MARTIN MARIETTA REFRACTORIES COMPANY
SUBSIDIARY OF MARTIN MARIETTA CORPORATION

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TELEPHONE (419) 849-3111

April 1, 1985

United States Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Attn: Evelyn R. Matson
Material Licensing Section

This refers to your letter received on Mar. 15, 1985, in which you have requested further information for the purpose of amending our license, #34-13543-01 (Martin Marietta Chemicals), Control #77904, to include license #34-13962-01, Control #77918.

The lock-out procedures and leak testing for our gauges, previously authorized under Woodville Lime and Chemical Company license #34-13962-01, will be the same procedure as specified in Martin Marietta Chemical's license #34-13543-01, unless you amend our new leak test procedures which are specified in the following pages of this letter.

Attached with this letter, marked Exhibit "A", is a brief description and some diagrams on the location of the previous Woodville Lime and Chemical Company nuclear gauges and also the present use and location of the Martin Marietta Chemical Company nuclear gauges.

These nuclear gauges are not exposed to any environmental conditions which would cause damage to the source shielding and the nuclear gauges do not have any cooling system.

With regard for our request to perform installation and relocation of our nuclear gauges, the responsible individual will be John Overmyer. Attached please find a brief outline marked Exhibit "B", of a Radiation Health Safety program attended by Mr. Overmyer. The training course was held in Nov., 1984, by Texas Nuclear at their Austin, Texas plant. The training instructor was Mr. Jack Hendricks. The completion certificates are also attached to this letter.

The personal monitoring devices that will be worn by personnel during the servicing of the nuclear gauges will be film badges. The badges will be on a change frequency of one month intervals.

We are presently using two (2) survey meters which were manufactured by Victoreen Instrument Company. They both are a model Thyac III, capable of detection of beta and gamma rays on a meter scale from .01 mR/H to 200 mR/H.

Our two (2) survey meters will be calibrated and certified by Victoreen Instrument Company. When the survey meter has been returned after certified calibration; a field calibration will be performed on the survey meter and the measurements recorded. These measurements will be used as a reference in the field calibration procedure. The field calibration procedure will be performed as follows:

1. The survey instrument will be calibrated in a relatively low radiation background area.

2. The equipment used for the calibration of the survey meter will be the meter itself, a check source (CS 137) and a small 6" pocket steel scales.

3. The meter will be set on a flat surface, the battery will be checked and adjusted if necessary. The meter probe cover will be opened and a measurement of background radiation will be measured and recorded.

4. With the test source (CS 137) lying flat, the meter probe is placed on top of the test source and a measurement is again taken and recorded. This measurement is compared to original field calibration reading that was taken when the survey meter was received from Victoreen Instrument.

5. The next step in the procedure is to use the pocket steel ruler as a brace and move the end window on the meter probe to approximately $\frac{1}{4}$" above the test source. We should have a meter reading on the highest scale. This reading is also verifiable on the 30 mR/H scale. A typical example would be that the check source gives us a reading of 50 mR/H while in contact with the meter probe, and at approximately $\frac{1}{4}$", it should drop to 25 mR/H, which is also verifiable on the 30 mR/H scale.

6. Moving the meter probe until it is approximately an inch away from test source and a reading of less than 10 mR/H will be obtained, which means we can verify the instrument calibration on the 100 mR/H scale, the 30 mR/H scale and the 10 mR/H scale. Reading scale to scale should be within $\pm$ 10%.

7. At approximately 2" away from the test source another reading will be produced on the 10 mR/H which can be verified on the 3 mR/H scale.

This field calibration will be performed and readings recorded before entering the work area where service work is to be performed on a nuclear gauge. This field calibration procedure will also be performed before measurements are recorded on leak test samples. It will allow us to have confidence in the accuracy of the meter readings taken during survey and leak test work.

In the performance of this field calibration, if the instrument readings deviate by more than ± 20% from those expected, the instrument will be removed from service and sent to Victoreen for certified calibration.

Because of the method of installation of the sources into a hanger welded tight to a cooler or stone bin, access to the window of the source, without relocating the source, is near impossible. Since the material in the cooler is ± 2000 deg. F during operation, access to t e source beam is also impossible. Access to the source beam in the stone bin is difficult because there is no access ladder to enter inside of the bin. See Exhibit "A" attached to this letter for better description of use of sources.

Access to these areas during kiln downtime may be necessary to enter coolers or stone bin for repairs. If this situation occurs a radiation survey will be taken before entry and the source will be locked out by John Overmyer or Denny Kelley. All plant electricians responsible for adjusting the detector are trained in radiation safety procedures by Denny Kelley or John Overmyer. Mr. Kelley has been trained in procedures by John Overmyer who is the Radiation Safety Officer.

If it is necessary to remove or install a source within the plant a radiation survey will be performed before and after the service of the nuclear gauge. This radiation survey will be completed by John Overmyer. The measurements will be recorded on the form (Exhibit "C"), which is attached to this letter.

The survey forms will be kept on file for a minimum of two years.

The leak test sequence on the nuclear gauges will be performed by John Overmyer. The form marked Exhibit "D", which is attached to this letter, will be used to record the readings.

