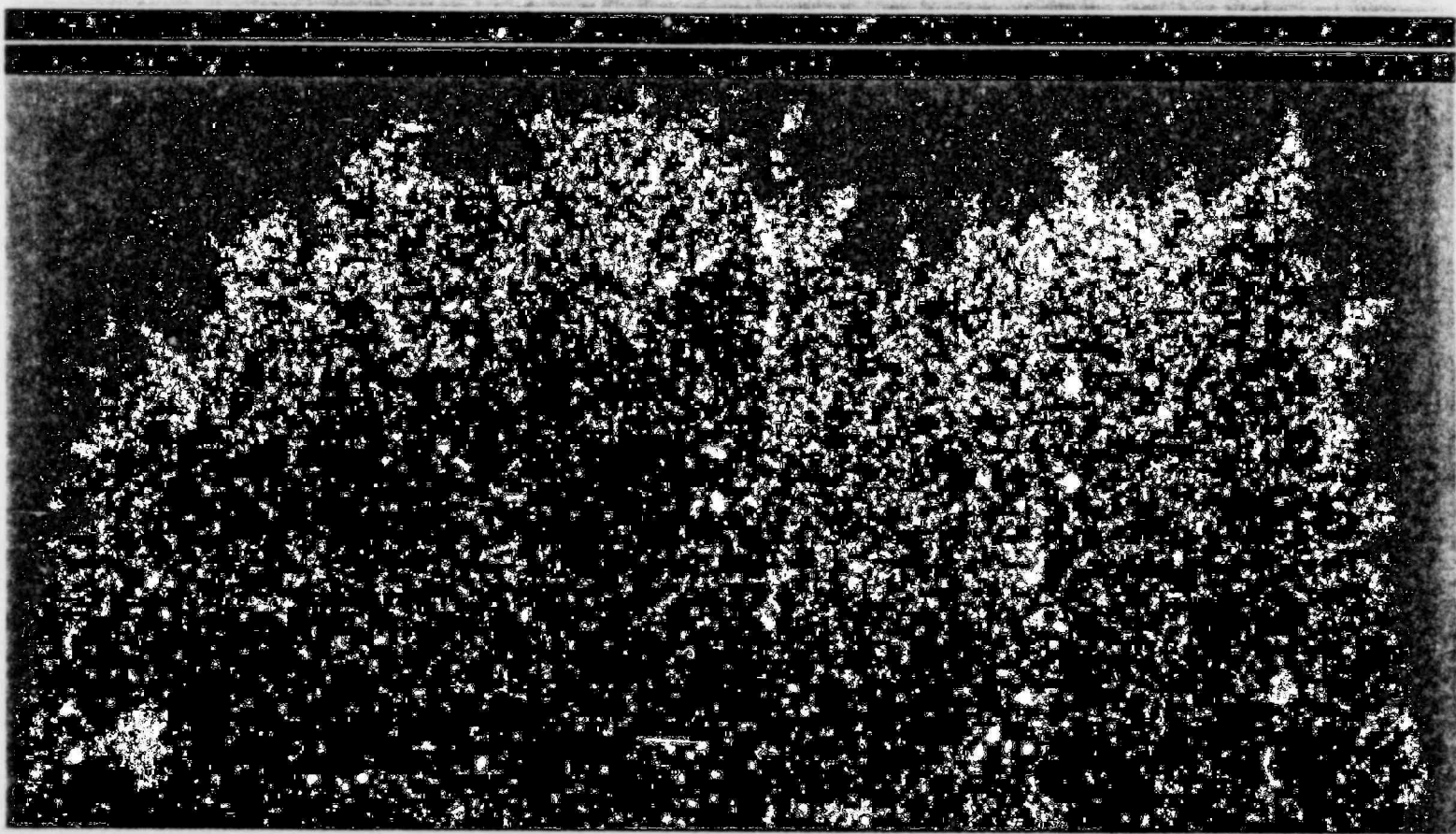
But new technologies do not come easily. In May, 1976, the ADVANCED ENERGY SYSTEMS DIVISION was chartered by Westinghouse to develop new energy concepts into viable working systems. Advanced technology, however, was not new to the people working at this site in Large, Pennsylvania. As part of Bettis Atomic Laboratories in the 1950's, the site had been involved with creating the first commercial atomic reactor at Shippingport. Later in the 1960's, as Astronuclear Laboratory, the engineers at Large played an important part in the NERVA program to develop a nuclear rocket engine for space exploration and travel.

Since then, AESD has applied its experience and skill to the challenges of advanced energy systems. Technology can provide the answers to tomorrow's energy problems, and Westinghouse experience in the practical application of new technology can make these new ideas work for the good of mankind.

DEVELOPING ADVANCED TECHNOLOGIES

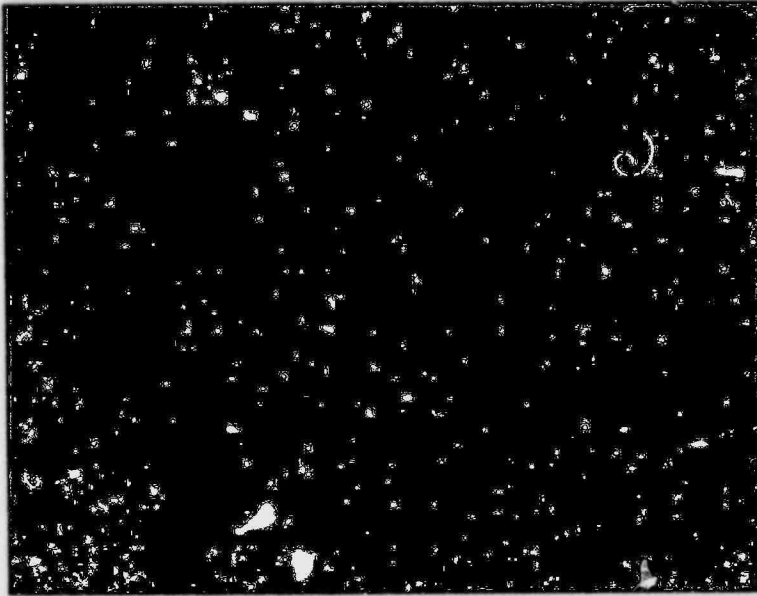


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- Project Management
- Systems Engineering
- Manufacturing
- Testing
- Product Assurance
- Material Services
- Electronics & Instrumentation

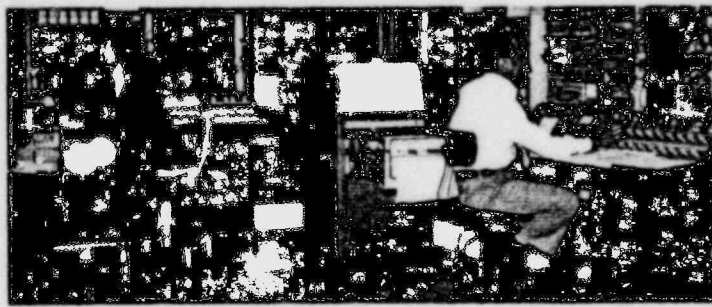


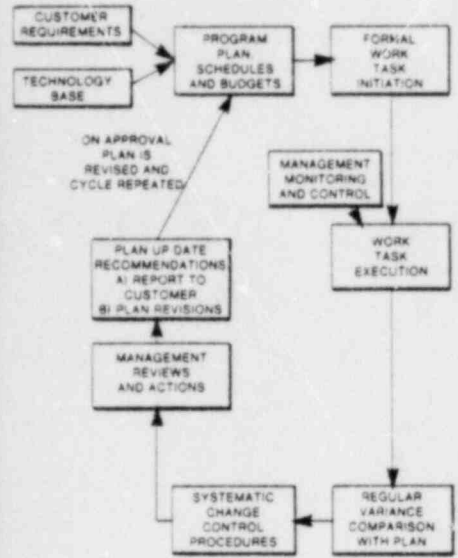
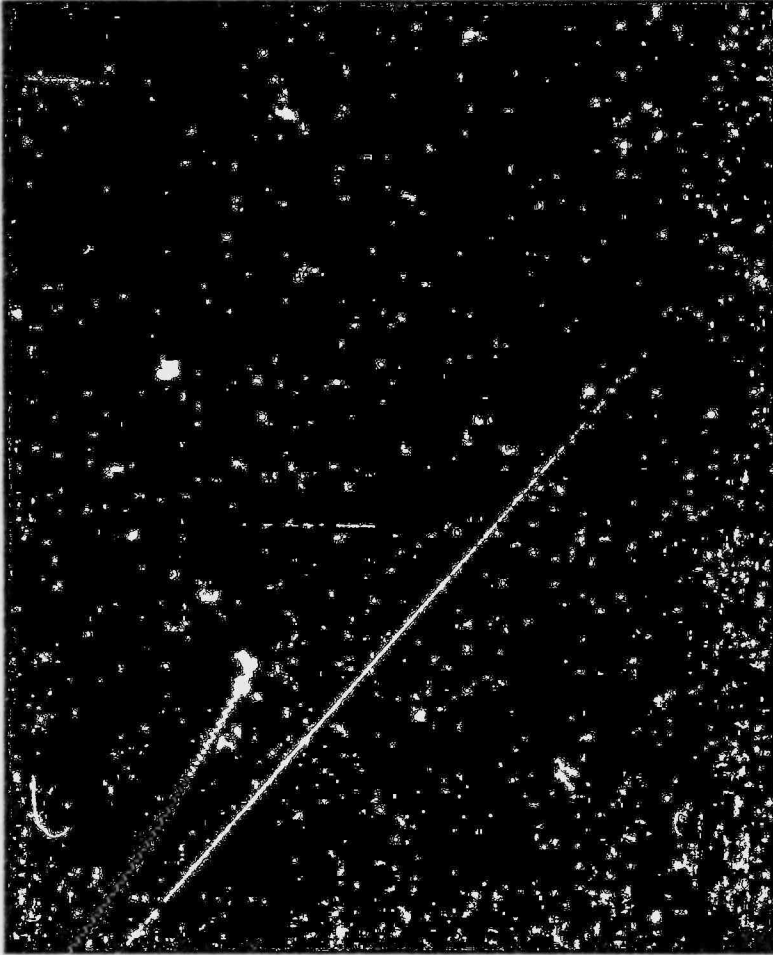
Capabilities in word processing, computer analysis, program planning and control and financial planning and control add to AESD's total systems resources.



