SLIDE DESCRIPTION

Slide No. 1 - This is a diagram of the nuclear fuel cycle as it was originally perceived. This cycle included the recycle of plutonium back to light water reactors. The subject of plutonium recycle is the heart of the political issue and decision yet to be made.

Slide No. 2 - This is an aerial view of the Barnwell Plant during construction. The three round objects are the intermediate and high level liquid waste storage tanks. On the right, is the concrete and steel shell of the Separations Facility with reinforced walls up to five and one half feet thick. This structure includes approximately 60,000 cubic yards of high density concrete with 6000 tons of reinforcing steel therein.

Slide No. 3 - This is an overhead view of the nearly completed waste tanks with the reinforcing bars in place for the equipment support building.

Slide No. 4 - This shows the interior of one of the high level waste storage tanks. There is seven and one half miles of two and one half inch stainless steel tubing that handles the six cooling water loops. The larger vessels are air spargers to keep the liquid waste moving in the tank to prevent settling. Some vessels are also air lift type pumps so that the material in the tank can be transferred to another tank or to a waste solidification facility (not yet constructed at Barnwell).

Slide No. 5 - This shows one of the high level tanks in the foreground. Notice the two walls of the stainless steel tank. The tank is designed so that if the inner tank should develop a leak, the liquid waste would be contained inside the outer tank wall. The outer tank wall is surrounded by a five feet thick reinforced concrete vault. In the event of a leak of the primary tank, the contents would be transferred to a spare tank (that's right, a spare tank!---at roughly twenty million dollars a copy).

Slide No. 6 - This shows the nearly-completed waste tanks with the uppermost reinforcing rods in place prior to the final pour of the concrete vault that surrounds the tank. After all of the concrete is poured, the tanks are buried under approximately fifteen feet of earth making them not only earthquake-proof, but bomb-proof as well.

Slide No. 7 - This shows an aerial view of the nearly-completed Barnwell Nuclear Fuel Plant. The large grey structure to the left center is the Separations complex where the spent fuel was to be received and processed. The smaller grey building to the lower right of the main structure is the emergency utilities area. This natural disaster-proof structure contains emergency generators, instrument air systems and the final filtering system for exiting ventilation air. This air is exited through the white housing pipe and up the dark 100 meter air stack. The small grey building to the upper right hand corner of the main structure is the waste tank equipment

Slide No. 7 - Continued

gallery mentioned earlier. This natural disaster-proof structure houses the cooling and pumping equipment for the waste tanks which are now buried below it. The pond in the background is a tertiary cooling water source for the waste tanks in the event of loss of the primary cooling tower system and all of the three deep well pumps that back the cooling towers up as a secondary system. Water pumping systems are a combination of electric and diesel driven pumps.

Slide No. 8 - This is an aerial view of the nearly-completed Separations complex.

Slide No. 9 - This is an aerial view of the uranium hexafluoride (UF-6) facility. It is in this facility that the recovered uranium would have been converted from its liquid form to UF-6 (a gas or liquid depending on pressure). This is the form necessary for reenrichment at a facility like Oak Ridge or Paducah prior to recycle to a fuel fabrication plant.

Slide No. 10-This shows the UF-6 Plant in the background with the UF-6 shipping containers in the foreground. These are the containers used to transport UF-6 to the reenrichment process. The uranium enrichment level handled by this facility would range between .8% and 1.2% U-235. This contrasts with natural uranium at .7% and enriched uranium for light water reactors at approximately 3%.

Slide No. 11- This shows a spent fuel rail cask. The cask weighs approximately 100 tons and transports approximately six tons of spent fuel. The cask is constructed of stainless steel and lead and is shown here with the crash pads and protective screen attached.

Slide No. 12- This shows the cask with crash pads attached and protective screen removed.

Slide No. 13- This shows the cask (of a type) being removed from the rail car.

Slide No. 14- This shows the cask (the one you saw on the blue rail car) with the crash pads removed and the cask in an inspection pit prior to unloading.

Slide No. 15- This shows the cask submerged in the unloading pool where the inner head is removed to expose the spent fuel. The long pole-like affair is attached to a crane and picks the fuel assemblies from the cask and moves them to the storage canisters in the lower part of the picture. The fuel assembly is always under at least twelve feet of water to provide a radiation barrier for the workers above.

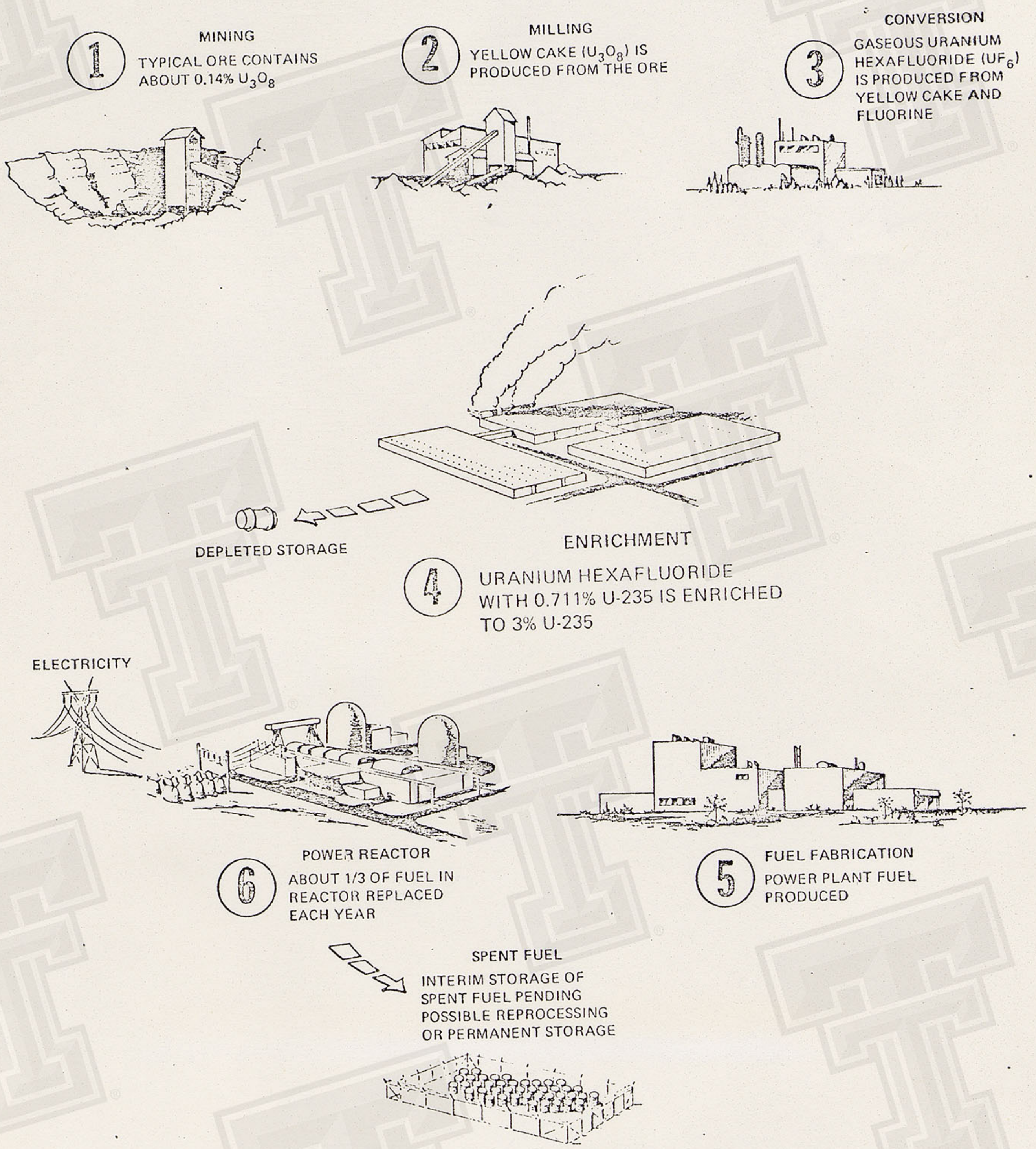
Slide No. 16- This is a view of the fuel storage pool with some of the storage canisters in place. IT SHOULD BE NOTED THAT THE WATER LEVEL IS BELOW NORMAL LEVEL AND THERE IS NO FUEL IN THE CANISTERS IN THE POOL. The normal water level would be about two feet beneath the top edge of the pool. Note: The Barnwell Plant has not received any irradiated fuel.