The following procedures will be performed to obtain the results of our leak tests:

1. A field calibration will be run on the survey meter before measurements are recorded.

2. We will place the test source (CS 137) on a clean flat surface and position the survey probe on top of the test source. Setting the survey meter range selector to give an approximate mid-scale reading, we measure and record the observed reading; M_1 (in mR/H).

3. Removing the test source a few feet away and leaving the survey probe in the same position, we measure and record the background radiation in the same units as M_1.

4. Each swab end of the cotton tipped applicators used in wipe testing the gauge, is in turn placed in the same geometrical position as the above noted test source. The measurements are recorded from the survey meter, M_2 (in mR/H).

5. To determine the degree of contaminent on the swab end in microcuries, a simple expression of proportionality is used:

$$\frac{A}{M_1} = \frac{C}{M_2} \quad \text{or} \quad C = A(\text{microcuries}) \times \frac{M_2\,(mR/H)}{M_1\,(mR/H}$$

A = Activity of the test source in microcuries

C = Amount of removable contamination on swab end, in microcuries to be calculated

M_1 = Survey meter reading with test source in place in milliroentgens per hour, minus background measurement

M_2 = Survey meter reading with swab end in place, read in mR/H minus background reading

This leak test procedure will be performed on a frequency of every three years on each source, because the source holders are type B-20-50-ELT.

Maintenance, repair, disposal of any function requiring the opening of the B-20-50 ELT source holders will be performed by K-RAY or by other persons specifically authorized by the Nuclear Regulatory Commission.

If you have any more pertinent information required for the amendment to our license, please feel free to contact us at (419) 849-3111.

Sincerely,

C. E. Hoban

C. E. Hoban
Plant Manager

CEH/pc

Attachments

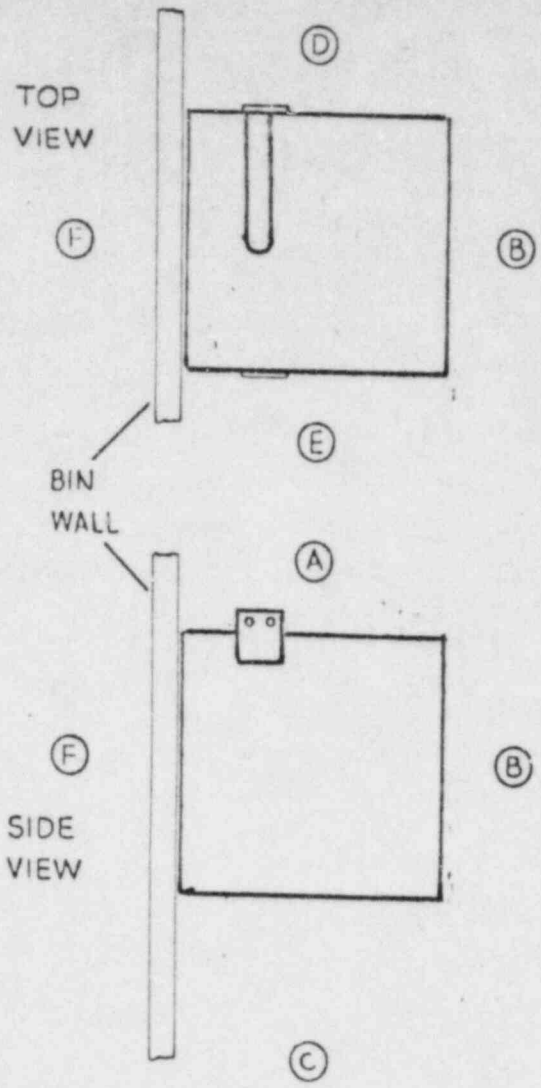
LEVEL GAUGE RADIATION SURVEY

Exhibit "C"

NOTES:

SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE AND/OR AT THE SURFACE.

ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.



DATE _____

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO. _____

SOURCE HEAD SER. NO. _____

ACTIVITY _____ mCi _____ CS137, _____ CO60

MEASURING INSTRUMENT _____

_____

READINGS TAKEN: _____ AT SURFACE, _____ AT ONE FOOT

_____

SIGNATURE (ONLY AFTER RESULTS RECORDED) DATE

COMPANY NAME _____

COMPANY ADDRESS _____

_____

mR/h

SHUTTER	A	B	C	D	E	F
OPEN						
CLOSED						

DENSITY AND LEVEL GAUGE LEAK TEST CERTIFICATE

NOTES:

1) NUMBERED POINTS INDICATE AREAS TO BE WIPED FOR LEAK TEST.

2) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

3) CHECK OPERATION OF SHUTTER WHEN LEAK TEST IS PERFORMED.

