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January 26, 1988

Fax No.  
(419) 394-4776

U. S. Nuclear Regulatory Commission  
Region III  
Material Licensing Section  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Dear Commission:

AAP St. Marys Corporation, for its products, will melt aluminum ingot to be cast into automobile wheels. The ingot is automatically "fed" into the melter's melting chamber by a conveyor. To prevent overfilling the melting chamber of the furnace, an ingot (or stock) level sensing device is installed in that area of the melter. If the sensor detects ingot (stock) at a certain level in the melt chamber area, the conveyor will not "feed" more stock to the melter. When the sensor cannot "sense" stock at the maximum level, the conveyor will "feed" stock into the melt area.

In this application, a radiation source is used to send a beam of radiation between the source head and a detector on the opposite side of the melt chamber, such that the beam transverses the chamber. The source is a sealed capsule containing Cs-137. The source holder is designed such that radiation levels will be less than 5 mR/h one foot from any accessible surface at the maximum source loading for the device with the device in the "off" position.

With the shutter of the device open, a collimated beam of radiation exists between the source head and detector traversing the vessel being monitored. It is not likely, when consideration is given to the design of the device, the precautions to be taken (described herein) and the minimal accessibility, that any individual will receive a radiation exposure in excess of 0.125 rem per calendar quarter. In fact, due to its location and the extreme heat of the melt chamber, the proximity of the device is not humanly accessible under normal conditions. However, in order to assure the Commission of the safety situation, we have described the conditions of the use of the device herein, as well as safety considerations to be taken.

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### RADIATION PROTECTION PROGRAM

For item 15 of the "Application for Byproduct Material License", the following information is submitted:

The manufacturer of the device (Texas Nuclear Corporation) will furnish us with detailed instructions on the proper precautions to be taken in utilizing these devices. Specific items of design detail, shutter operation, beam geometry, radiation levels and regulatory compliance will be presented by trained personnel of Texas Nuclear at the time the device is installed.

Again, as previously stated, it is not likely, when consideration is given to the design of the device, the precautions to be taken and the minimal accessibility, that any individual will receive a radiation exposure in excess of 0.125 rem per calendar quarter.

The device is built into the refractory walls of a melting furnace. It is secure and not moveable. There are no severe environmental conditions that can affect the integrity of the source and shielding. All environmental factors have been presented to the manufacturer, Texas Nuclear, for their careful evaluation prior to specifying these devices. As the enclosed sketches show, the device is located within the walls of the firebrick-lined chimney or flue of the melting furnace. The point of location is high above the plant floor (16'11"). During the course of the work day, employees do not come near the area where the device is located.

All charging (loading) of ingot into the melt area (where the device is located) is done mechanically without human involvement. There is no reason for a person to be anywhere near the device's location. In fact, based on common working conditions and limited physical accessibility, there are no situations that would routinely place any person anywhere close and certainly not within three feet of the device.

Our personnel will be instructed as to the size and location of the beam involved. They will carefully be advised of the radiation levels in the beam. They will also be cautioned that, unless the shutter is CLOSED, these radiation levels are significant. We are aware that the device involved here is capable of producing high level radiation between the source holder and the detector. However, the following arrangements should be sufficient to prevent unauthorized entry to the radiation beam and preclude any unintentional radiation exposure:



1. During normal operation, no individual has access to the vessel. The contained material and operating parameters preclude the access of any major portion of the body to the radiation field. Only authorized personnel are allowed to change the operating parameters and/or authorize access. More importantly, during normal operation, the melt area is not humanly accessible.
2. Personnel are to be instructed to CLOSE the guage shutter when the operation is stopped.
3. If the operation is shut down for any period of time or extensive work is done on the chimney or melt area where the device is located, the radiation safety officer will be notified to insure that the shutter is locked in the CLOSED position and remains locked during this period of time.
4. Signs displaying "CAUTION: RADIATION" and the standard symbol stating that the shutter must be CLOSED will be posted at installation. Posted procedures will also instruct all persons that no work is to be done in the area of the beam or that would expose the device itself unless the radiation safety officer is present and has approved a proper, safe procedure for the work.
5. The device is not accessible in general. The extreme temperature in the area of the device makes it impossible for a human to get close to the device in actual operation.

Our supplier, Texas Nuclear, will perform the initial radiation survey and leak testing at the time of installation. Additionally, our employees will receive specific training at the time of installation. This training will include construction features of the device, source integrity, beam geometry and intensity, and, operating details of the device. Any precautionary steps (such as the addition of shielding, warning signs, etc.), or precautions to be taken in ordinary and extraordinary situations, will be addressed at the time of installation and during training. The training and instruction will conform to all state and federal regulations applicable, and, as practicable, we will take full advantage of procedures and training from the maker of the device as provided for in the purchase agreement with Modern Equipment Company, Inc. of Port Washington, Wisconsin.