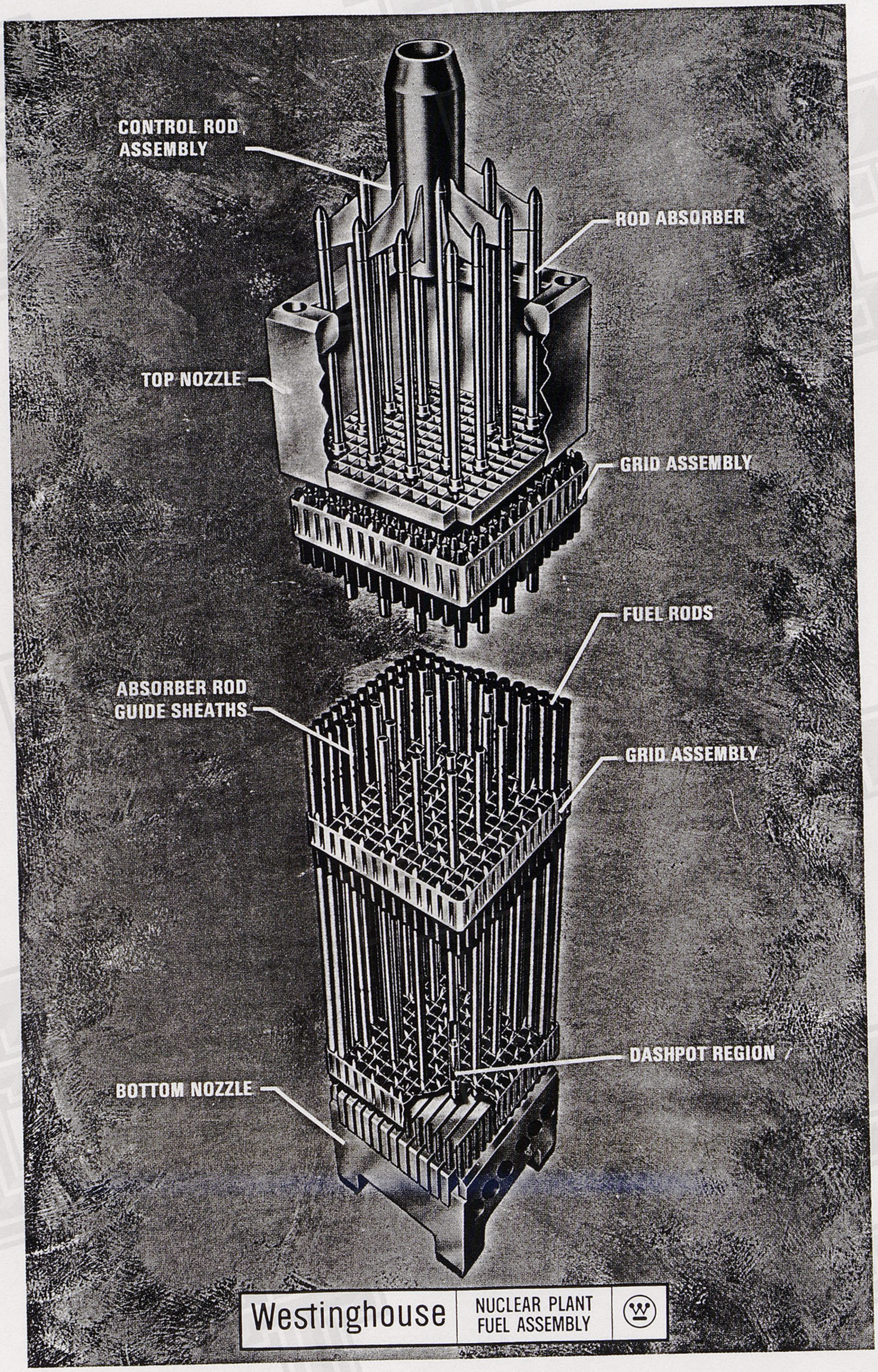
Slide No. 17- If the fuel were reprocessed, it would be transported from the storage pool into this remote operating cell. The long piece of equipment on the left hand wall is the shear that would chop the fuel element into two to three inch pieces for dissolution. The equipment in this room is designed to be operated and maintained from outside the room.

Slide No. 18- This slide shows the diverter system for the dissolver tanks. The chopped pieces of the fuel element fall into one of three dissolver barrels. You can see one in the lower right hand corner. In this dissolver the fuel within the cladding tubes is dissolved using nitric acid. Once all of the fuel is in solution, it is ready to be separated into its three major parts; uranium, plutonium and the waste or fission products. The uranium was originally intended to go to the UF-6 Plant mentioned earlier, the plutonium was to have been stored in special tanks prior to solidification and shipped to a mixed oxide fuel fabricator and the waste transferred to the storage tanks shown earlier prior to solidification and transport to the yet undesignated Federal depository.

Slide No. 19- This is a picture of a portion of the Control Room. The Control Room monitors and controls the entire process and its large numbers of back-up systems.

NUCLEAR FUEL CYCLE

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ROD ABSORBER
TOP NOZZLE
GRID ASSEMBLY
FUEL RODS
ABSORBER ROD GUIDE SHEATHS
GRID ASSEMBLY
DASHPOT REGION
BOTTOM NOZZLE
Westinghouse
NUCLEAR PLANT FUEL ASSEMBLY