**Advanced
Energy
Cycle**

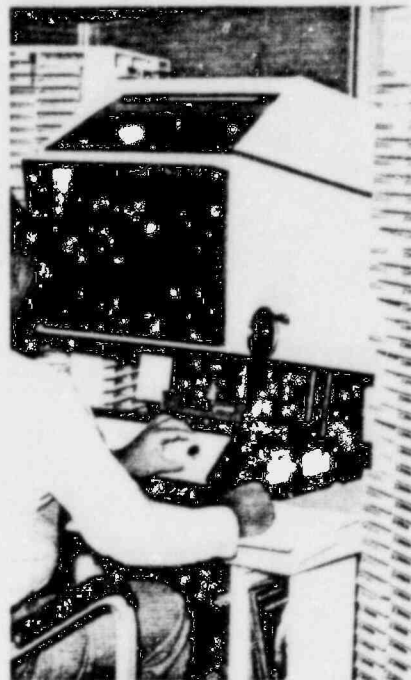
MAKING THE SYSTEM





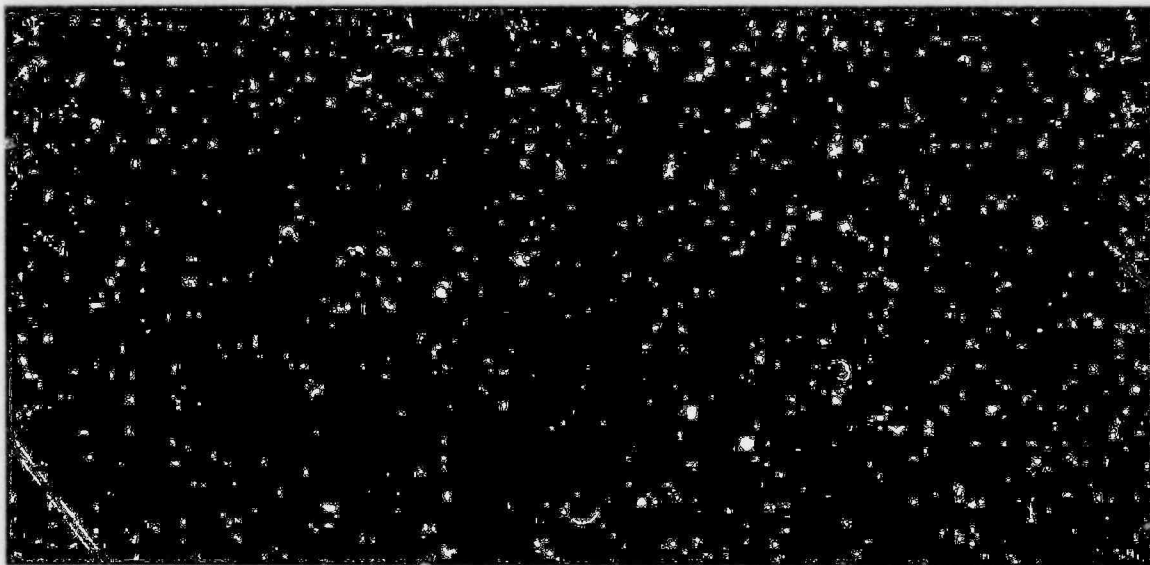
PROJECT MANAGEMENT

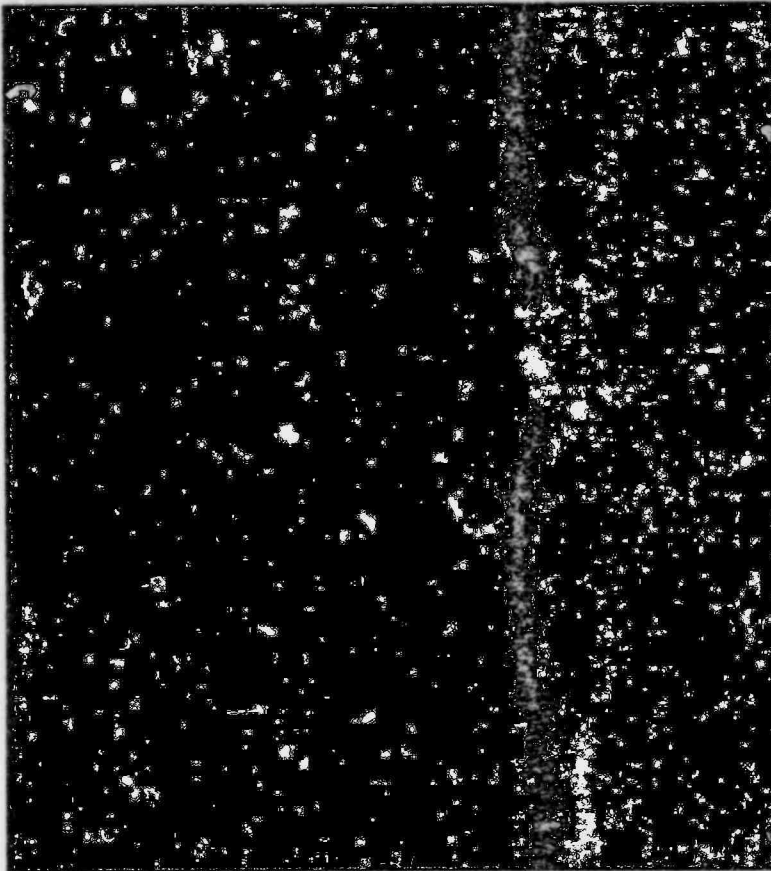




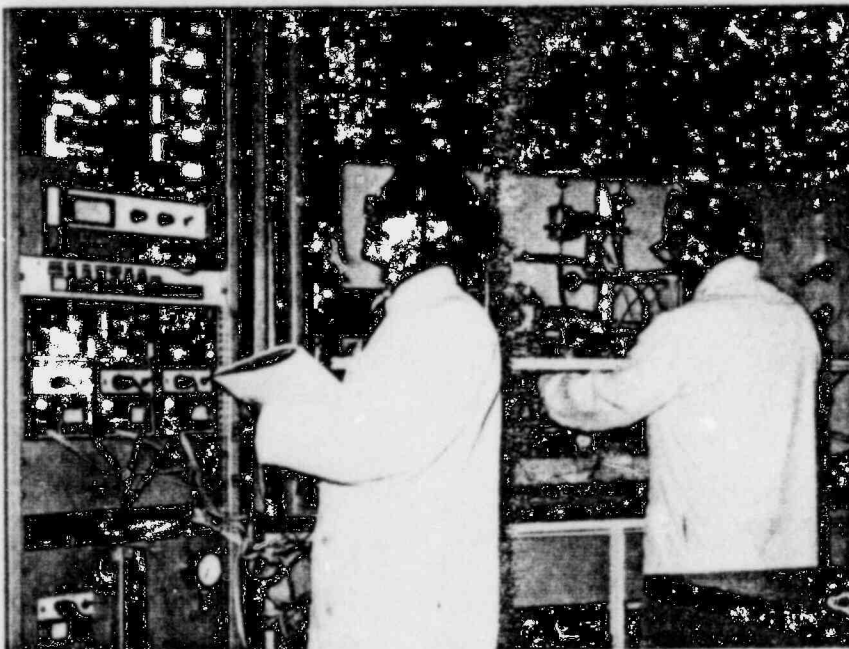
This information handling system provides access to continually updated national specifications and standards.

ENGINEERING



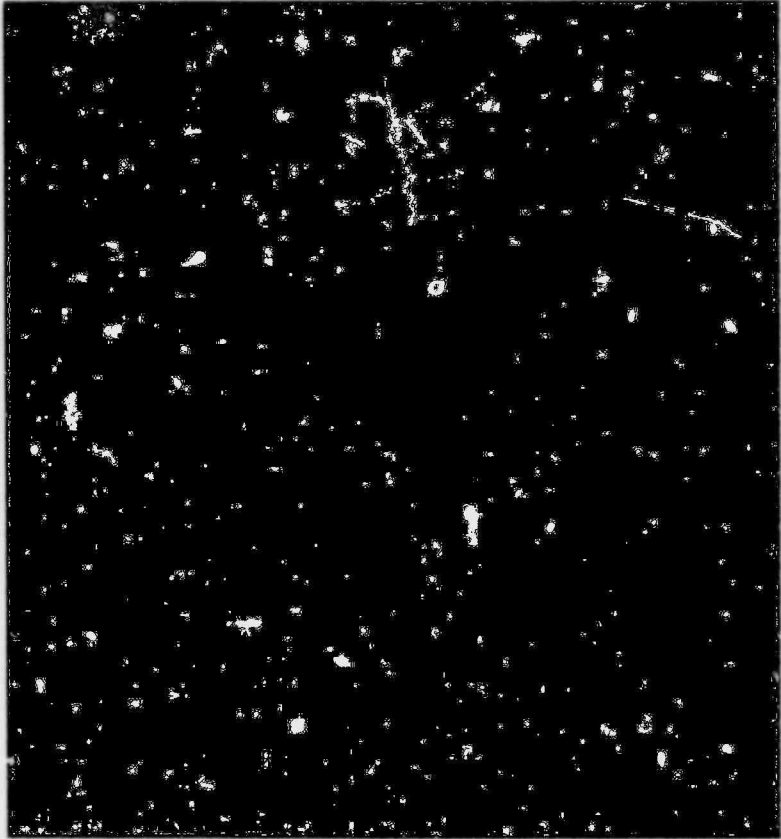


For the implantable artificial heart our laboratory developed a concentric cup multiple-foil vacuum insulation system which is now being applied to a high efficiency fuel processing furnace.