1. WIPE AROUND SOURCE HEAD BASEPLATE.
2. WIPE AROUND SHUTTER SHAFT.

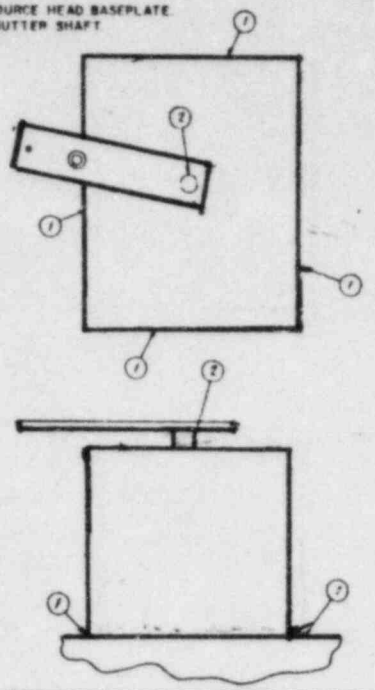


Exhibit "D"

USER _____

GAUGE LOCATION _____

_____

SOURCE HEAD MOD. NO. _____

TAG NO. _____

SOURCE HEAD SER NO. _____

ACTIVITY _____ mCi ____ Cs^{137}, ____ Co^{60}

MEASURING INSTRUMENT _____

_____

LEAK TEST TYPE _____

RESULTS:

SHUTTER OPERATION - _____ OK

____ NEGATIVE, ____ POSITIVE, _____ uCi

SIGNATURE (SIGN ONLY AFTER RESULTS ARE FILLED IN) _____ DATE

COMPANY NAME _____

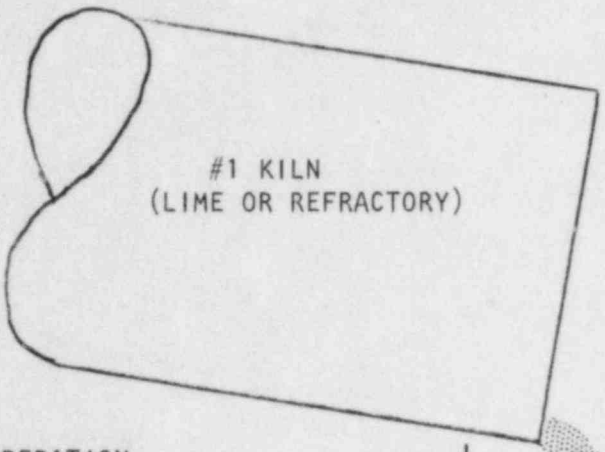
COMPANY ADDRESS _____

LEAK TEST CERTIFICATE FOR DENSITY & LEVEL GAUGE

The following information contained in Exhibit "A" is a total explanation of the locations of the source under Martin Marietta Chemical's License #34-13543-01, Control #77904, and Woodville Lime & Chemical Company's License #34-13962-01, Control #77918.

With the amendment of Martin Marietta's license, it would cover a total of (8) different sources containing a total of 2200 millicuries of Cesium 137. The name of the manufacturer and model number of the (8) sealed sources is 3M Model 4FGS. The source holders on the (8) sources are B-20-50 ELT.

WOODVILLE LIME AND CHEMICAL
#1 Kiln



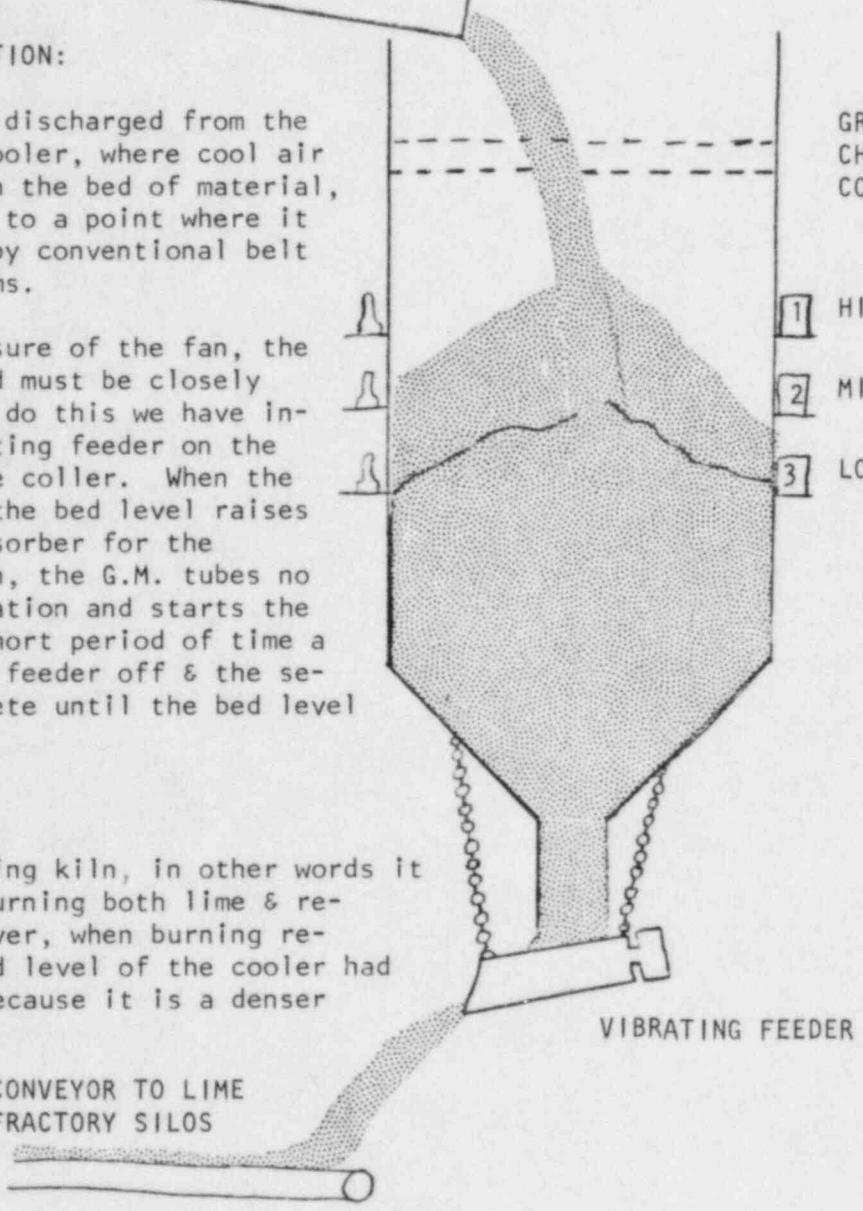
METHOD OF OPERATION:

Hot material is discharged from the kiln into the cooler, where cool air is blown through the bed of material, thus cooling it to a point where it can be handled by conventional belt conveying systems.

Due to the pressure of the fan, the depth of the bed must be closely controlled. To do this we have installed a vibrating feeder on the discharge of the coller. When the feeder is off, the bed level raises & becomes an absorber for the source radiation, the G.M. tubes no longer see radiation and starts the feeder. In a short period of time a timer shuts the feeder off & the sequence is complete until the bed level raises again.

BACKGROUND:

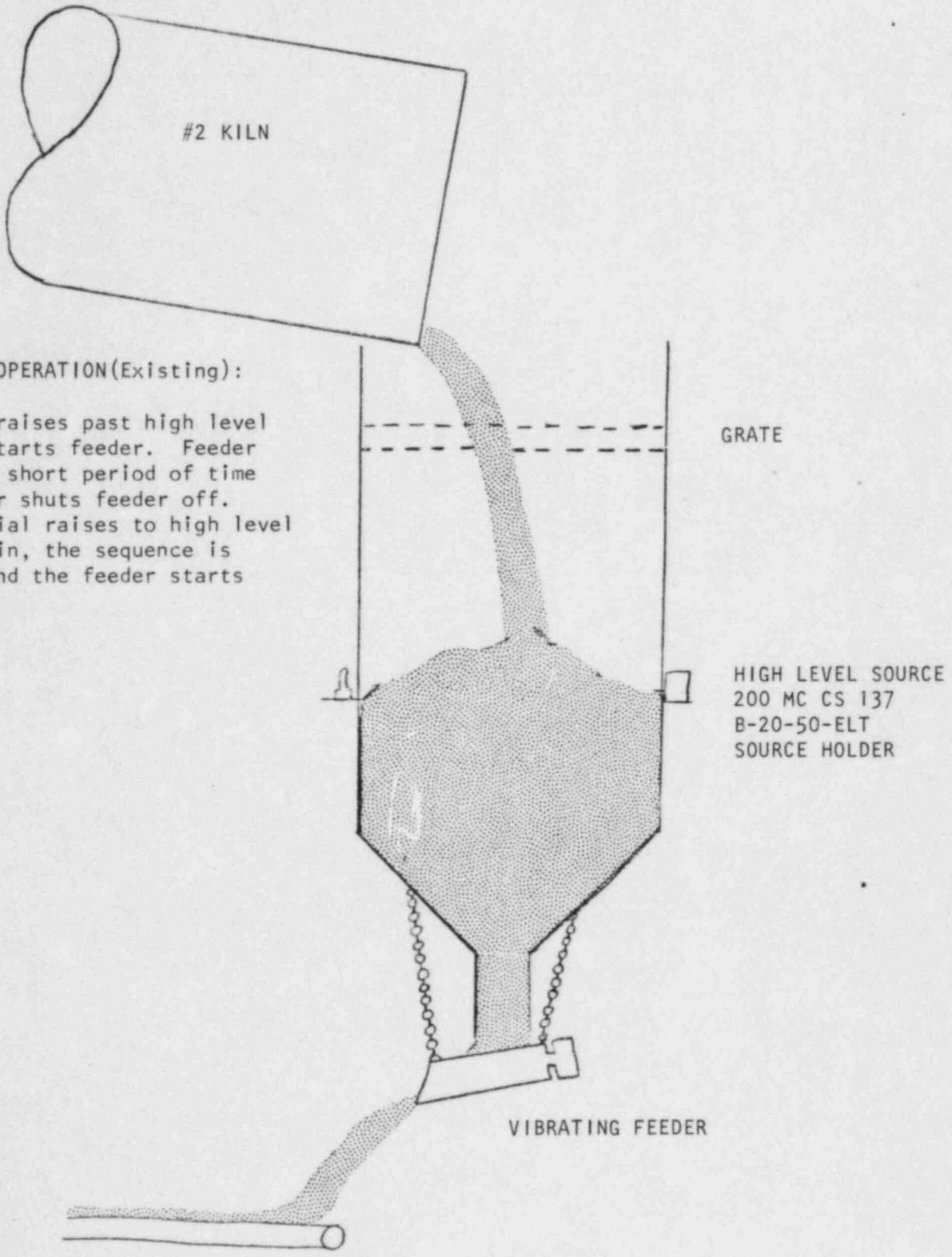
#1 Kiln is a swing kiln, in other words it is capable of burning both lime & refractory. However, when burning refractory the bed level of the cooler had to be lowered because it is a denser product.