ADDITIONAL INFORMATION

The source holder will be tested for source integrity at least every three years. Leak testing will be performed according to the manufacturer's recommendation and as required by state and/or federal regulation.

Furthermore, the following additional procedures will be followed:

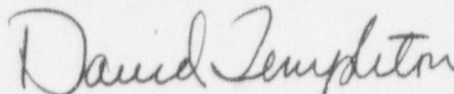
1. In any event of catastrophic emergency, where this device may be effected, we will call for instruction and assistance from a properly certified technician or officer of a local or state service, or from the manufacturer, and await their instruction and/or assistance.
2. Any repair, relocation, or removal of the source will be done only by a person or persons fully trained and properly certified eligible to do such work.
3. A radiation survey will be performed by the manufacturer (Texas Nuclear) of the device upon installation to measure the radiation levels around the device and assure accordance with the manufacturer's installation procedures.
4. The manufacturer (Texas Nuclear) will answer questions concerning licensing or the radiation safety of the device. Address:

Health Physics Section  
Texas Nuclear Division  
P. O. Box 9267  
Austin, Texas 78766  
512/836-0801, ext. 310 or 311

The attached drawings show, by studying each of the views, the location of the device. Employees are not normally in the area of the device's location.

If further information is required or if questions arise, please notify the writer.

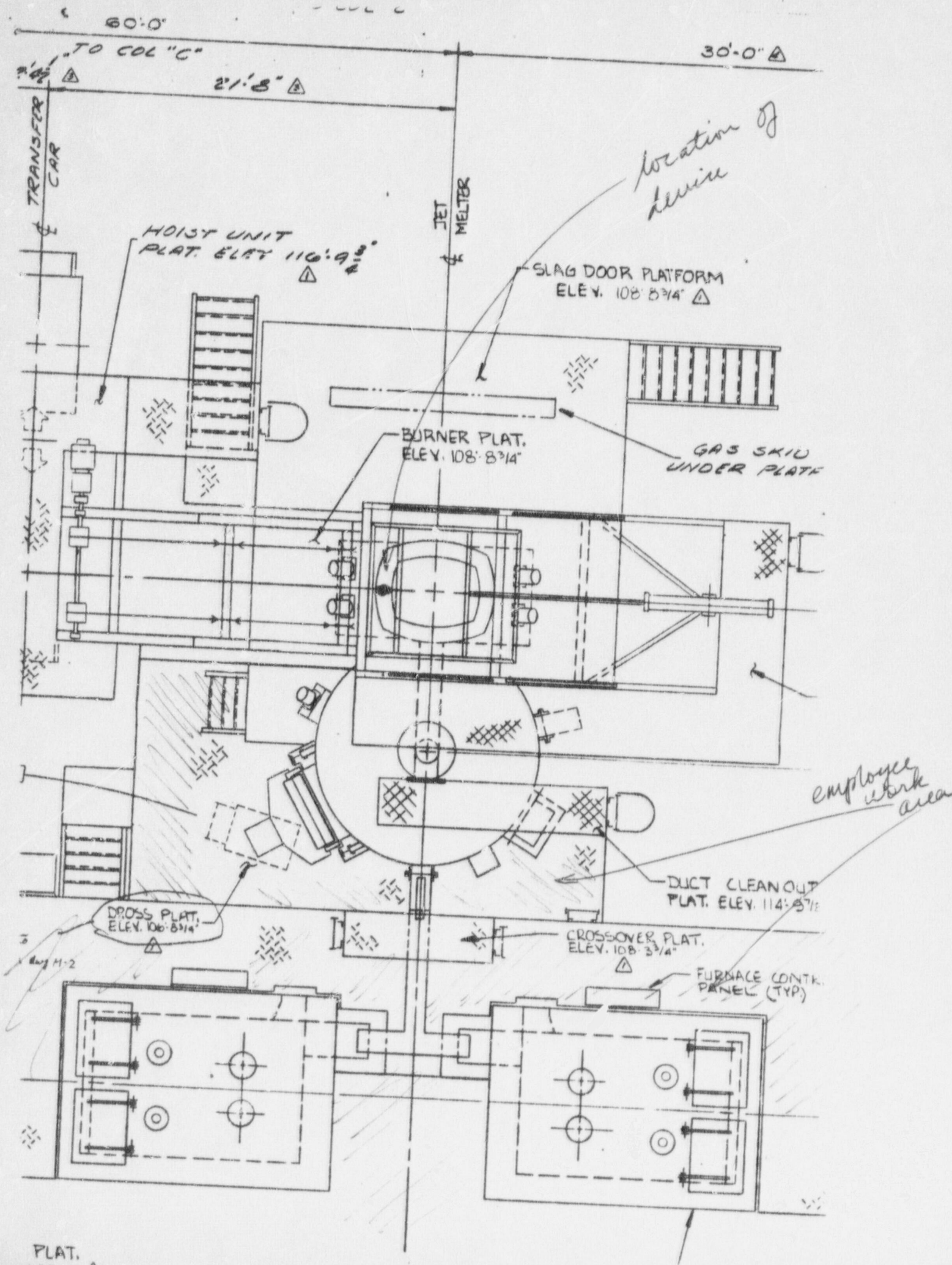
Submitted by:



David Templeton  
Asst. General Manager

DT/skh

attachment





TOP OF CHARGER  
STRUCT. EL 179'6 3/4" Δ

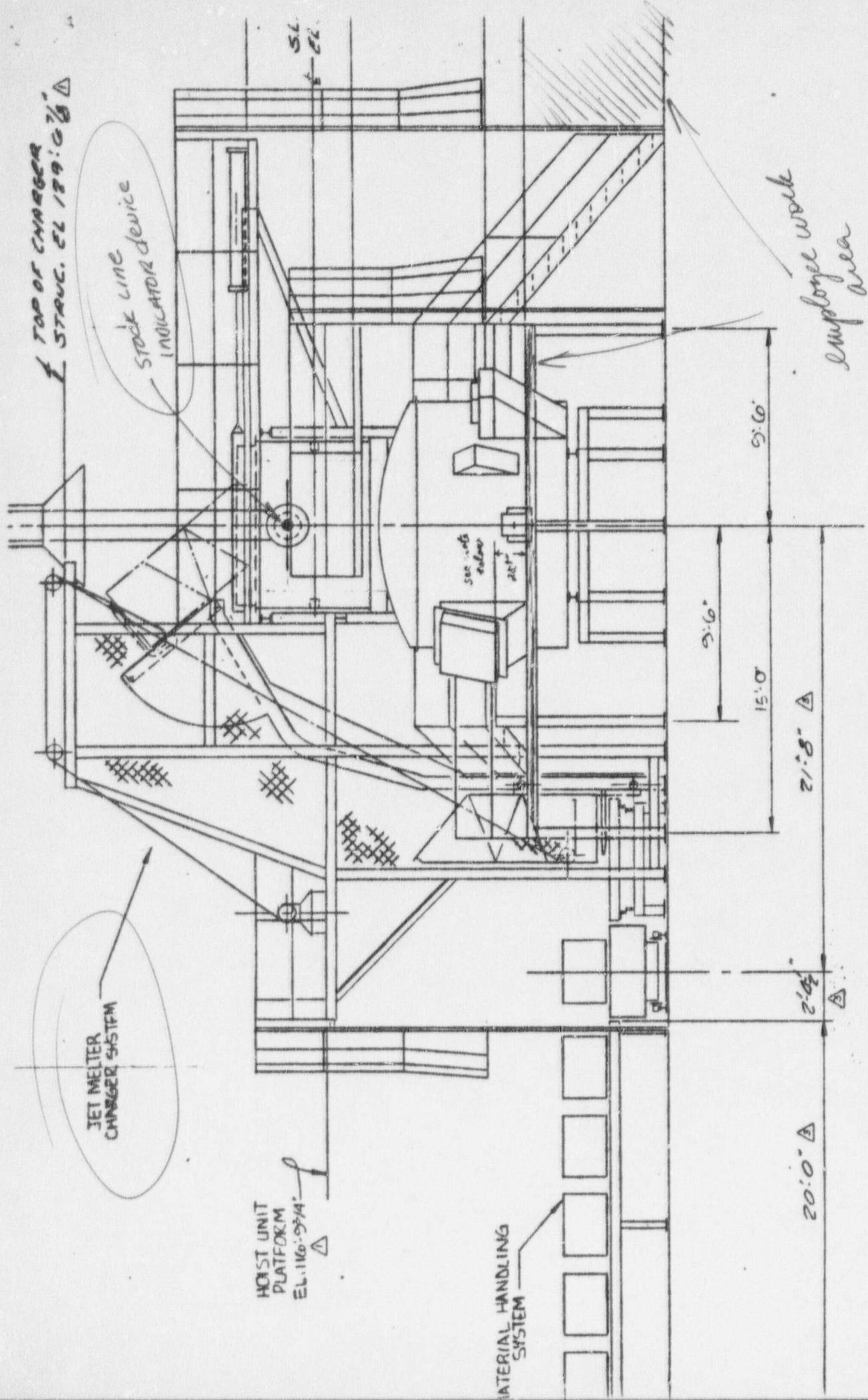
STOCK LINE  
INDICATOR device