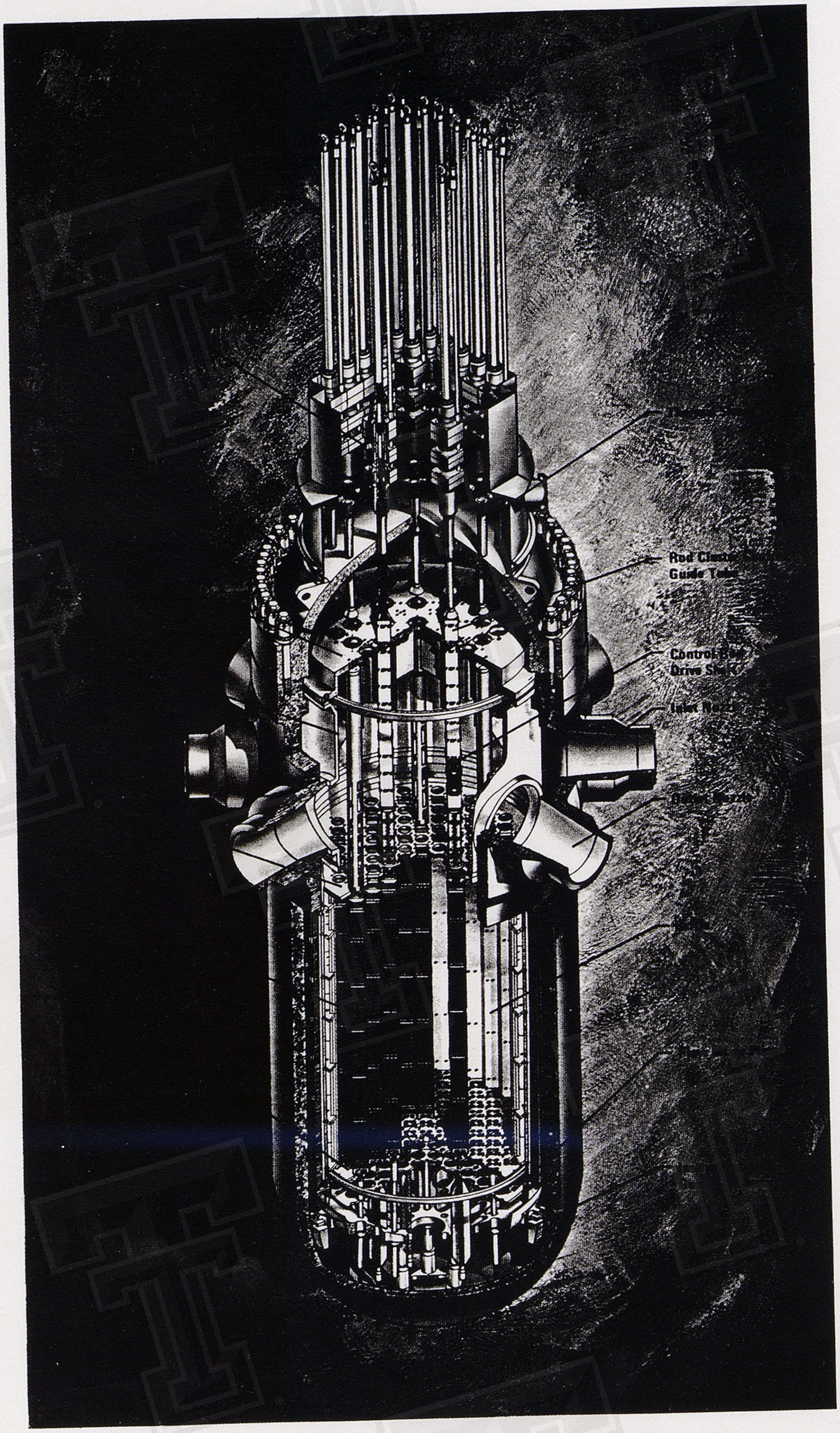
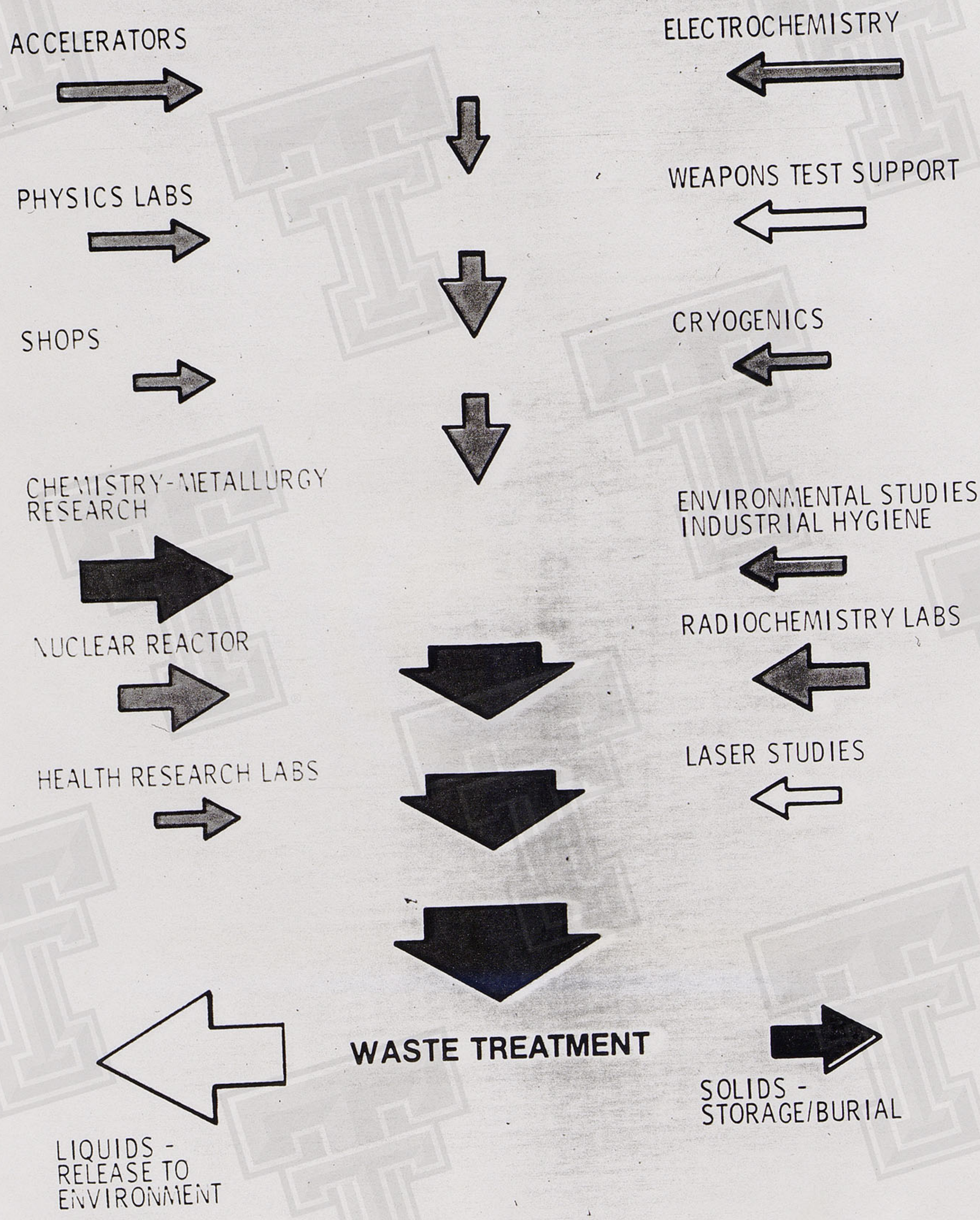
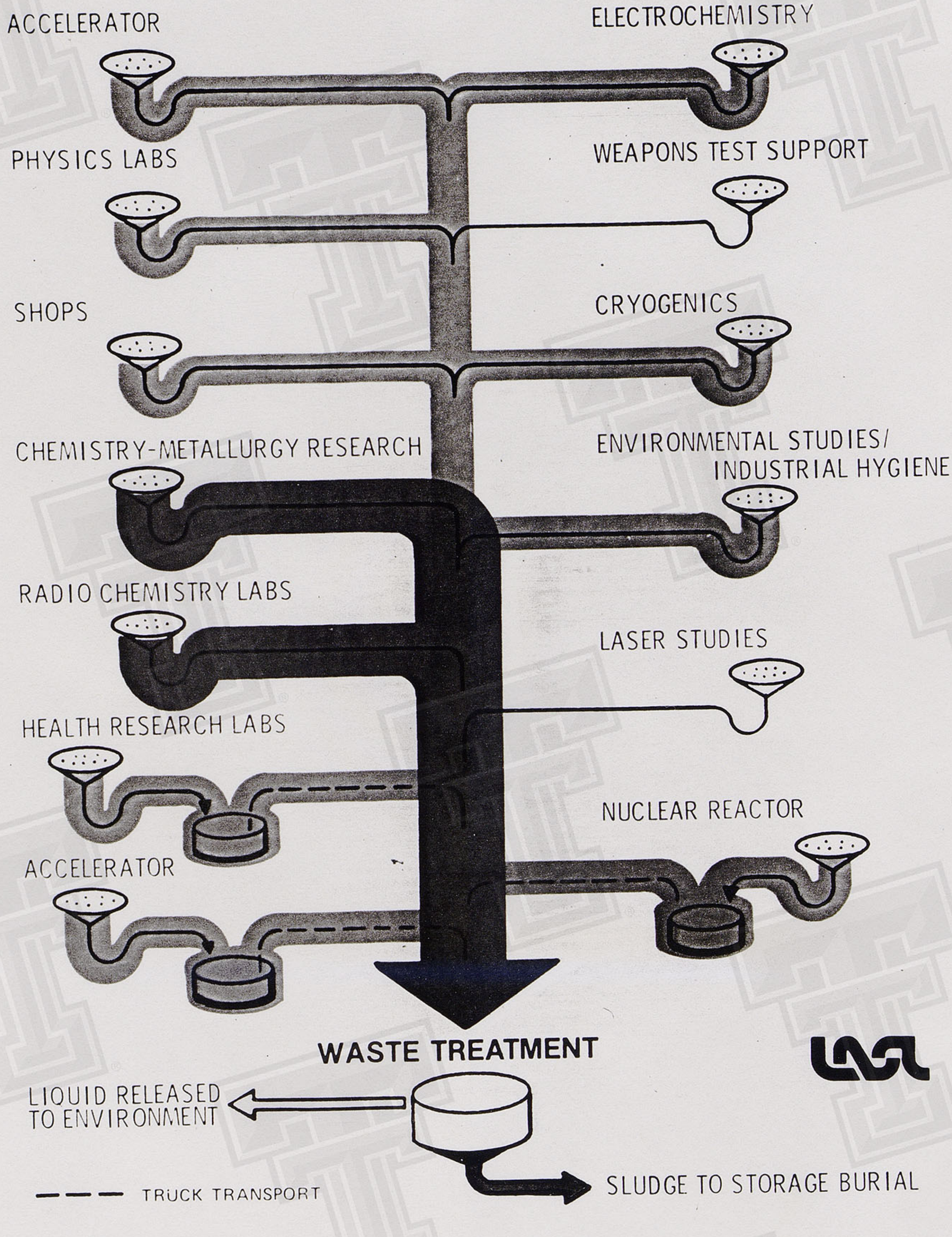


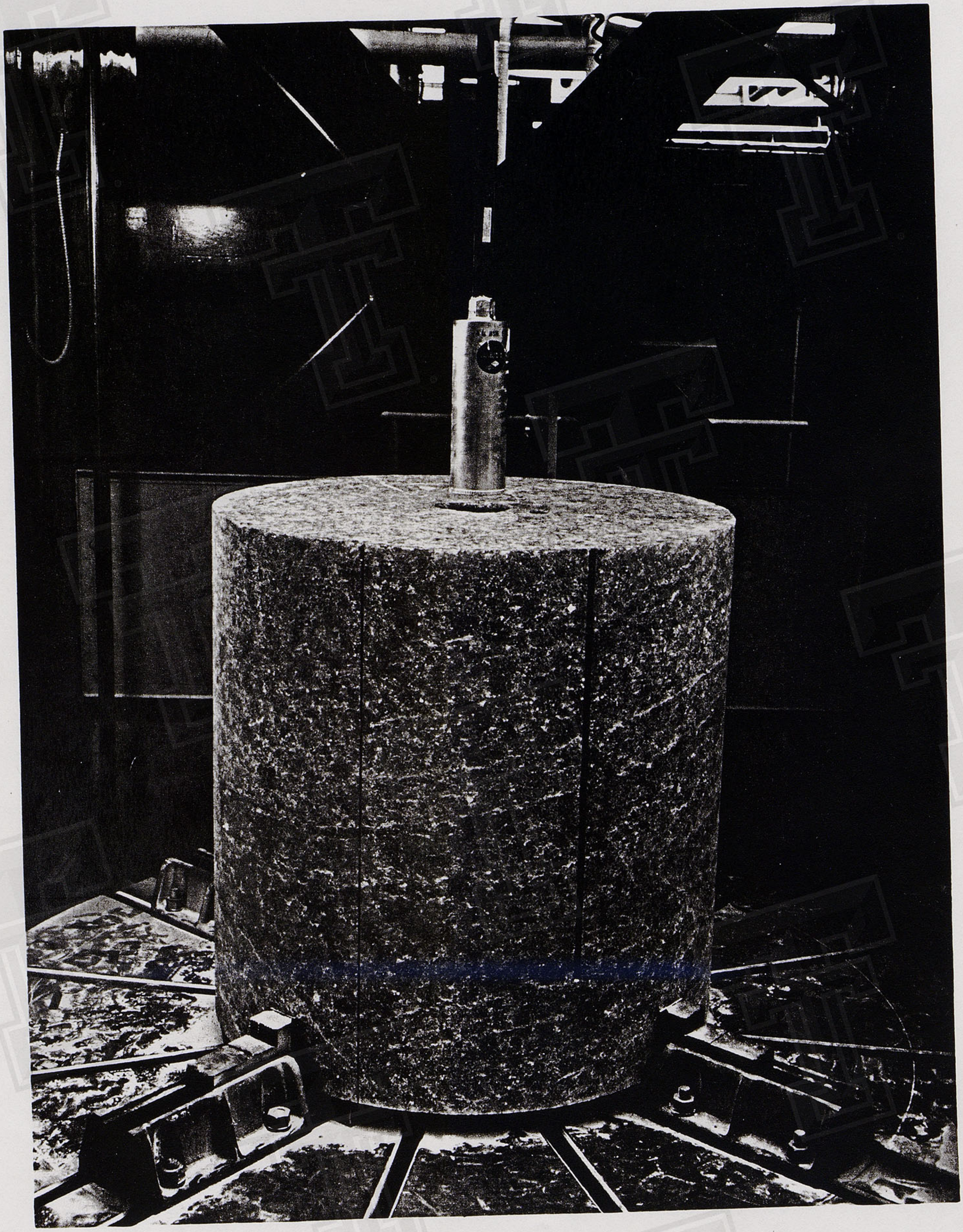
Figure 3-1. Cutaway of a Typical Reactor