1- High Level Source
200 MC CS137
In an Invalco
B-20-50-ELT
Source Holder

2- Middle Level Source
500 MC CS137
In an Invalco
B-20-50 ELT
Source Holder

3-Lower Level Source
200 MC CS137
In an Invalco
B-20-50-ELT
Source Holder



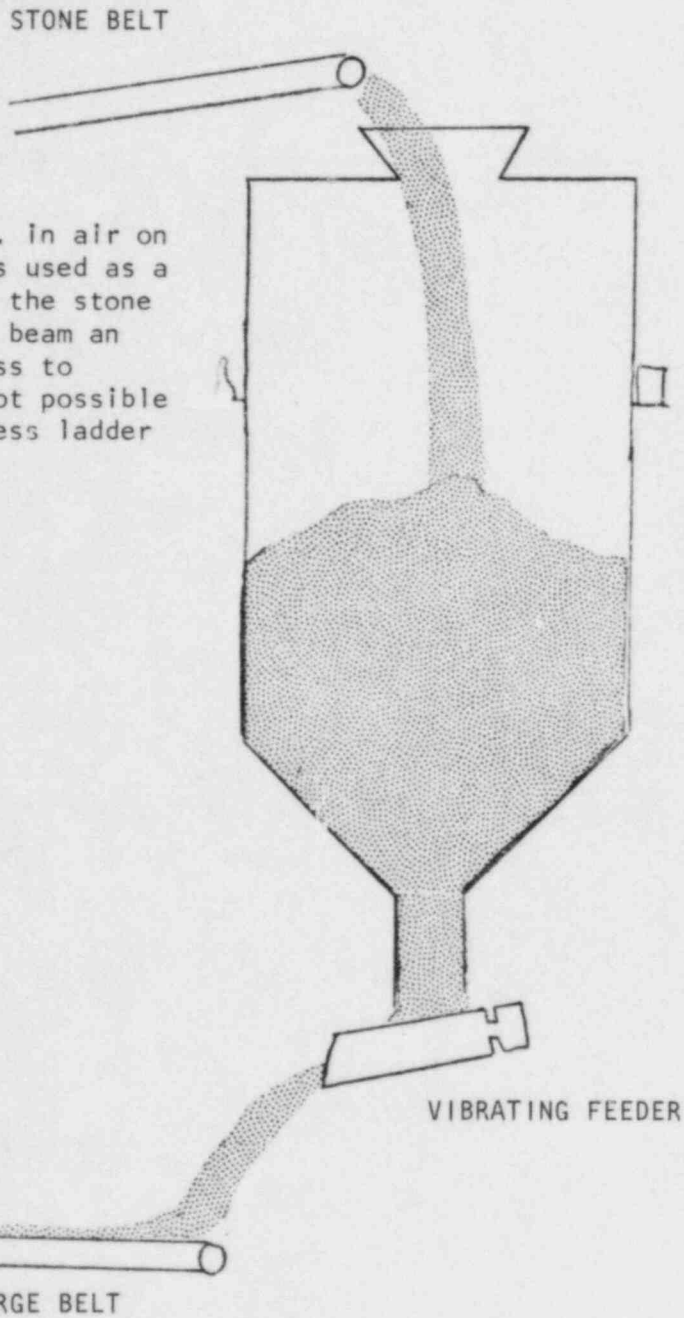
METHOD OF OPERATION(Existing):

Bed level raises past high level source & starts feeder. Feeder runs for a short period of time and a timer shuts feeder off. When material raises to high level source again, the sequence is complete and the feeder starts again.