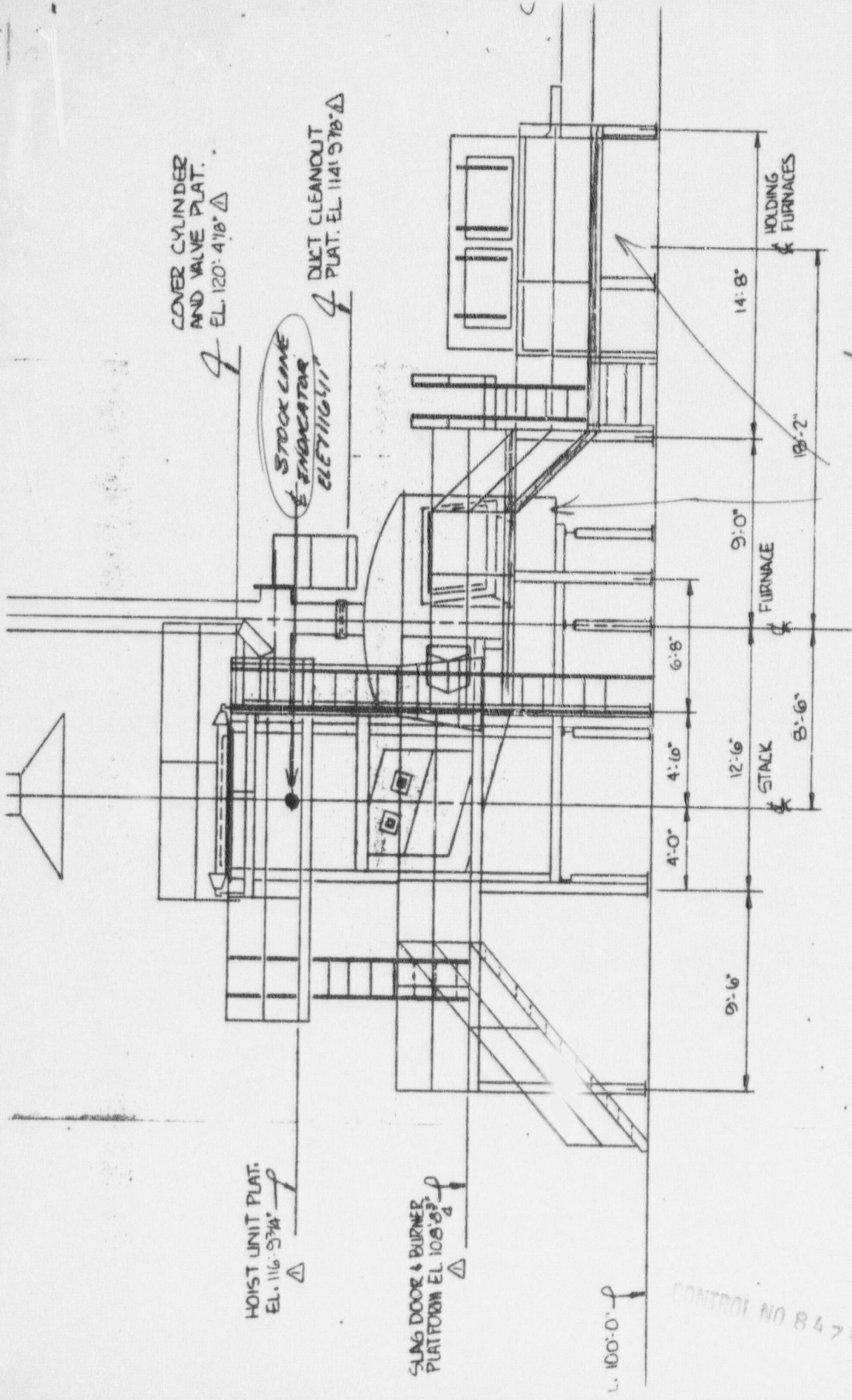
JET MELTER  
CHARGER SYSTEM

HOIST UNIT  
PLATFORM  
EL. 116'-9 3/4" Δ

MATERIAL HANDLING  
SYSTEM

employee work  
area





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