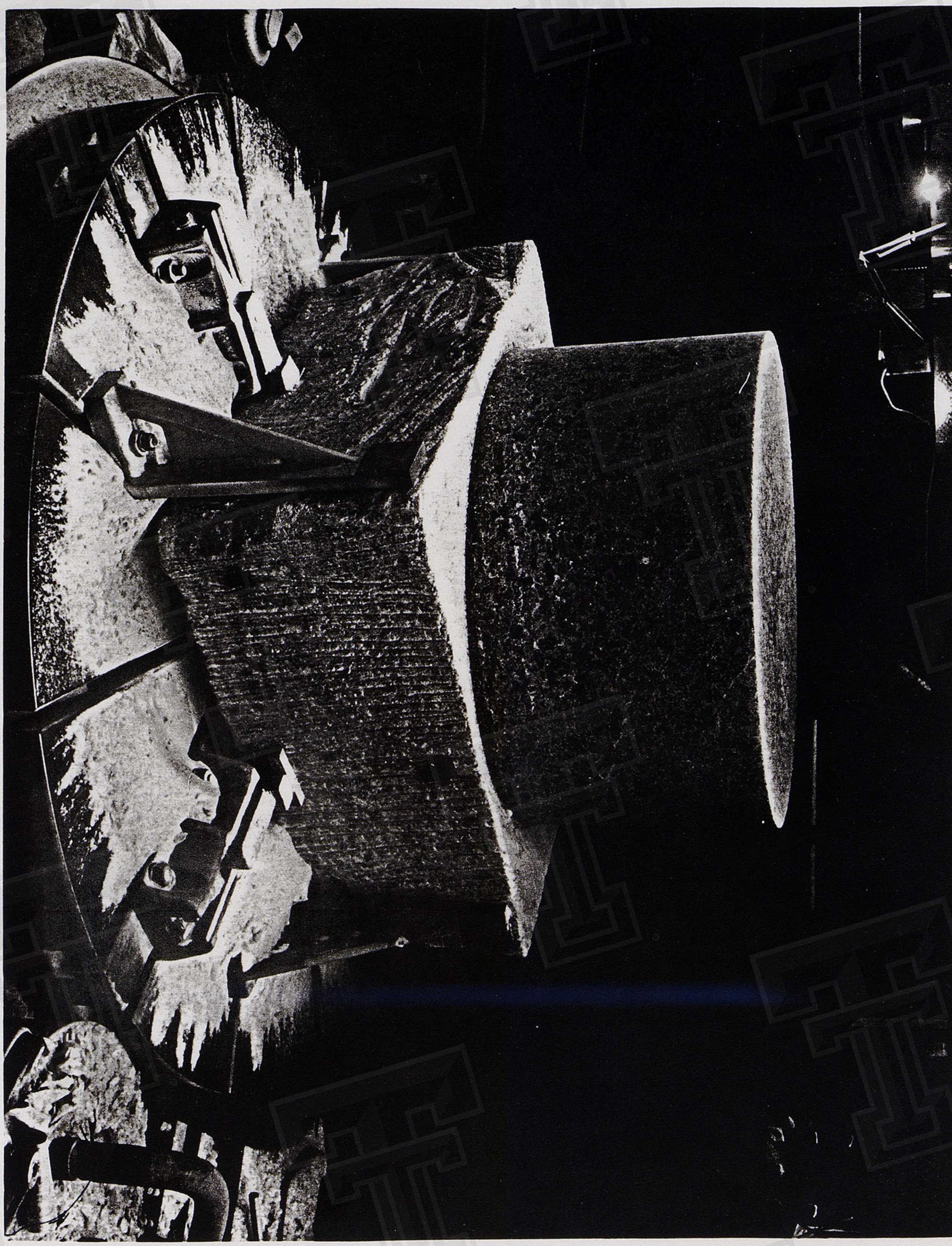
WASTE COLLECTION SYSTEM SERVING TA-50

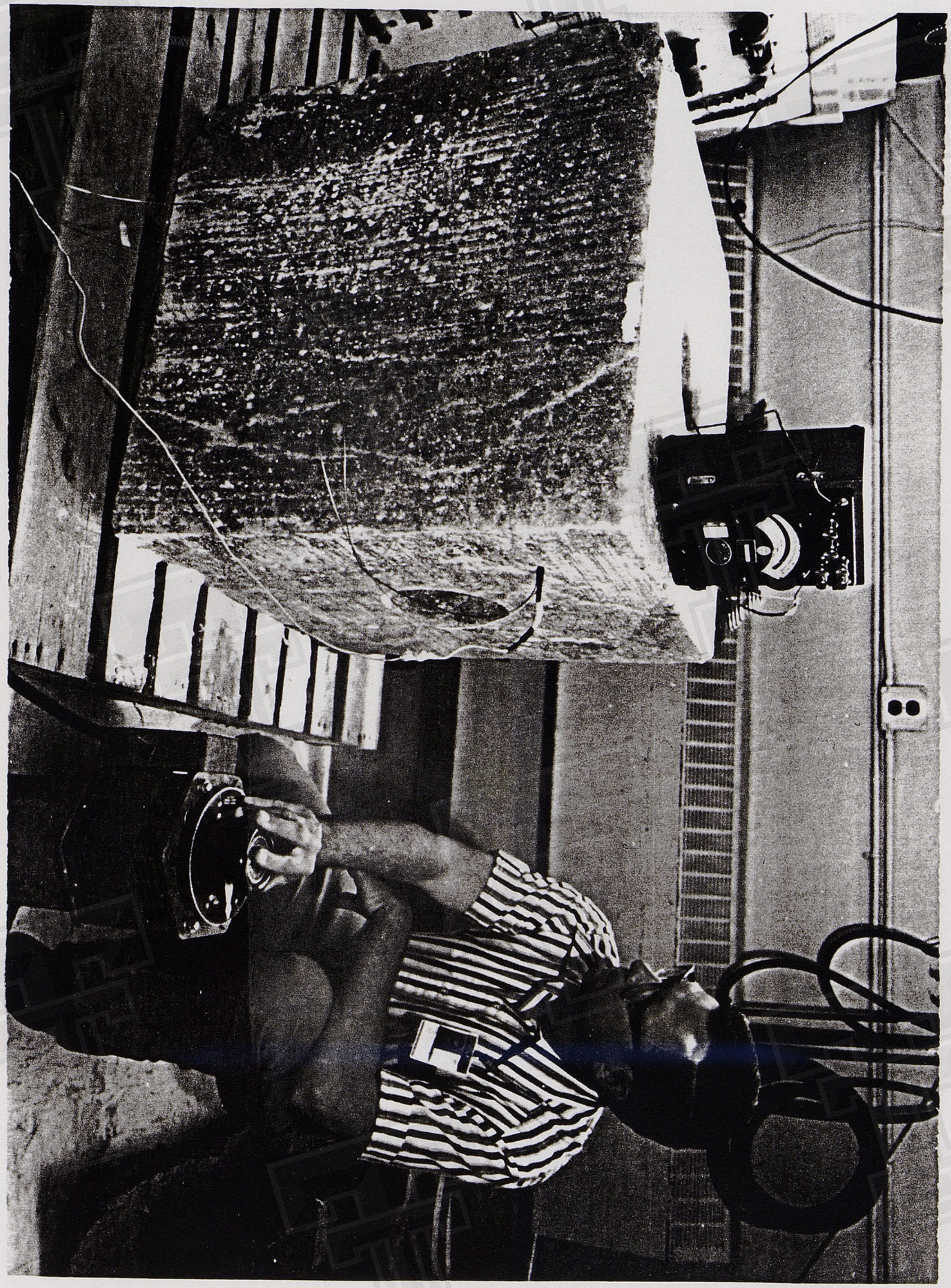