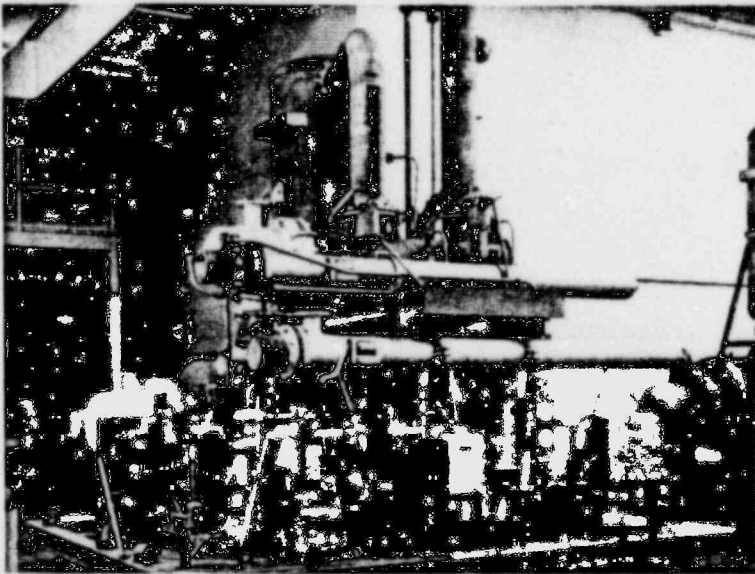
The Westinghouse electro and thermochemical hybrid process for producing low-cost hydrogen requires special materials to contain boiling sulfuric acid and the products of sulfur trioxide decomposition. Electrodes and catalysts are being developed for the specialized electrolyzers required for the electrolysis of sulfuric acid.

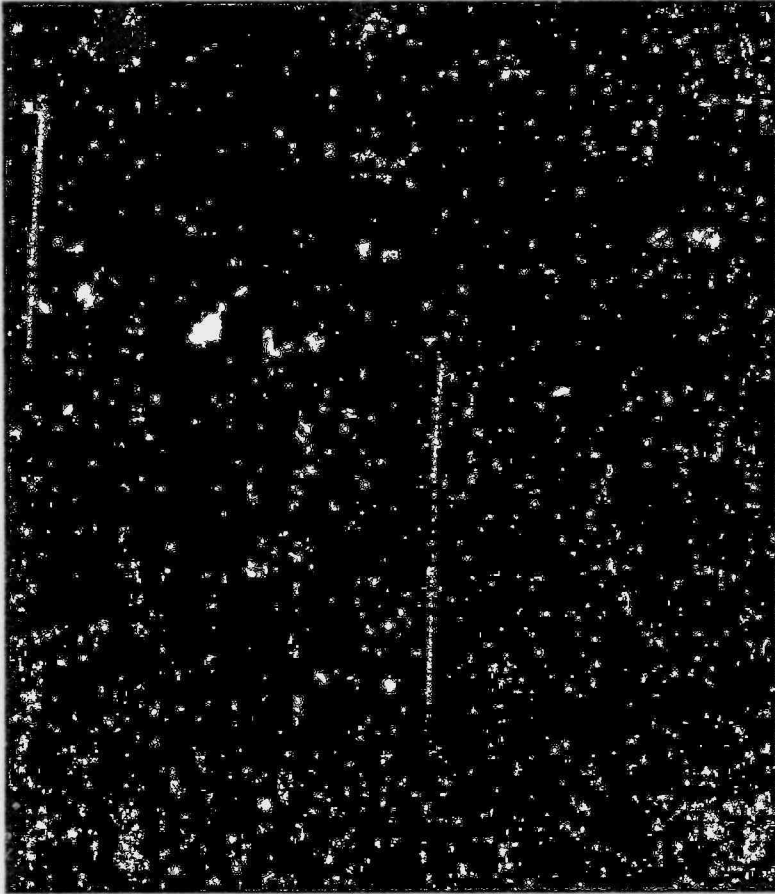
MATERIALS



The radiation waste evaporator, fuel transfer tube, and U-25 MHD channel pictured on this page were fabricated in AESD manufacturing.

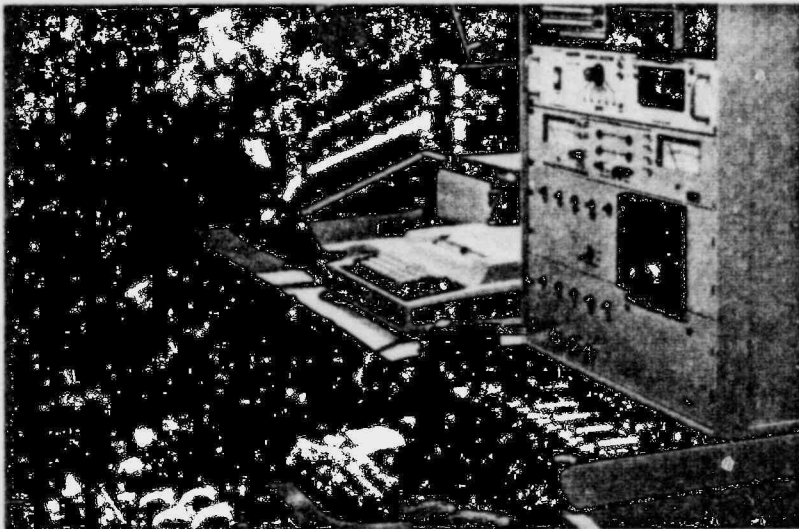
MANUFACTURING



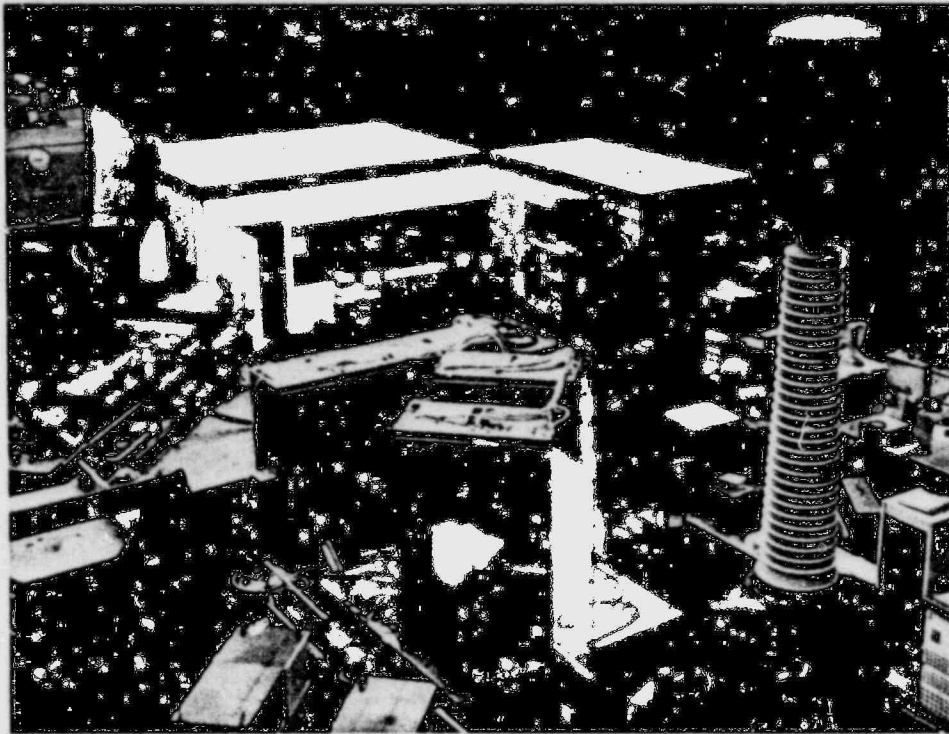


Back panel wiring of the electrical control board for a Philippine Nuclear Plant.