WOODVILLE LIME AND CHEMICAL

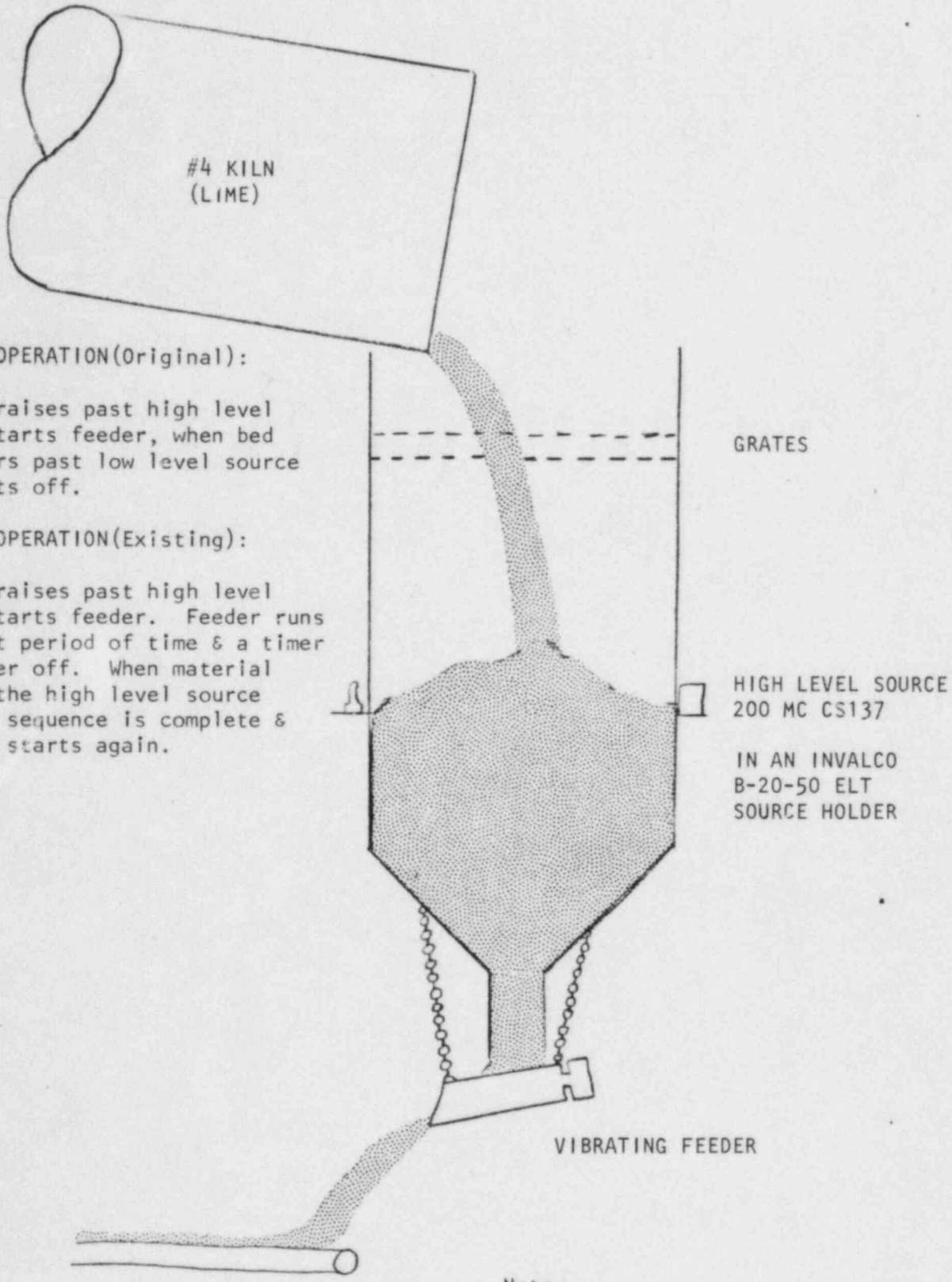
Exhibit "A"
3 of 6

Kiln Feed Stone Bin



Source is located 35 ft. in air on side of stone bin and is used as a high level alarm. When the stone level reaches radiation beam an alarm is sounded. Access to the radiation beam is not possible because there is no access ladder to enter bin.

HIGH LEVEL STONE SOURCE
500 MILLICURIES CS137
SH Model B-20-50 ELT
INVALCO SOURCE HOLDER



METHOD OF OPERATION(Original):

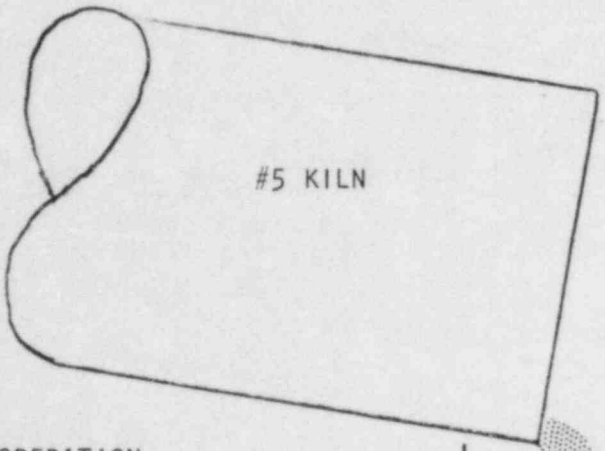
Bed level raises past high level source & starts feeder, when bed level lowers past low level source feeder shuts off.

METHOD OF OPERATION(Existing):

Bed level raises past high level source & starts feeder. Feeder runs for a short period of time & a timer shuts feeder off. When material raises to the high level source again, the sequence is complete & the feeder starts again.

Note:

See #5 Kiln Niems Cooler operation (Exhibit A) for more detail regarding operation.