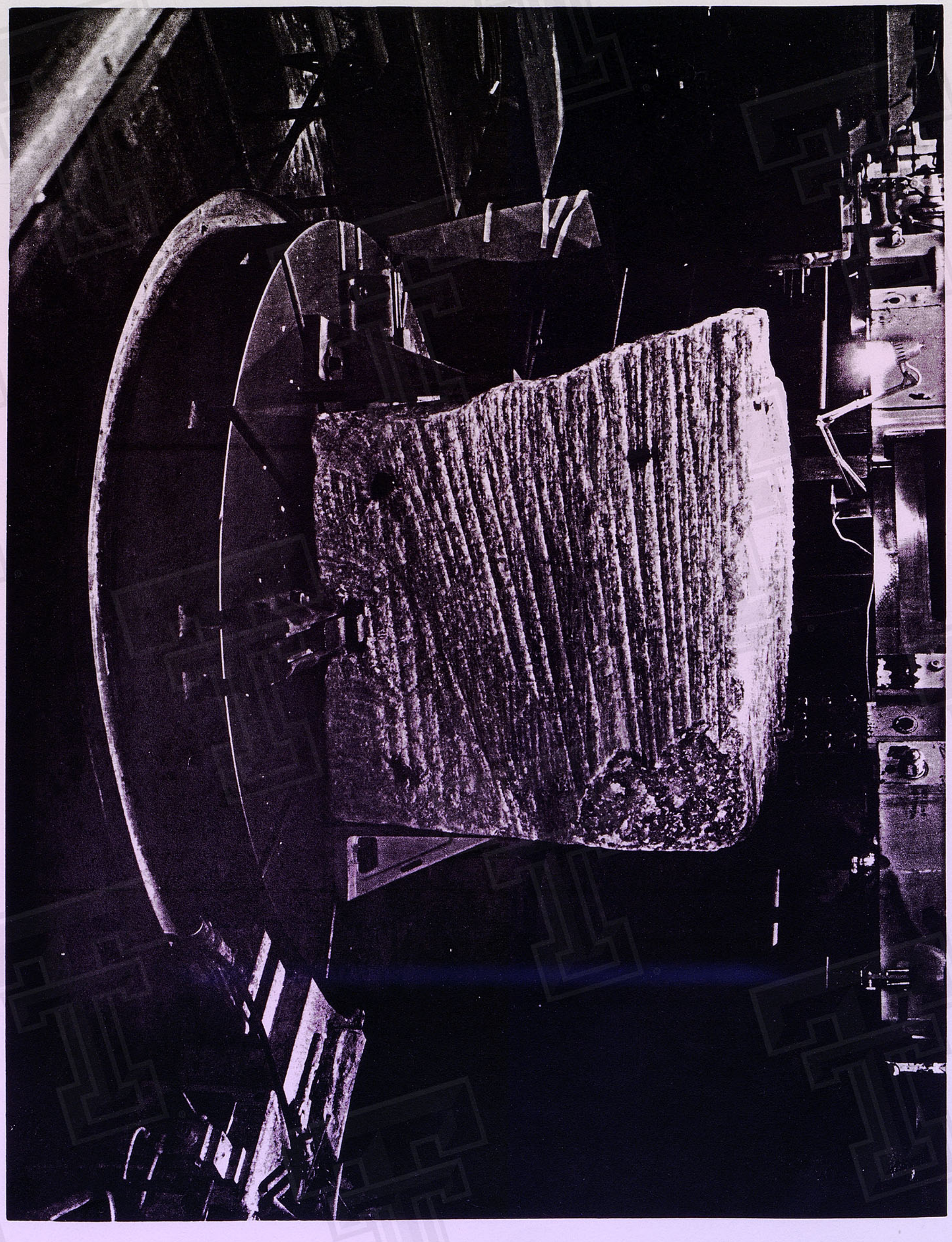
WASTE COLLECTION SYSTEM SERVING TA-50

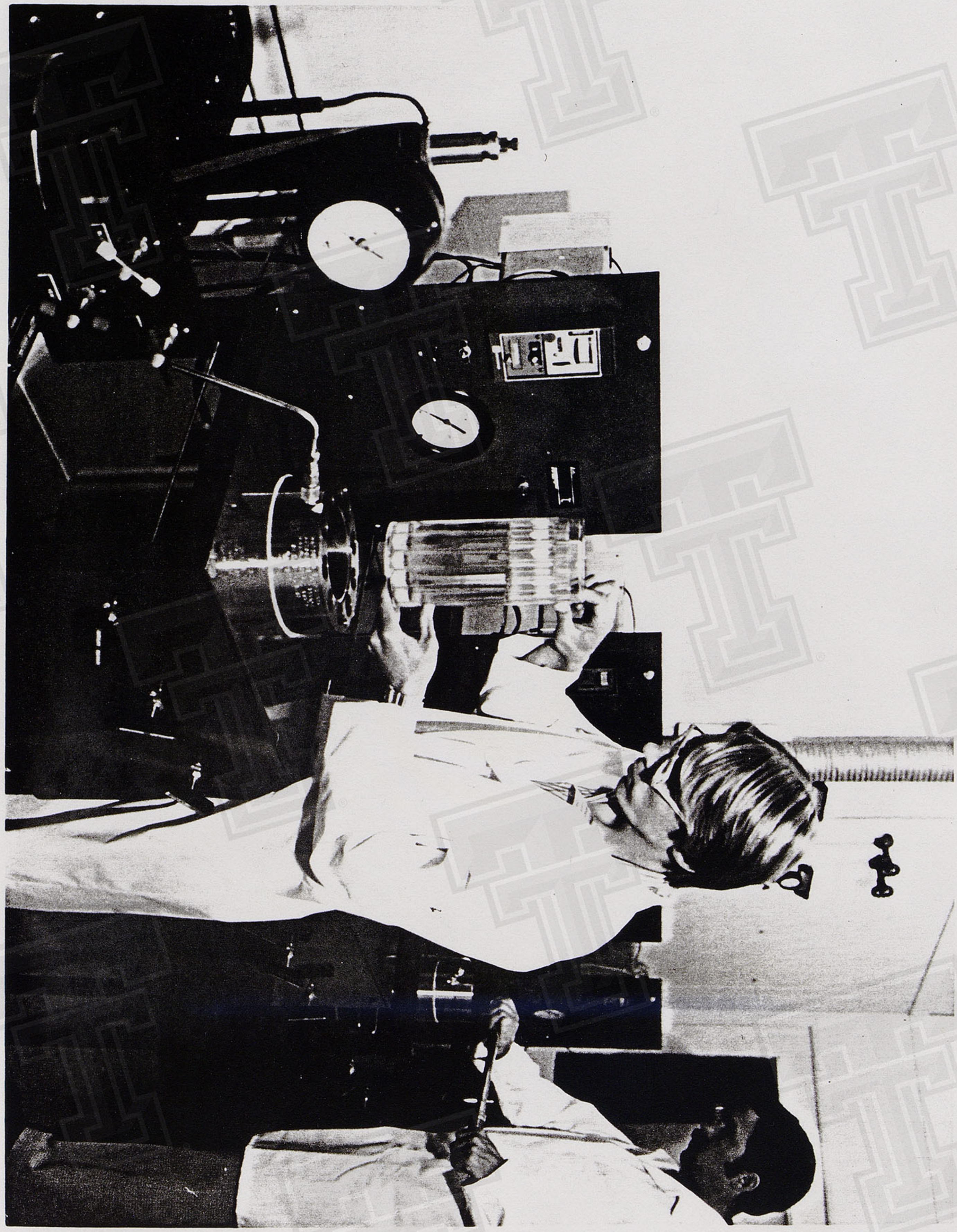