ELECTRONICS AND INSTRUMENTATION

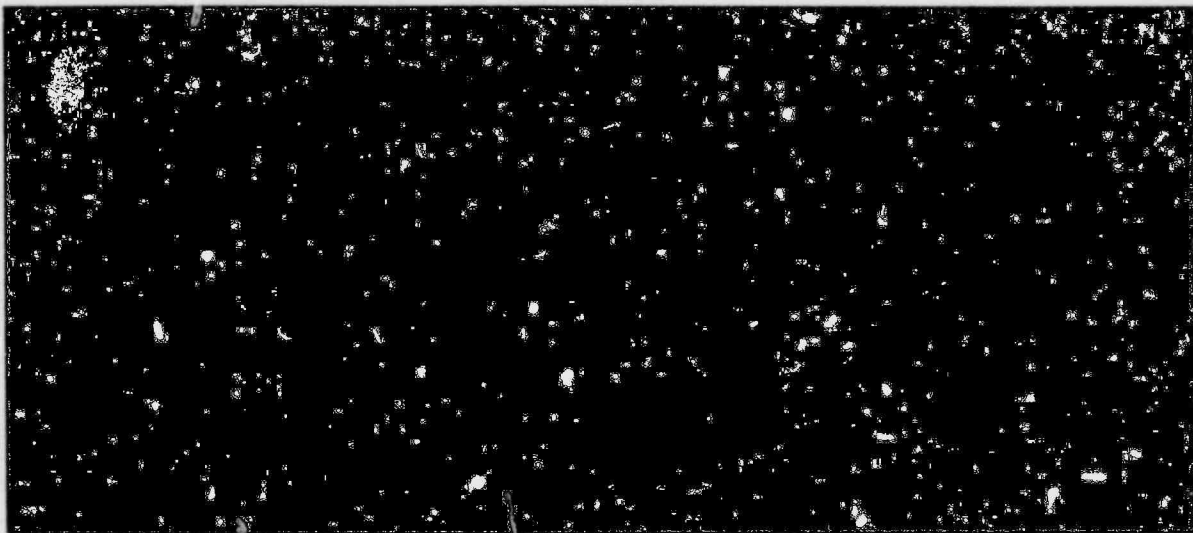


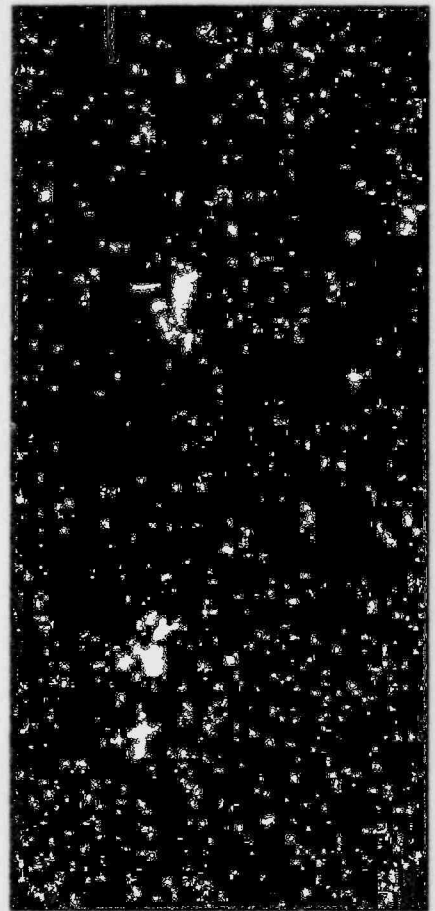
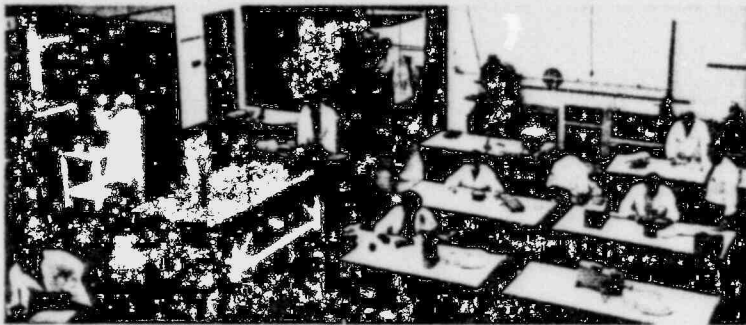
Final check-out of the control system for Hanford Engineering Development Laboratory's off-line outgassing and calcining furnaces.



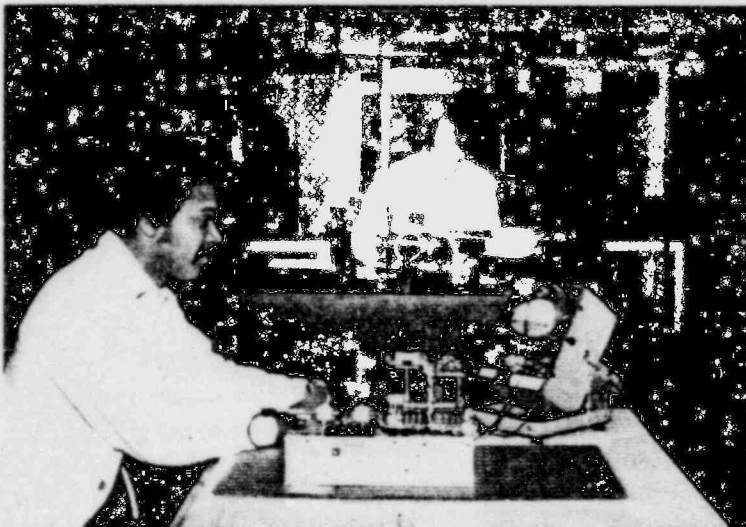
Test laboratory implementation of five qualification test programs — safety injection pump, nuclear service valve, solid state protection system, current transformer, and motor control centers.

TESTING

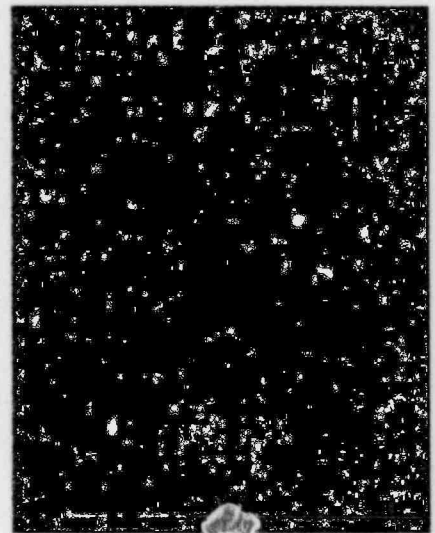




PRODUCT ASSURANCE



Liquid penetrant and ultrasonic nondestructive testing are performed in our Product Assurance Laboratory.



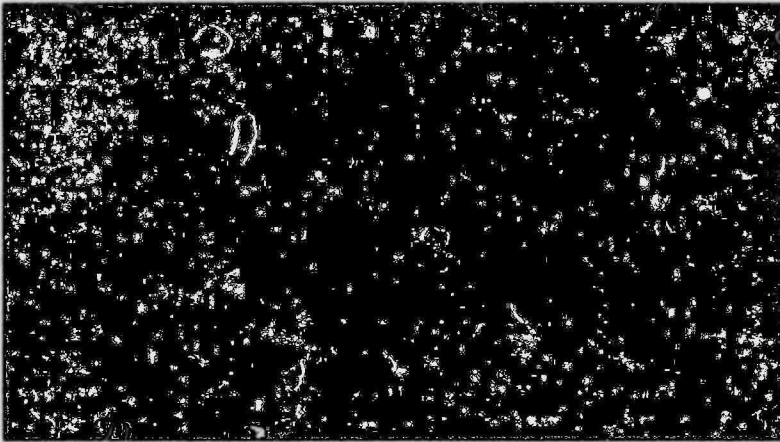
TECHNOLOGIES

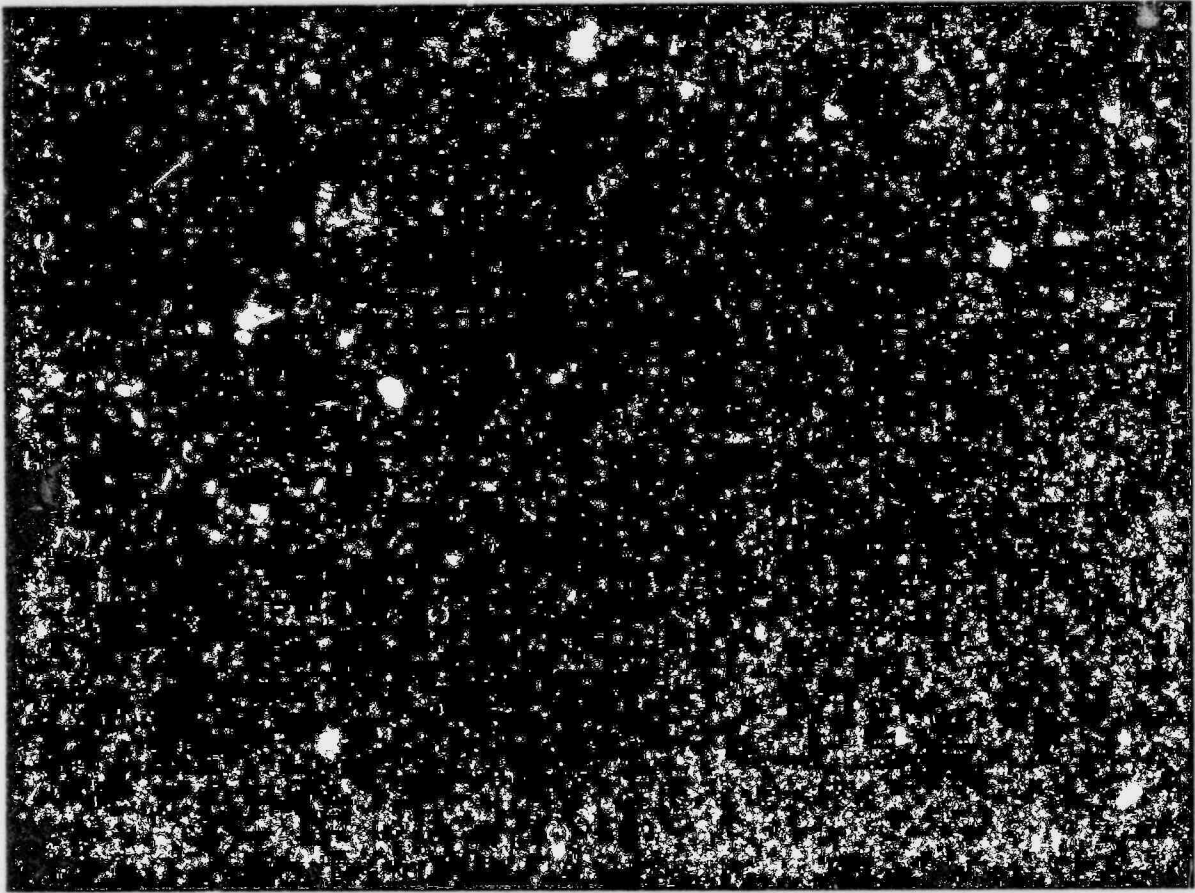
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TECHNOLOGIES