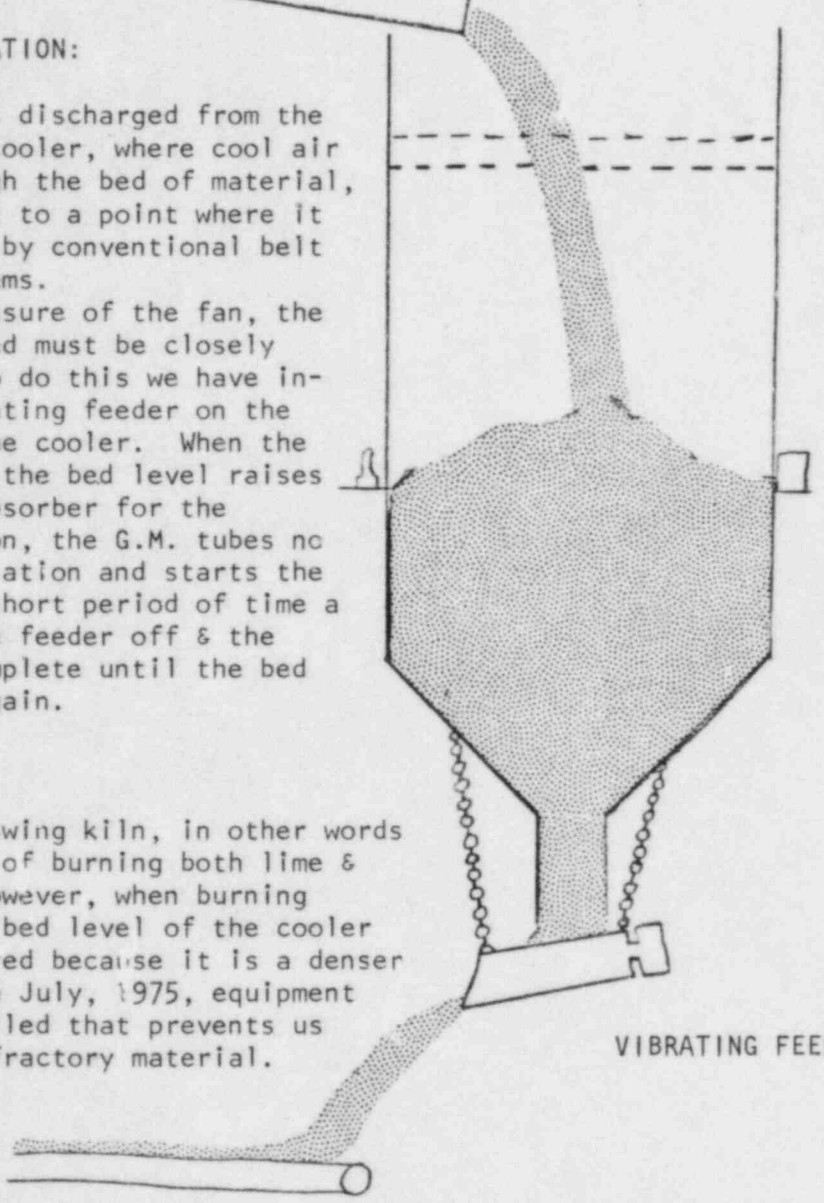


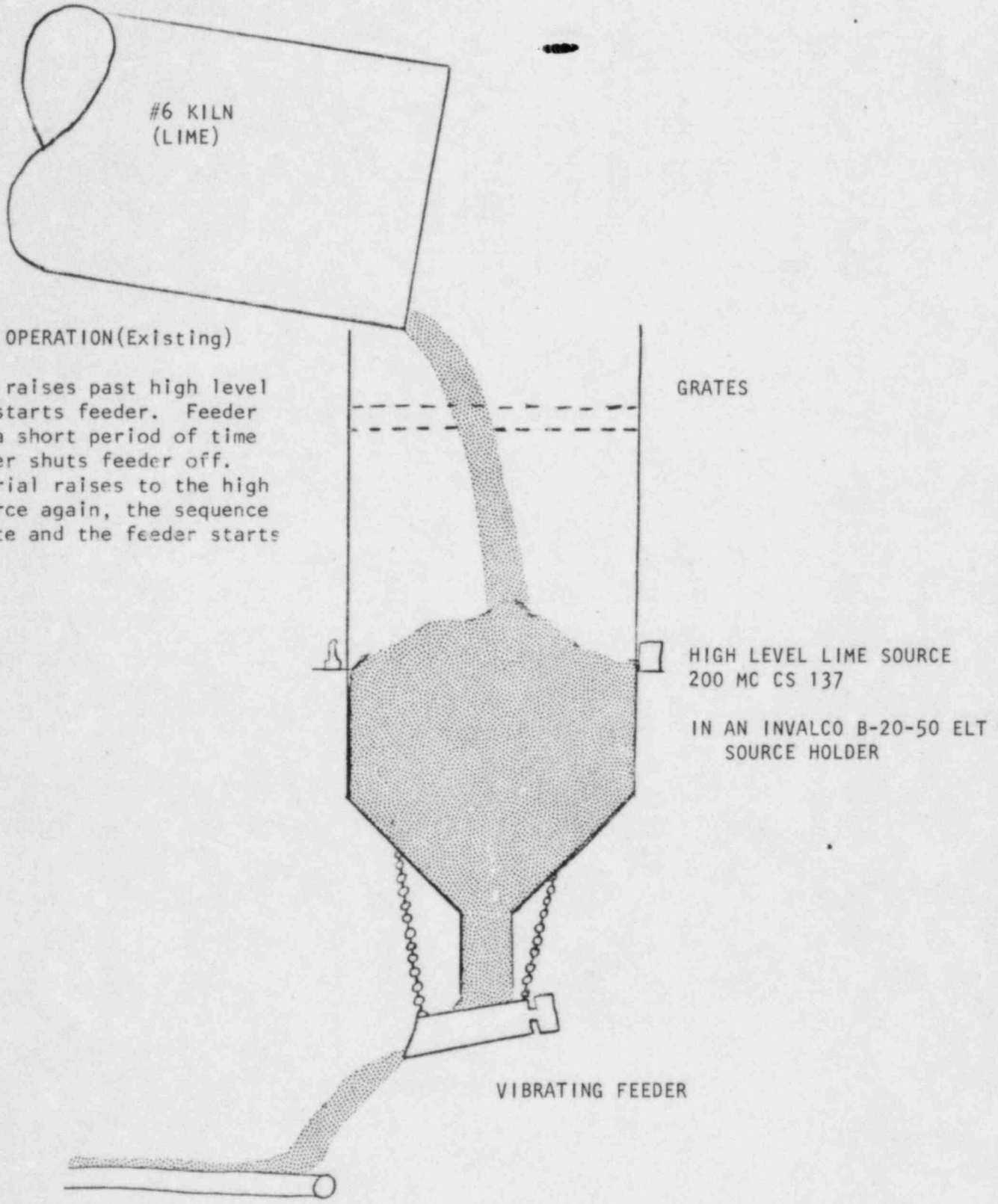
METHOD OF OPERATION:

Hot material is discharged from the kiln into the cooler, where cool air is blown through the bed of material, thus cooling it to a point where it can be handled by conventional belt conveying systems.
Due to the pressure of the fan, the depth of the bed must be closely controlled. To do this we have installed a vibrating feeder on the discharge of the cooler. When the feeder is off, the bed level raises & becomes an absorber for the source radiation, the G.M. tubes no longer see radiation and starts the feeder. In a short period of time a timer shuts the feeder off & the sequence is complete until the bed level raises again.

BACKGROUND:

#5 Kiln was a swing kiln, in other words it was capable of burning both lime & refractory. However, when burning refractory the bed level of the cooler had to be lowered because it is a denser product. Since July, 1975, equipment has been installed that prevents us from making refractory material.





METHOD OF OPERATION(Existing)

Bed level raises past high level source & starts feeder. Feeder runs for a short period of time and a timer shuts feeder off. When material raises to the high level source again, the sequence is complete and the feeder starts again.

Brief Texas Nuclear Course Outline:

(ATTENDED BY JOHN OVERMYER)

Exhibit "B"

A. Course Objective

B. Review of preparatory material

C. Atomic Structure

1. Bohr Atom
2. Atomic numbers & weights
3. Isotopes

D. Radioactive material

1. Alpha particals
2. Beta particals
3. Gamma rays
4. Delay schems

E. Radiation Interaction

1. Ionization
2. Gamma exposure formulas
3. Free path in air
4. Free path in tissure
5. Terms of dose

F. Biological Effects

1. Radiation damage to tissue
2. Somatic & genetic effects
3. Radio Sensitivity
4. Effects of full body dosages
5. Radiation protection guidelines & codes

G. Radiation Detection

1. Use of survey meter
2. Pitfalls of a GM tube

H. Dosimetry

1. Review of types of Dosimeters & how they work

I. Distance, Time & Shielding

1. Inverse square law
2. Time & accumulative doses

J. Licensing

1. Unlicensable materials
2. 10 CFR part 20, 19, 30

K. Emergency Procedures

1. Fire or explosion
2. Loss or theft

L. Communications

1. Relate problems regarding industrial sources & accidents

M. Leak Testing

1. To be performed at the source
2. Interval

N. Question & answer period

O. Hands on experience with various sources at Texas Nuclear plant

RECORD OF PERFORMANCE

John P. Overmyer

Engineering Technician

Martin Marietta

Quiz I	Quiz II	Exam	Final Grade
99	100	84	87.1

Class Average - 82.2

RECORD OF PERFORMANCE

John P. Overmyer

Engineering Technician

Martin Marietta

Quiz I	Quiz II	Exam	Final Grade
99	100	84	87.1

Class Average - 82.2

Certificate Of Training

This is to certify that

JOHN P. OVERMYER

Has Successfully Completed a Radiation Safety Training Course presented by Texas Nuclear Corporation.

TEXAS NUCLEAR
A SUBSIDIARY OF RAMSEY ENGINEERING

Issued 16th Day Of November 1984

Health Physicist

President

Certificate Of Training

This is to certify that

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TEXAS NUCLEAR
A SUBSIDIARY OF RAMSEY ENGINEERING

Issued 16th Day Of November 1984

Health Physicist

President