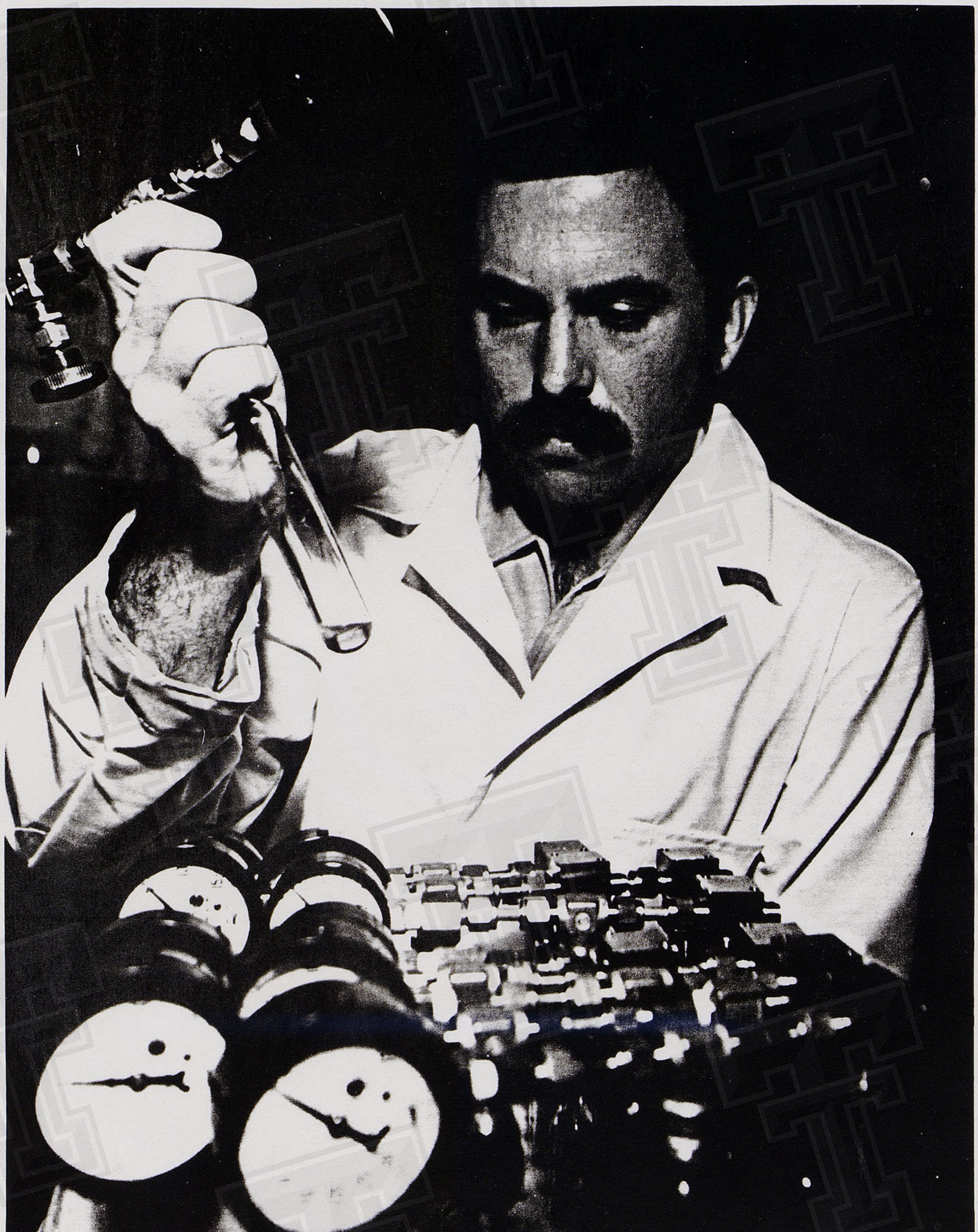


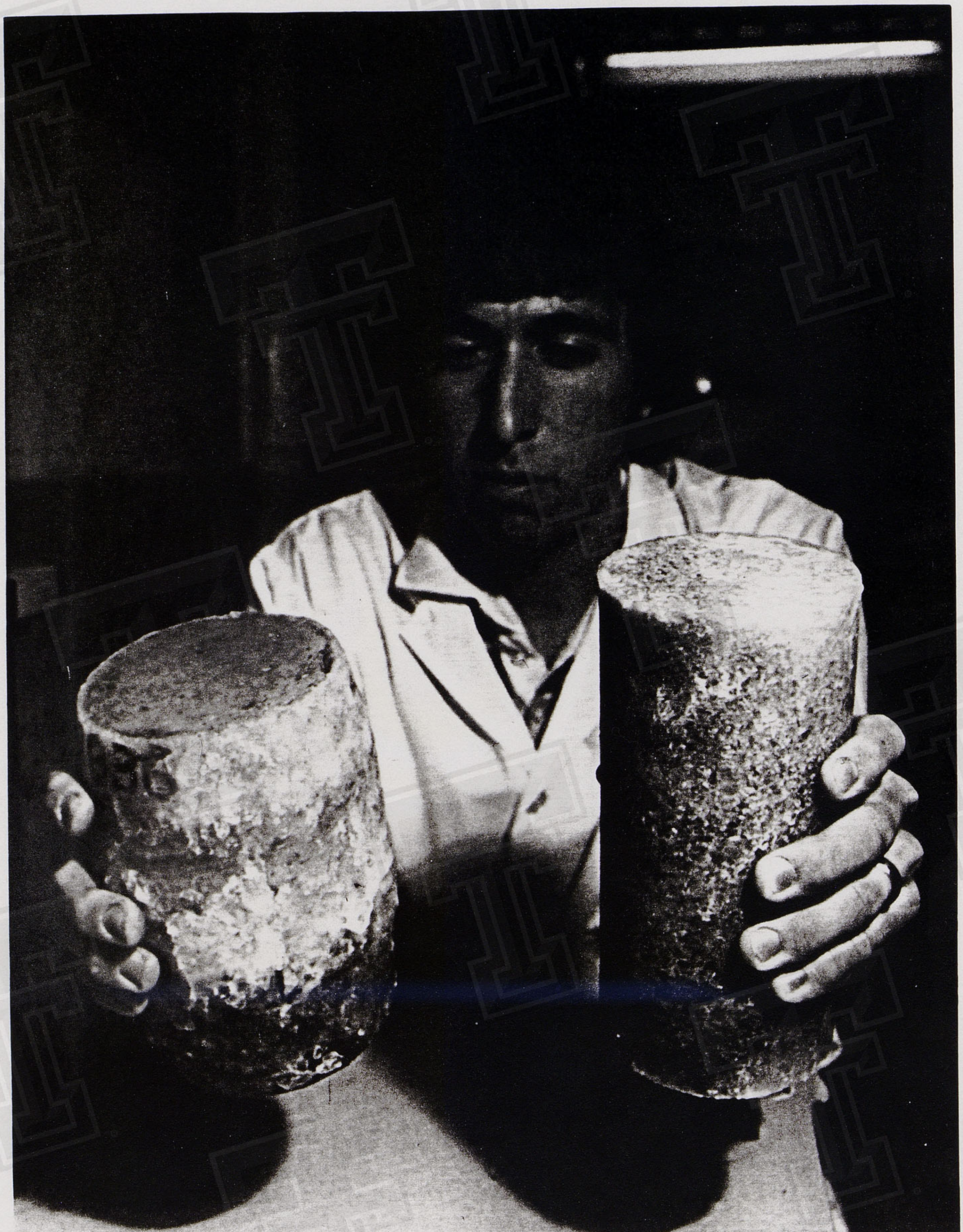


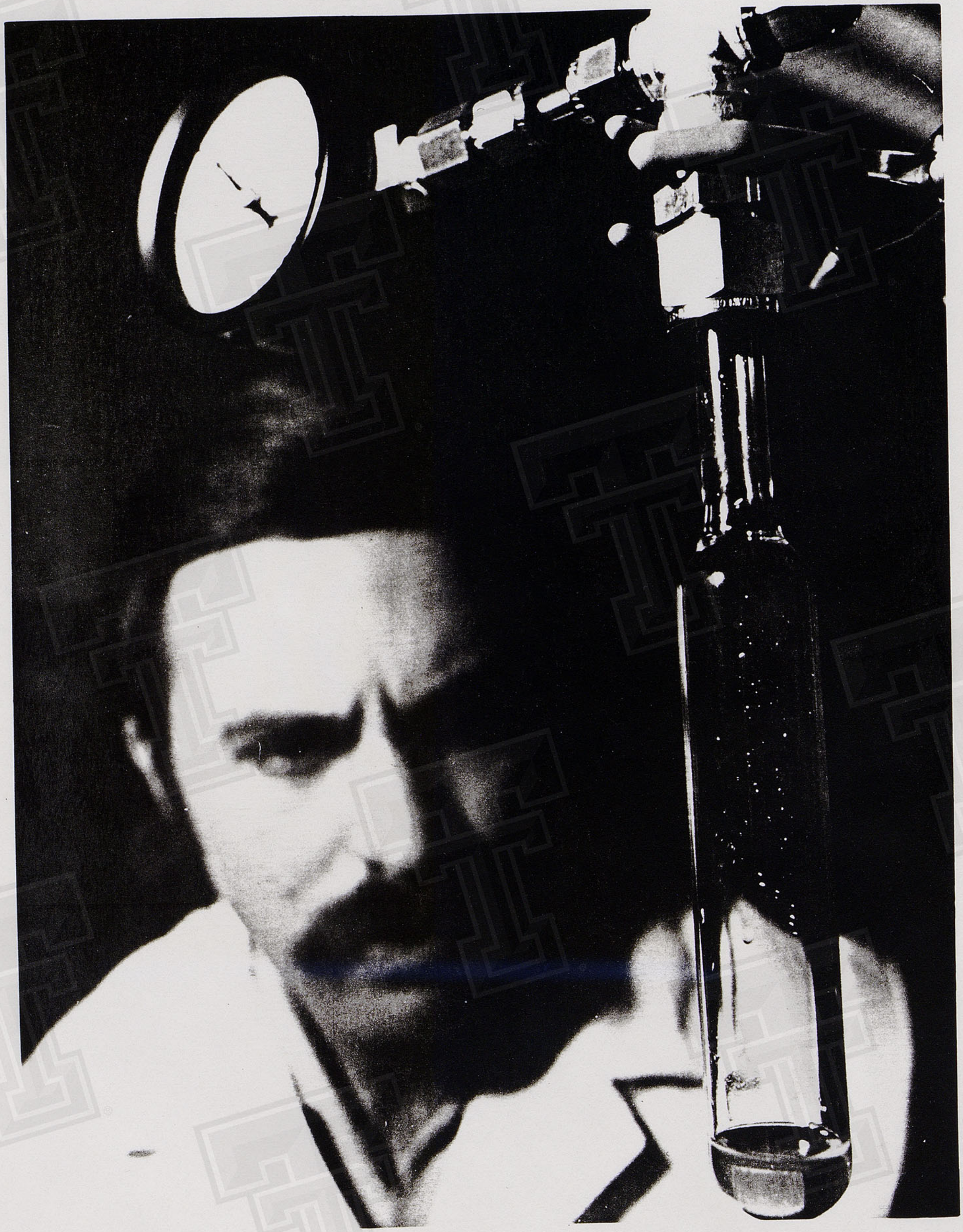