- Solar Thermal
- Photovoltaics
- Wind
- Magnetohydrodynamics
- Fuel Cells
- Conservation
- Waste Management

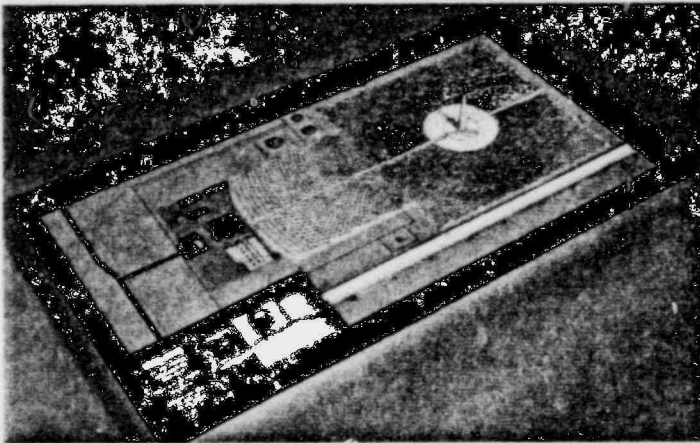


APPLYING THE SYSTEM TO THE TECHNOLOGIES

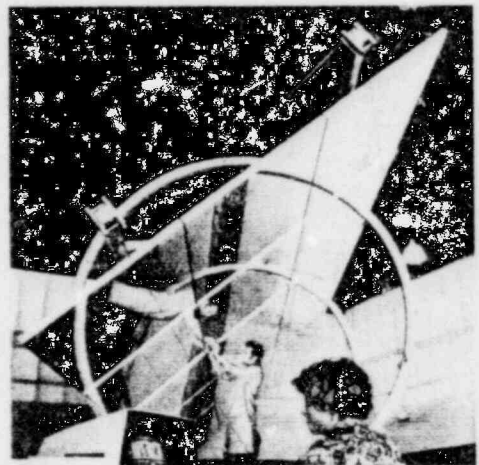




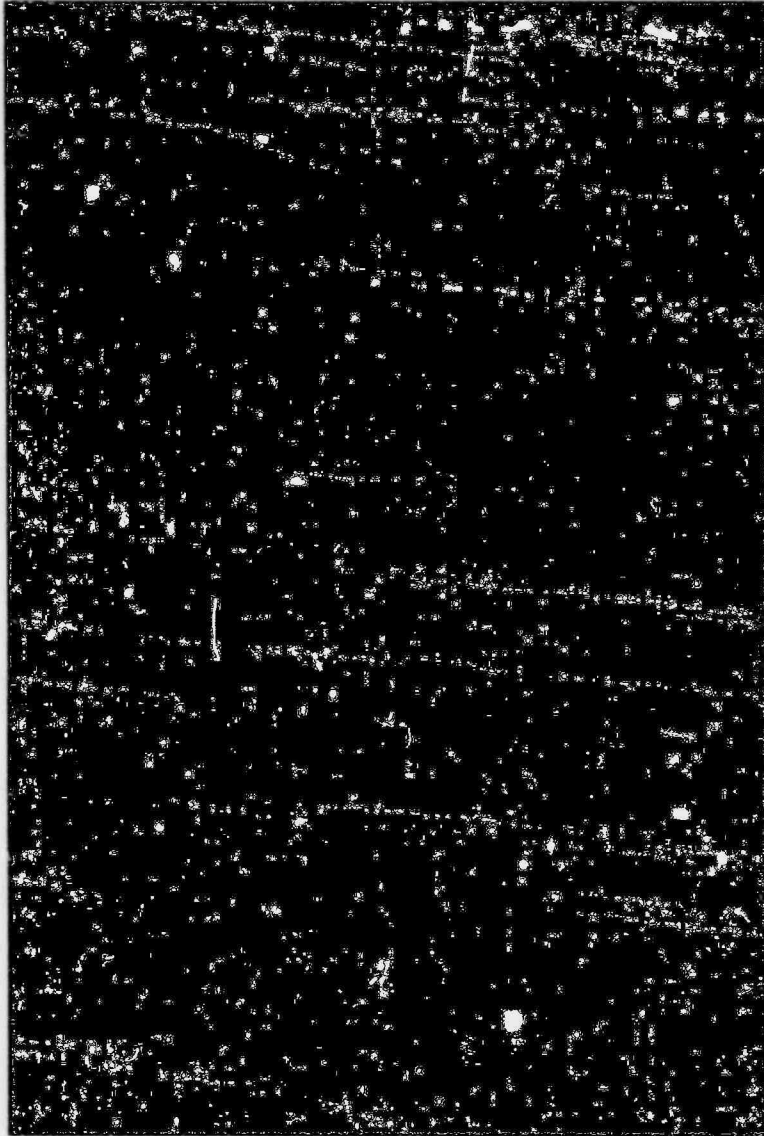
SOLAR THERMAL



A repowering design model constructed for Public Service Company of New Mexico



The Westinghouse Demonstration Heliostat

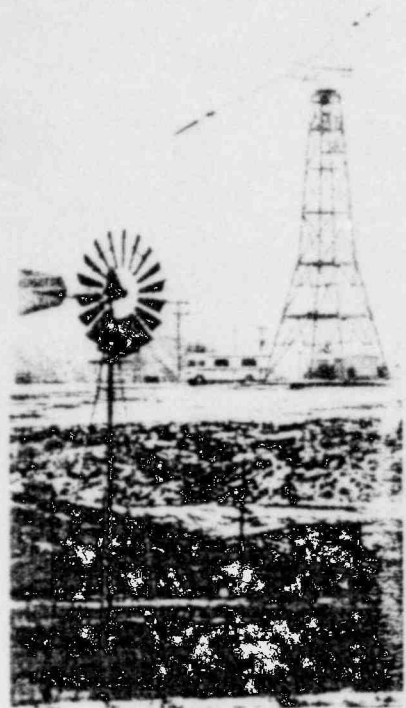
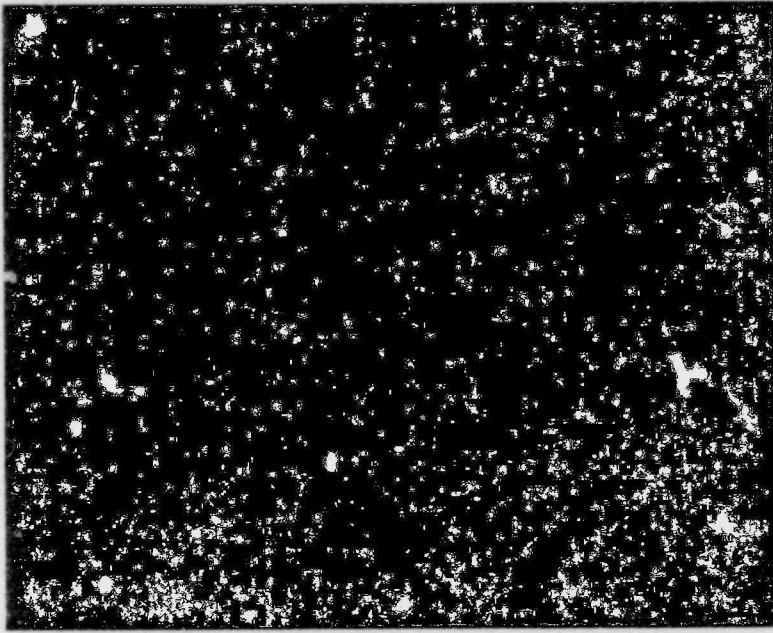


PHOTOVOLTAICS



This furnace pulls a single crystal dendritic silicon web, which is used to make solar cells, pictured below.





