PACIFIC AIR PRODUCTS CO.
3133 West Harvard Street · Santa Ana, California 92704 · P.O. Box 5277 · Telephone 714/557-1710 · Telex No. 67-8319

June 20, 1983

Nuclear Regulatory Commission
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Attention: Mr. Uldis Potapovs,
Chief Vendor Program Branch

Regarding: Docket #99900769/83-01

Gentlemen:

If there are any circumstances involving Pacific Air Products Company dampers in the future, they will be handled as follows:

1. A review of the situation will be conducted by the President of Pacific Air Products Co. or his designate. He may, at his option, include those members of the staff that are necessary to provide a full and complete evaluation of the problem and the 10CFR Part 21 applicability.

2. A report of the review and the results, including whether or not 10CFR Part 21 is applicable will be prepared. If 10CFR Part 21 is determined to be applicable, the notification process will be conducted in accordance with the Pacific Air Products Co. Quality Assurance Manual Section 15.1. If it is determined that 10CFR Part 21 does not apply, the report will be filed and utilized for product evaluation purposes.

3. The assessment of generic implications of product deficiencies, whether or not 10CFR Part 21 is applicable, is a process that would be covered in depth during the President's review and evaluation.

If you have any questions, please contact me at (714) 557-1710.

Sincerely,
PACIFIC AIR PRODUCTS CO.

James Dodson

James P. Dodson
Director of Quality Assurance

JPD:dg

JUN 03 1983

Docket No. 99900769/83-01

Pacific Air Products Company
ATTN: Mr. L. R. Hess
President
3133 W. Harvard Blvd.
Santa Ana, CA 92704

Gentlemen:

Thank you for your letter dated May 16, 1983, in response to our letter dated April 15, 1983. As a result of our review, we find that additional information, as discussed with your Mr. James Dodson during a telephone call on May 19, 1983, is needed. Specifically, with regard to preventive actions for the identified nonconformance in NRC Report No. 99900769/83-01, please describe the method which will be used to: (1) generate and maintain records of evaluation for any future potential 10 CFR Part 21 deficiencies, and (2) provide for assessment of generic implications of such deficiencies.

We also appreciate your information concerning the general potential problems connected with fire damper wear.

Please provide this additional information within 25 days from the date of this letter in order that we may complete our review in a timely manner.

Sincerely,

Original Signed by
U. POTAPOVS"

Uldis Potapovs, Chief
Vendor Program Branch

bcc:
JTCollins
RLBangart
JEGagliardo
EHJohnson
REOller
DMB-IE:09

RIV			
R&CPS	SC:R&CPS	BC:VPB	D:V&IP
REOller/rc	IBarnes	UPotapovs	RLBangart
6/1/83	6/2/83	6/2/83	6/3/83

DESIGNATED ORIGINAL

Certified By Rheanne Clark

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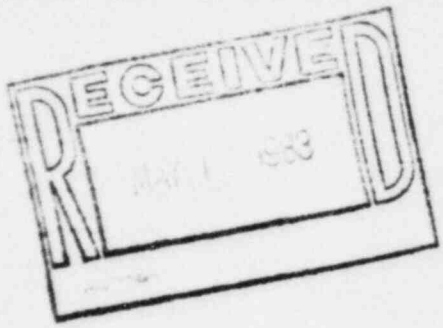
1p. PDR

PACIFIC AIR PRODUCTS CO.
3133 West Harvard Street · Santa Ana, California 92704 · P.O. Box 5277 · Telephone 714/557-1710 · Telex No. 67-8319



May 16, 1983

NUCLEAR REGULATORY COMMISSION
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76011

Attention: Mr. Uldis Potapovs, Chief
Vendor Program Branch

Regarding: Docket #99900769/83-01

Gentlemen:

As stated on Appendix A of Mr. Oller's Report on the Audit of Pacific Air Products Co., the indicated Nonconformance results from the fact that no records are available to show that an evaluation of possible 10CFR21 impact was made for the Fire Damper Blade Lock situation at Comanche Peak or at other projects using similar materials.

The key point in the situation is the consideration of 10CFR21 reportability, rather than the lack of evaluation of the condition at a Nuclear site. We feel that we performed a thorough and responsible evaluation of the circumstances and conditions at the site. A copy of the germane section of the Report is attached for your review. This investigation was intentionally conducted as a problem resolving process, with any consideration of the 10CFR21 implications to be done after the conditions were evaluated.

DESIGNATED ORIGINAL

Certified By Rheanne Clark

The Report concludes that the majority of problems encountered at the site with fire dampers were due to improper handling. The one problem that was caused by a manufacturing discrepancy involved the blade lock latches. In the case of seven fire dampers, the blade lock component was connected to the fire damper frame by tabs that were improperly folded rather than being folded opposite each other. Under normal conditions, this circumstance would not have caused any problem, since the dampers are essentially designed for one time usage in a system with no air flow during a fire. The loosening of the blade locks appears to have been the result of multiple tests performed at the site on dampers installed in ductwork. This situation is one that is now being considered for 10CFR21 reportablility, since the practice of multiple cycling or testing of fire dampers at Nuclear sites is widespread in the Industry; and, if such testing constitutes use or abuse of a device that is designed to be checked, at most, yearly (reference NFPA 90A-1981 Appendix B, attached), then it could indicate that many (if not all) Nuclear Plants with curtain type fire dampers may have simply worn out their dampers by testing them too much and thus have voided any U.L. Certification that once applied to new units.