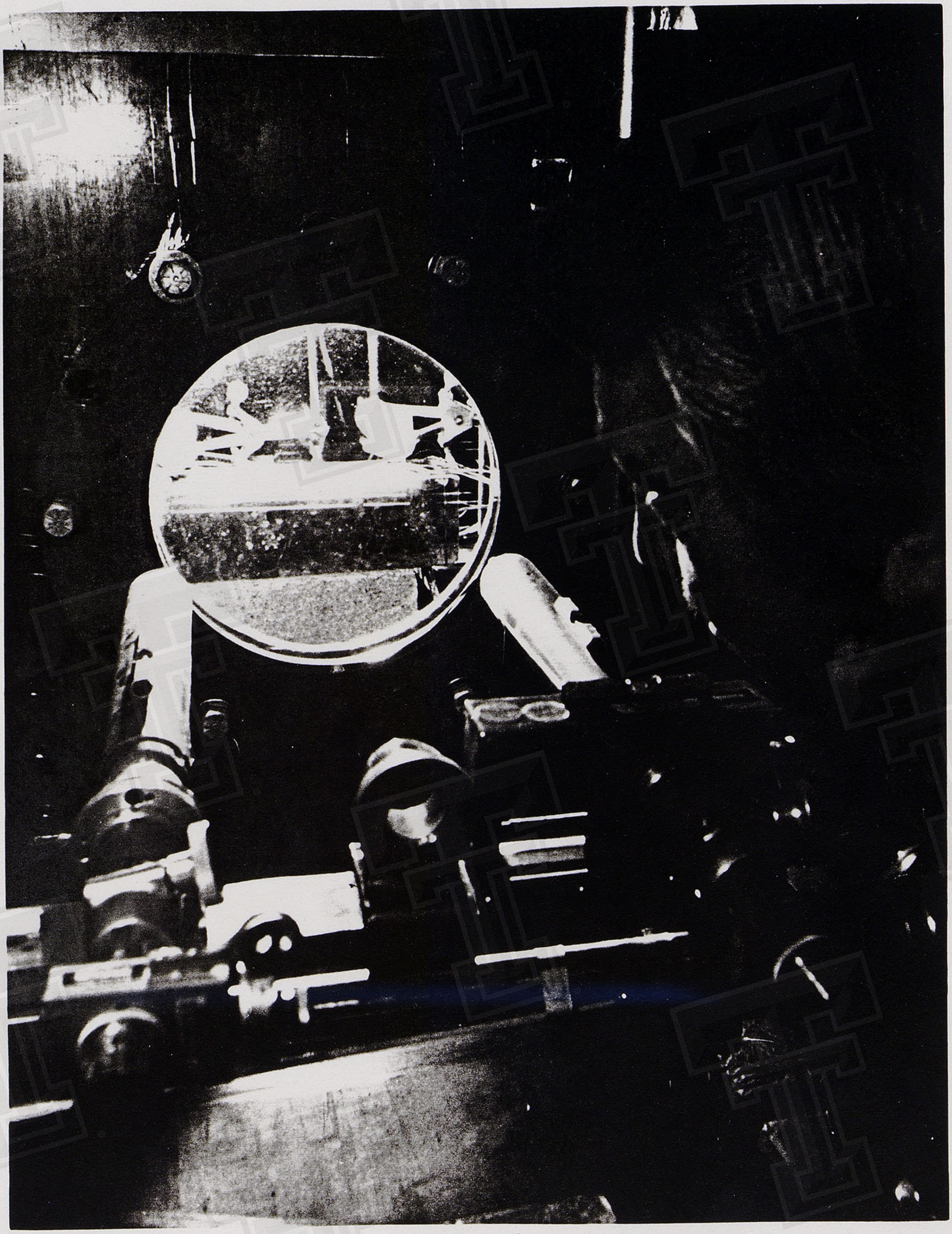


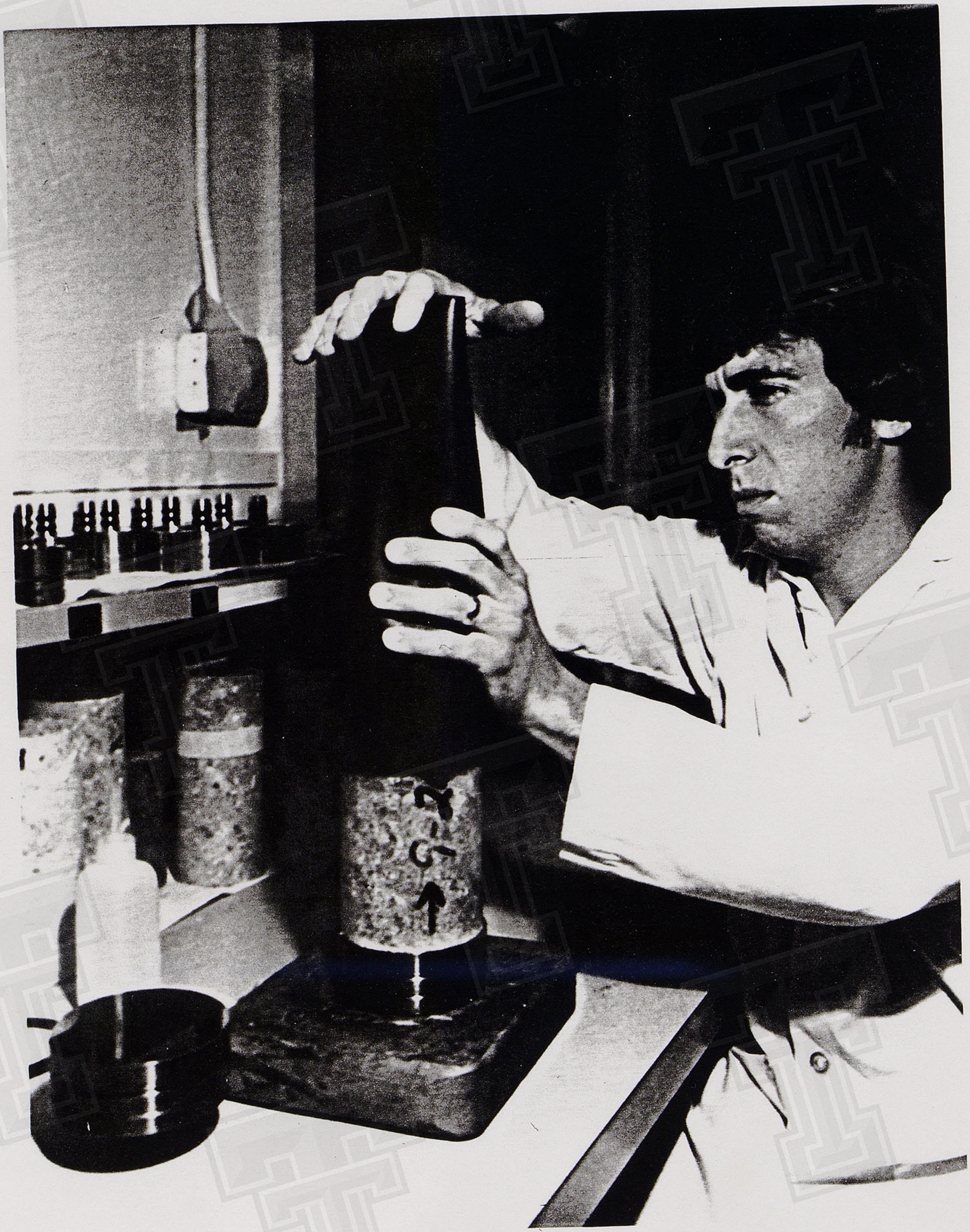


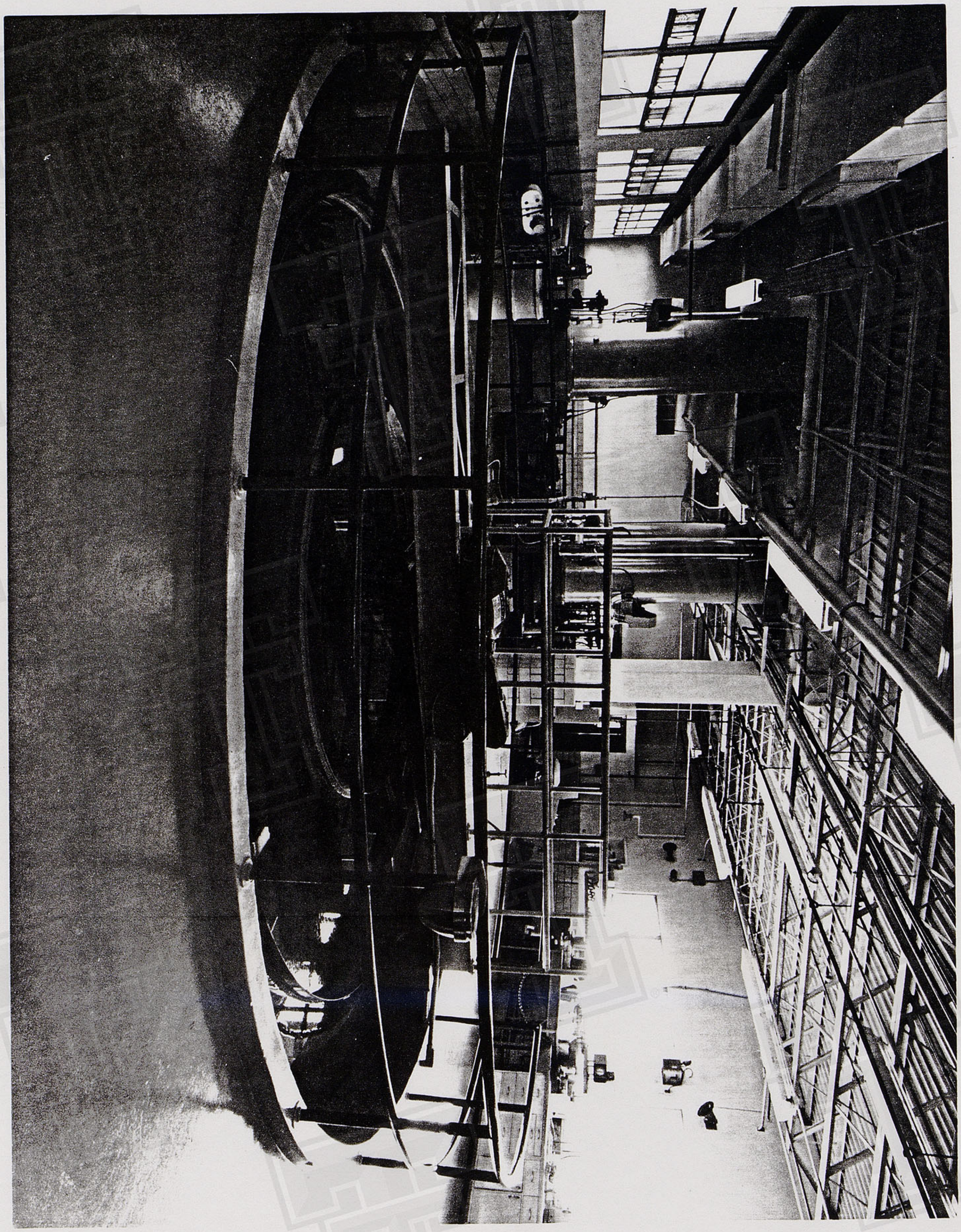