Clayton, New Mexico

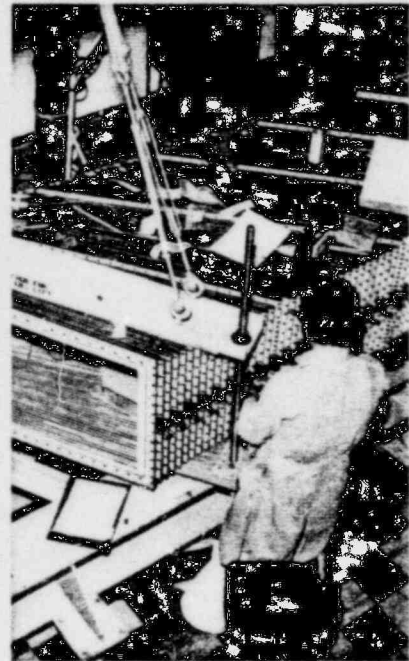
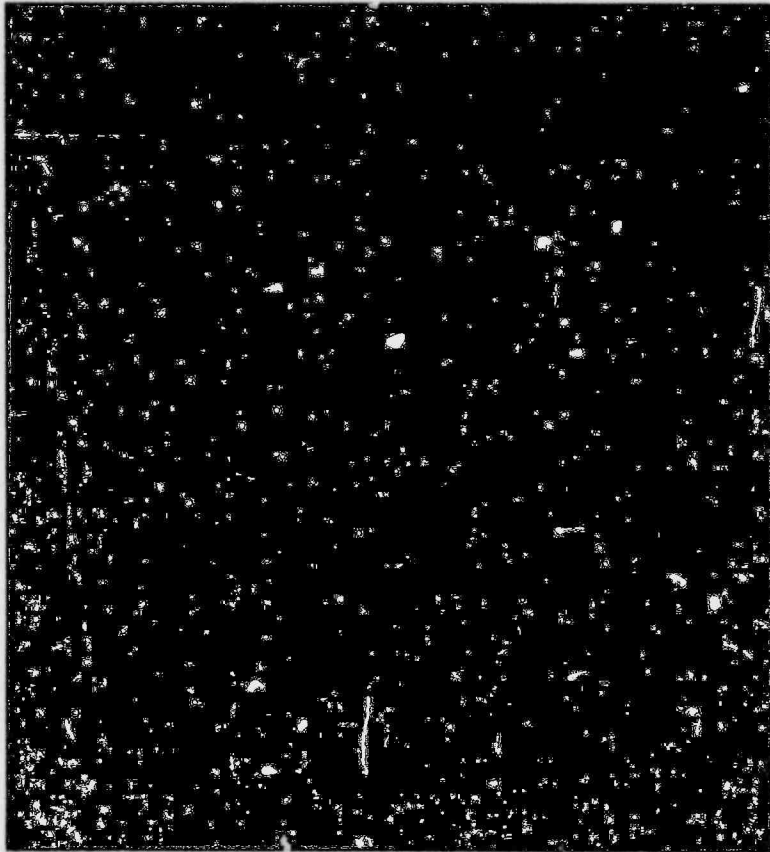
Block Island, Rhode Island



Culebra, Puerto Rico

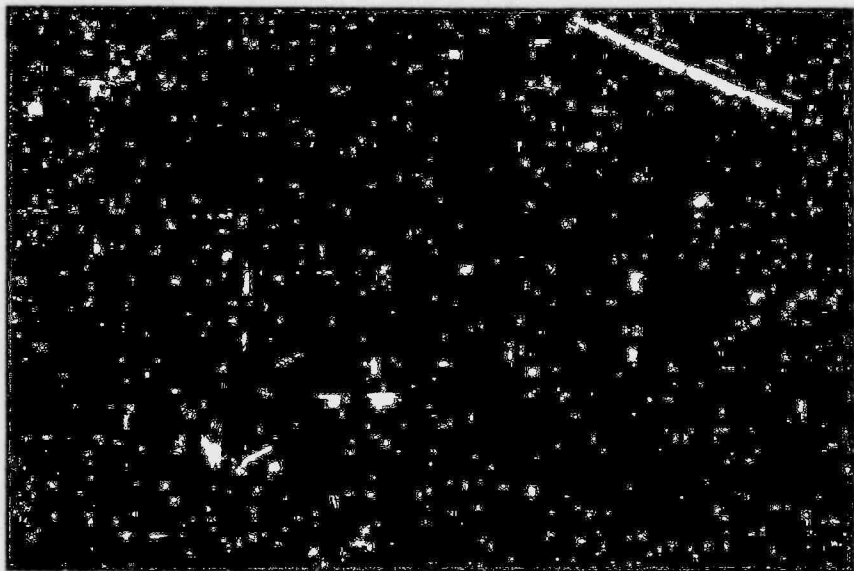


WIND

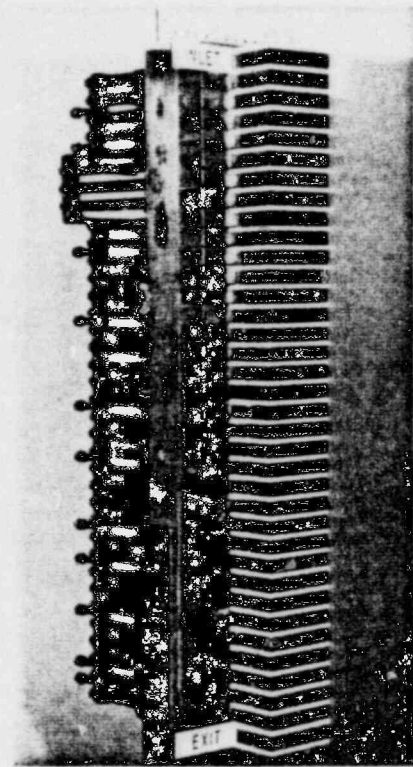
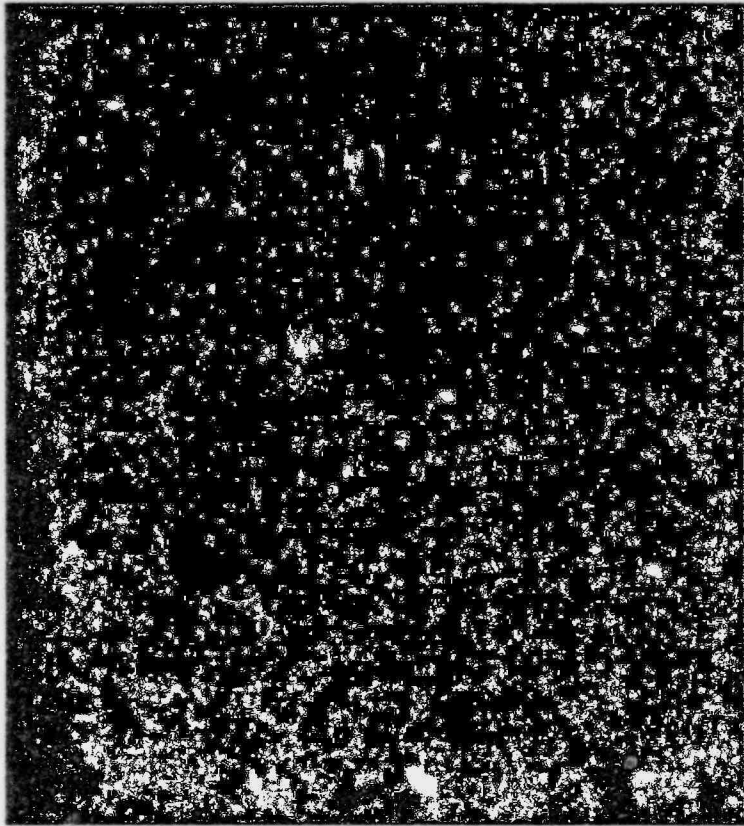


A MHD channel was constructed at AESD for Argonne National Laboratory.

MAGNETOHYDRODYNAMICS



Platinum-clad copper MHD electrodes in a Westinghouse-designed, microprocessor-controlled, radiant-heated brazing system.

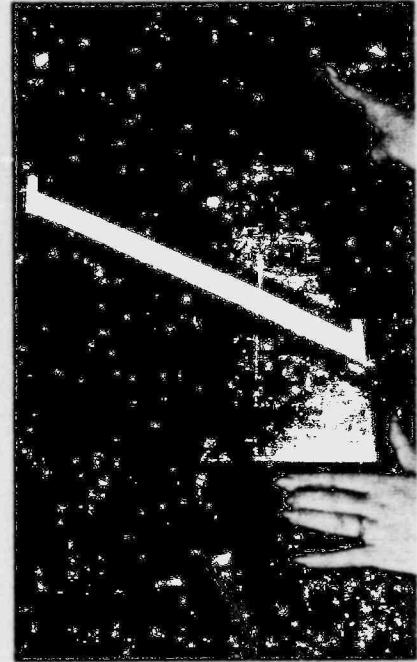
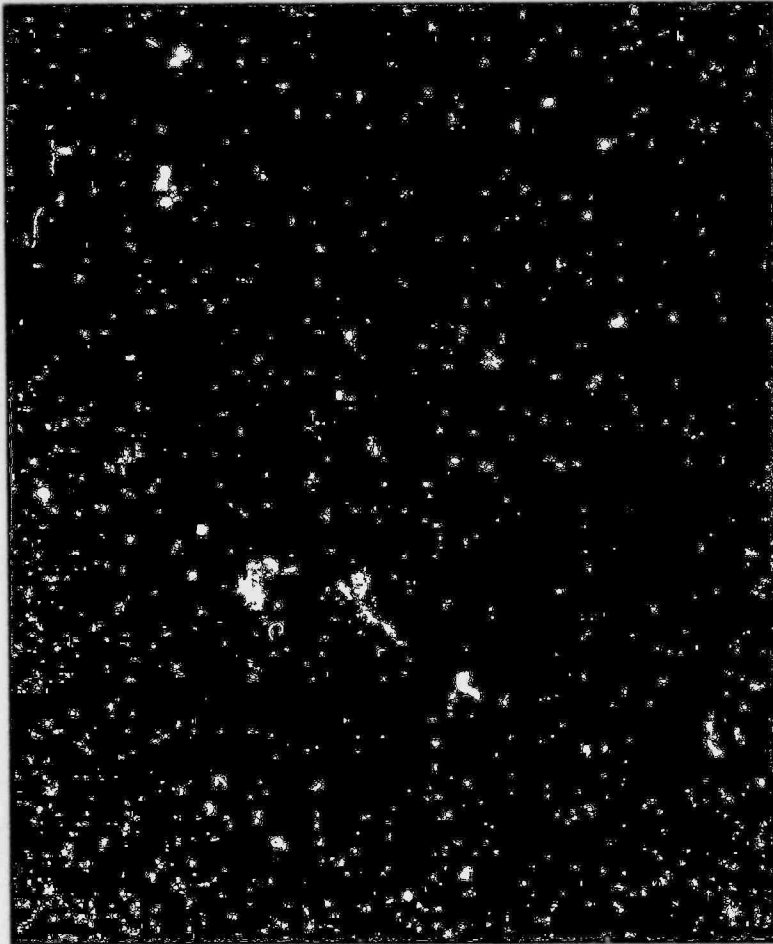


MHD electrodes have sustained temperatures of 3000 °F.