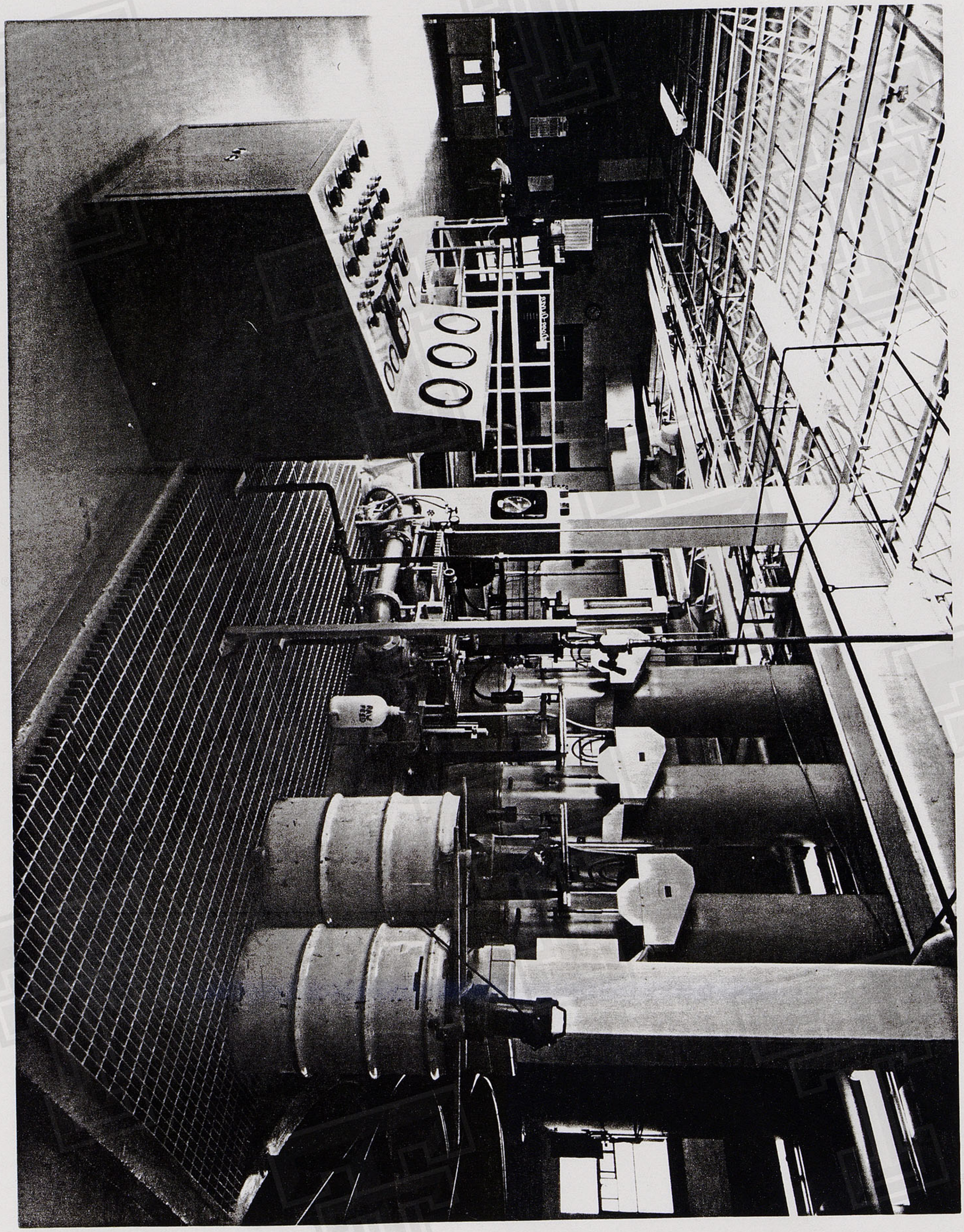


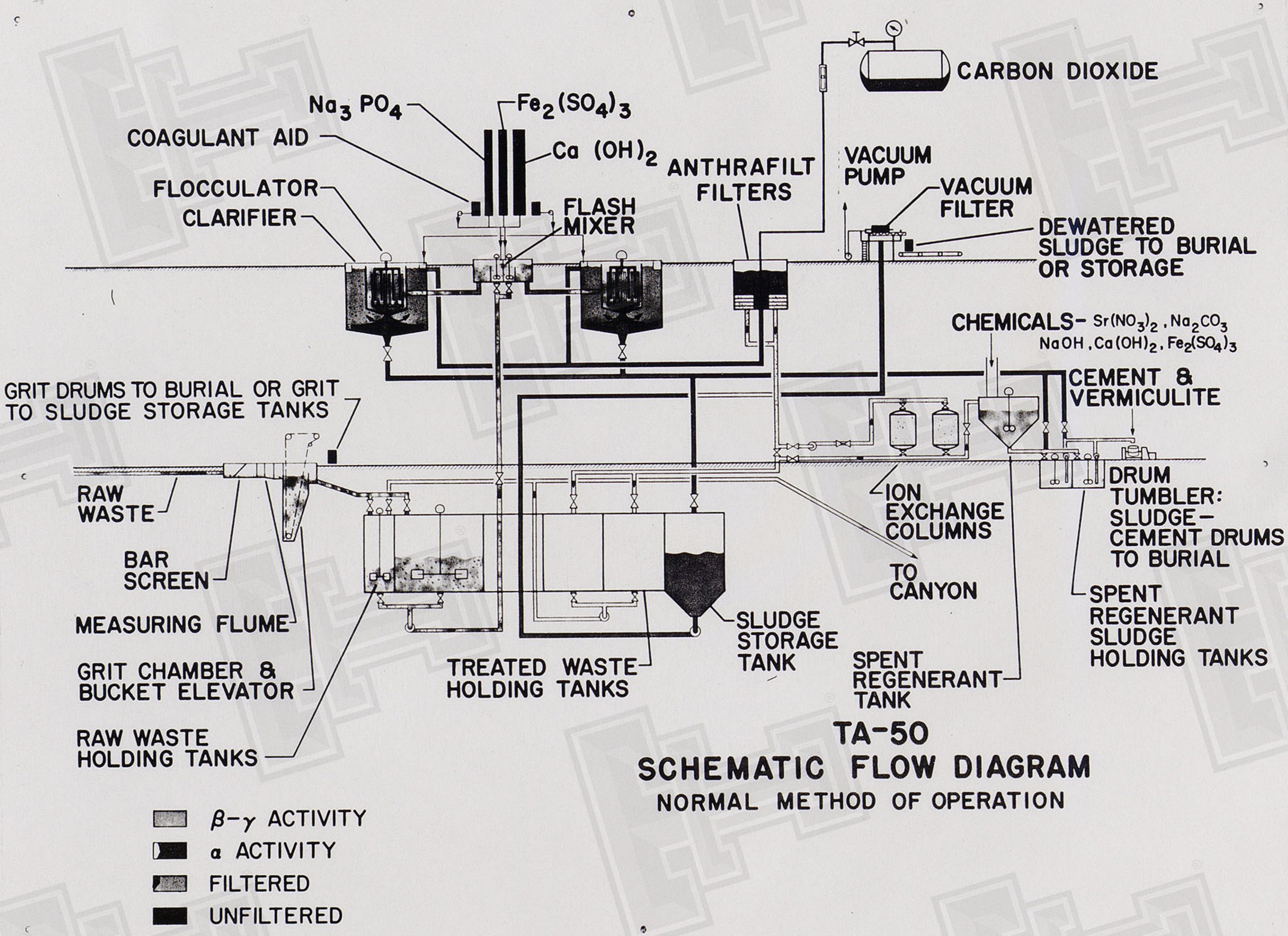












TA-50
SCHEMATIC FLOW DIAGRAM
NORMAL METHOD OF OPERATION