MHD PROGRAMS

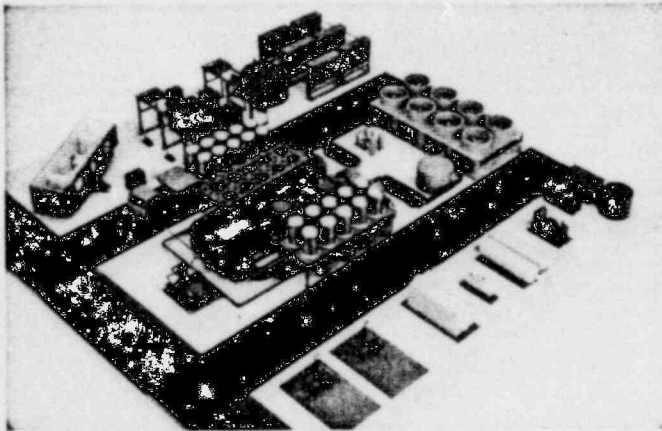


The Component Development and Integration Facility, Butte, Montana.



These individual cells are connected in series in a fuel cell stack.

FUEL CELLS

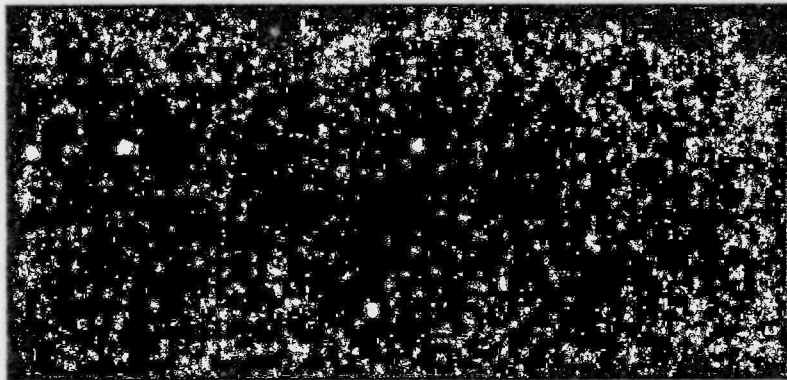


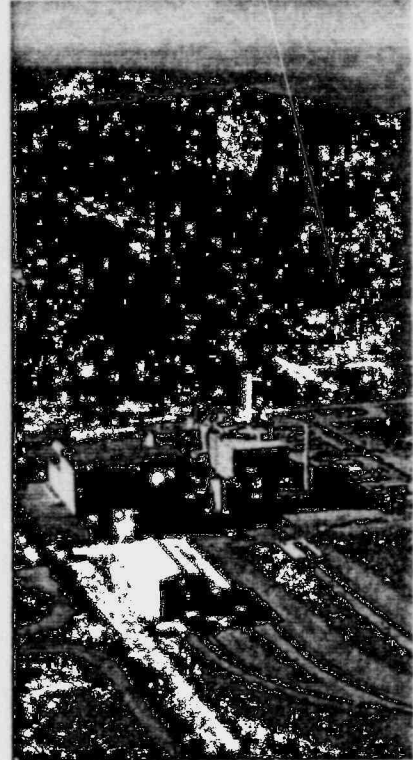
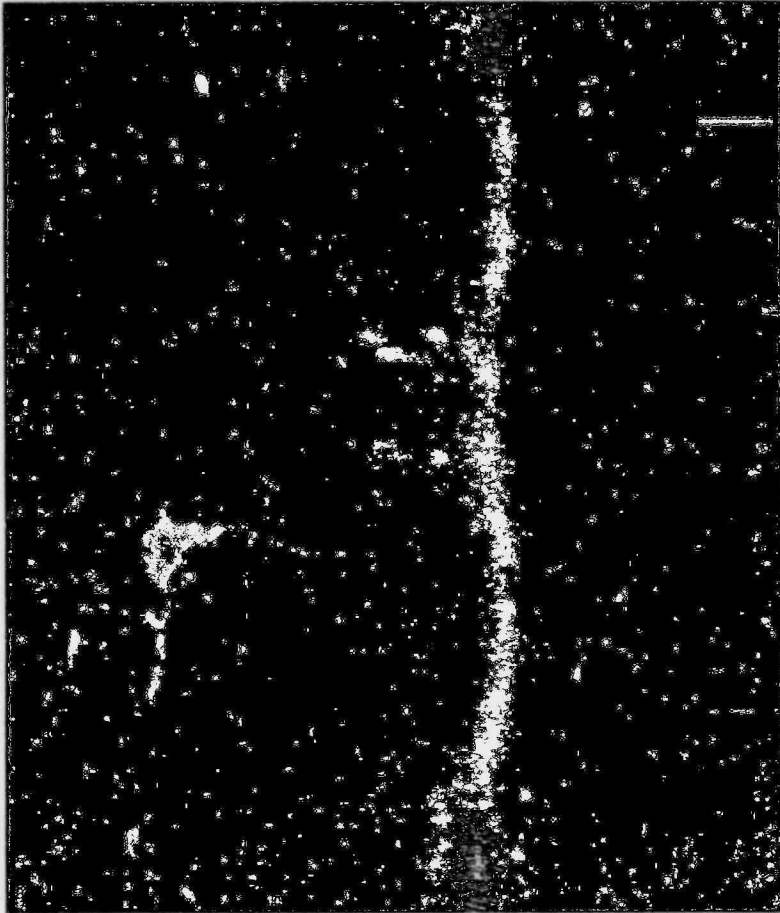
Model of a fuel cell plant





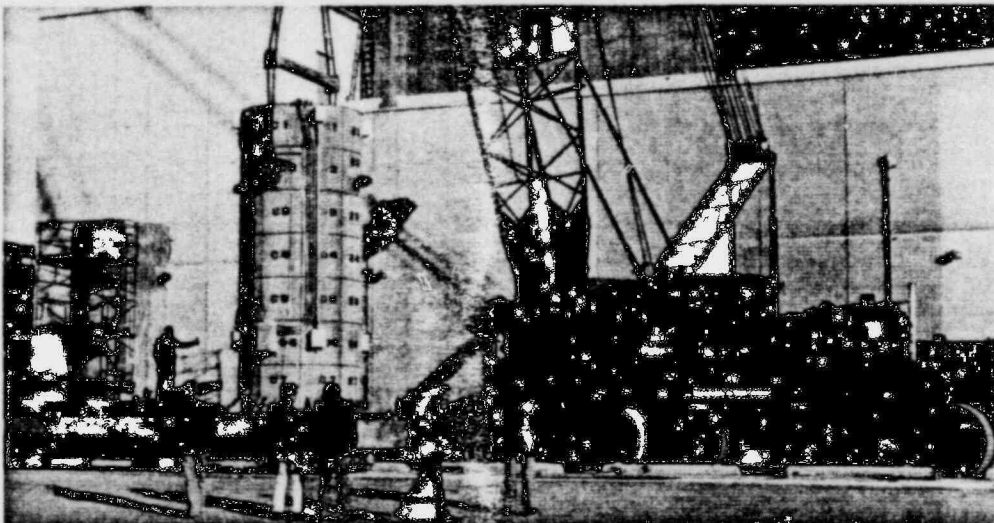
CONSERVATION



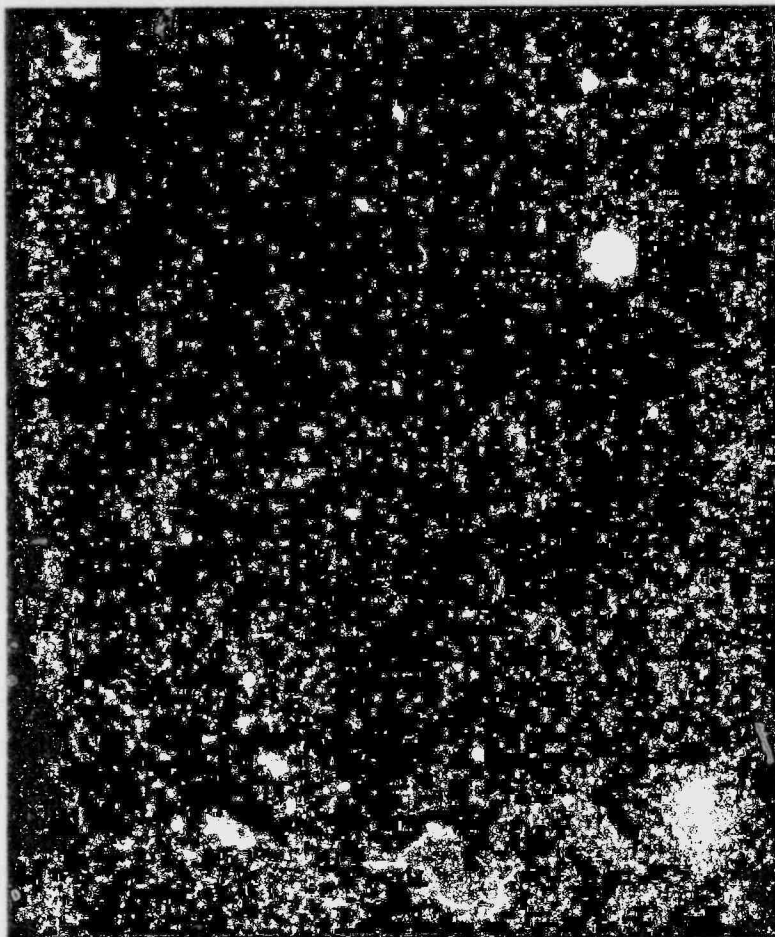


The E-MAD facility in Nevada has the capability to encapsulate spent fuel.

WASTE MANAGEMENT

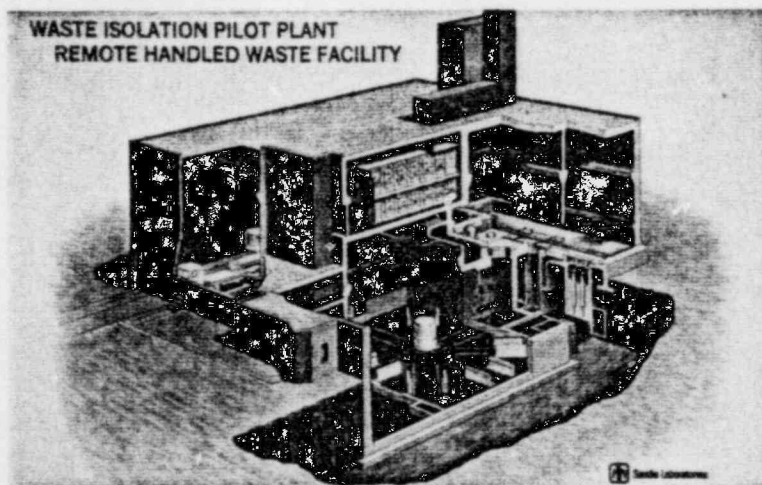


This concrete cylinder is one concept for the retrievable storage of spent fuel



Nevada government officials, including Governor List, investigated the remote handling capabilities at E-MAD during a recent tour.

WASTE MANAGEMENT PROGRAMS



COMMITMENT



- Making Nuclear Power Practical
- Weathering And Energy
- Innovative Accomplishments Of Advanced Energy Systems Division



**ONLY BY TURNING A CONCEPT INTO A
WORKABLE SYSTEM WILL THE VAST
POSSIBILITIES OF THESE NEW TECHNOLOGIES BE
REALIZED.**

With the coming years, the demand for electricity will increase. Utilities, industry, the general public—everyone shares a concern that the new technologies will be ready for use when they are needed. Westinghouse recognizes this concern. To help the utilities meet their power generation demands fifty years from now, Westinghouse Electric Corporation is working today:

- Keeping utilities informed of technology developments.
- Working for public acceptance of new ideas.
- Demonstrating feasible technology in actual programs and hardware.
- Working for utility/industry/government sharing in demonstration programs.
- Supporting pro-energy legislation.
- Studying environmental and safety factors.
- Testing and designing necessary hardware.
- Working to reduce the cost of alternate energy sources.
- Developing research programs into new energy systems.

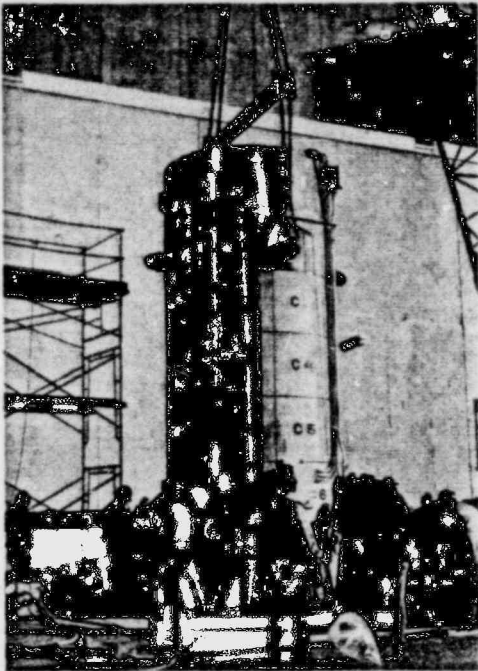


The earth, seen from the Apollo space missions

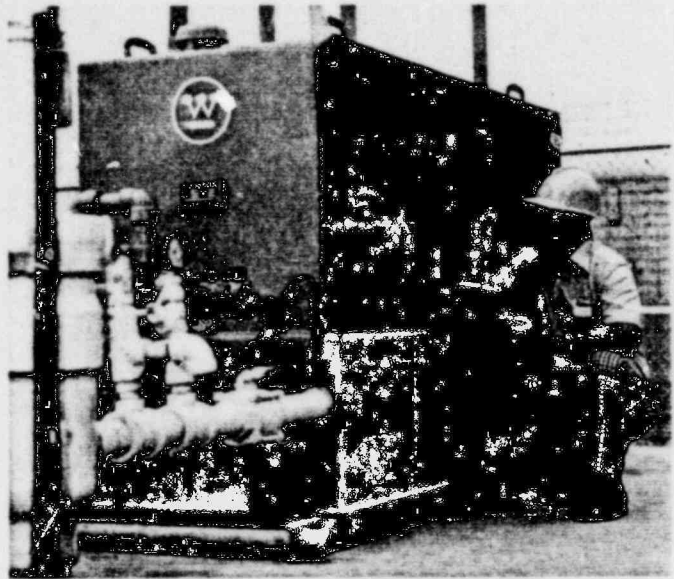
WESTINGHOUSE AND ENERGY

Westinghouse Electric Corporation is in itself a collection of diversified resources. One hundred separate divisions offer expertise and facilities for almost every facet of power generation or industry products. These enormous reserves stand behind and support the efforts of Advanced Energy Systems Division.

Development of advanced technology is essential to Westinghouse. With the resources, knowledge and capabilities of this corporation behind us, the milestone advances which are necessary in energy technology become much more possible. Today's science will become tomorrow's power systems.



A spent fuel assembly is stored inside this concrete silo at the Nevada Test Site. Engineers from Advanced Energy Systems Division designed the hardware inside this storage cell, as well as this system for interim storage of spent fuel.

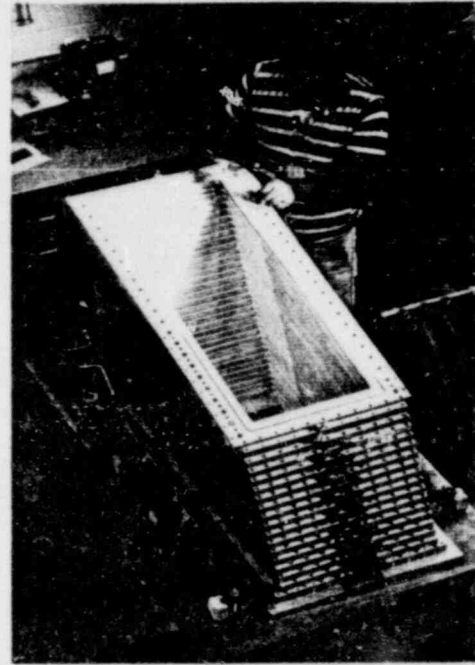


Methane gas from this well, located at Westinghouse Waltz Mill Site in Madison, Pennsylvania, is used to heat and cool the buildings on the site. Advanced Energy Systems Division is studying the applications and the economics of recovering methane from coal beds and mines.

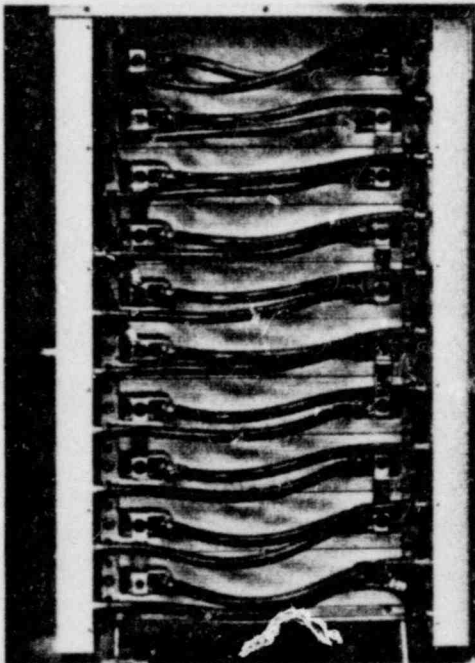


The Westinghouse heliostat, built for rugged dependability, low cost and ease of maintenance, underwent testing at Sandia Laboratories in Albuquerque, New Mexico. AESD engineers are designing a production version of this successful design.

An MHD channel was built for Argonne National Laboratory. The channel was fabricated in the AESD shops — one of the more complex manufacturing jobs ever undertaken here.



Milestones of Advanced Energy Systems Division



This model 22K Thermoelectric air conditioning unit was recently installed in the Navy submarine, the *U.S.S. Dolphin*. Designed and constructed here, this thermoelectric system is providing highly-reliable, silent, fail-safe service during its shipboard testing.

AFSP M-002-79

For more information contact:
Manager, Marketing
Advanced Energy Systems Division
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Pittsburgh, Pennsylvania 15220