Considering that the Underwriters Laboratories rating of fire dampers and accessories, such as fusible links, is based on "new" condition of the equipment poses the following questions:

1. Is a fire damper still considered "new" and entitled to U.L. Certification after being physically "used" in testing?

2. Is the U.L. rating still valid after a damper has been operated more than 40 times? (Considering once a year recommended checking and a 40 year plant life?)

This entire area of concern is being explored at the present time by Pacific Air Products Company and we hope to determine whether-or-not it should be reported as a potential 10CFR21 item.

Pacific Air Products Company did contact the manufacturer of the fire dampers (Air Balance, Inc.) and obtained a resolution

to the tab folding problem at Comanche Peak. The dampers in question were corrected and Air Balance Inc. instituted stricter inspection processes for dampers so constructed.

We also notified the only other Nuclear Plants that had purchased fire dampers from PAPCo that had been manufactured by Air Balance Inc. (Indian Point-Unit 3 and W.B. McGuire Nuclear Station). This was done during the audit by Mr. Oller. In both cases, no problem was found to exist. In the Indian Point Plant, dampers were inspected and found to have the blade lock tabs properly folded. In the McGuire Plant, it was determined that the Air Balance Inc. dampers originally shipped had never been installed and had been replaced with units purchased from Safe-Air Inc. which utilize a rivet rather than a folded tab.

In conclusion, let me state the following:

1. The steps PAPCo has taken to correct the item are detailed in the preceeding paragraphs. We still do not agree with the assessment that the one instance constitutes a 10CFR21 reportable item.

2. The steps taken to prevent recurrence will be as they have always been; namely, that the Management of Pacific Air Products Company will continue to take an active role in evaluating any circumstances that involve dampers manufactured or furnished by Pacific Air Products Company.

If you have any questions or comments, please contact me at (714) 557-1710.

Sincerely,

PACIFIC AIR PRODUCTS CO.

James Dodson

James P. Dodson
Director of Quality Assurance

cc: L.R. Hess (PAPCo)
R.E. Oller (NRC)

Attachments

JPD:dg

Appendix B Maintenance

This Appendix is not a part of this NFPA document, but is included for information purposes only.

B-1 General.

B-1-1 Beyond the scope of this standard lies the important responsibility for the maintenance of equipment. This includes periodic checks of the detection and control equipment, damper and motor operation, and cleaning of ducts, plenums, dampers and filters. Owners must develop a greater awareness of the life and property protecting abilities of these systems and establish a planned maintenance schedule. Failure to maintain proper conditions of cleanliness in air duct systems and carelessness in connection with repair operations have been important contributing causes of several fires which have involved air conditioning systems. The following recommendations apply, in general, to the period of operation of the system; systems operated only part of the year should be given a thorough general checkup before starting operation and again after shutting down.

B-1-2 Inspection Form. The use of an inspection form to assist in obtaining a thorough inspection is recommended. The form should be made up to fit the system or systems involved, listing the items needing attention. However, it is suggested that provision be made on the form for equipment location, inspection frequency, due date, inspection date, inspector and record of discrepancies found.

B-2 Inspection and Cleaning of Ducts.

B-2-1 Inspections to determine the amount of dust and waste material in the ducts (both discharge and return) should be made quarterly, except that if after several inspections such frequent inspection is found unnecessary, the interval between inspections may be adjusted to suit the conditions.

B-2-2 Cleaning should be undertaken whenever inspection indicates the need.

B-2-3 Cooling and heating coils should be cleaned, if necessary, at the time of cleaning the ducts. Thorough cleaning of ducts may require scraping, brushing, or other positive means. Vacuum cleaning may not remove dust of an oily or sticky nature, or heavy accumulations in the elbows or seams. The amount and kind of dust and dirt will depend greatly on the occupancy and the arrangement of the duct system. Additional access doors or panels may be required for complete cleaning of duct systems.

B-3 Inspection and Cleaning of Plenum Chambers.

B-3-1 Plenum chambers should be inspected monthly, except that if after several inspections such frequent inspection is found unnecessary, the interval between inspections may be adjusted to suit the conditions.

B-3-2 Cleaning should be undertaken whenever inspection indicates the need, especially in common plenums serving more than one fan or system. Where plenum chambers being used for storage are found, arrangements, such as keeping the doors locked, should be made to prevent such usage. (*See 2-2.1.*)

B-3-3 Repair Work. Great caution should be exercised in the use of open flames or spark emitting devices inside of ducts or plenum chambers, or near air intakes.

B-4 Fresh Air Intakes.

B-4-1 Conditions outside the fresh air intake should be examined at the time of inspection of the ducts. Items to be noted are: (a) accumulations of combustible material near the intake, (b) presence of buildings or structures which may present an exposure to the intake allowing smoke and fire to be drawn in, and (c) operating condition of any automatic damper designed to protect the opening against exposure fire.

B-4-2 If accumulations of combustible material are noted, they should be immediately removed, and arrangements made to avoid such accumulations. Inspections should thereafter be made more frequently. If newly erected exposures are noticed, consideration should be given to the protection at the intake to see that it is adequate. (*See 3-3.6.*)

B-5 Filters.

B-5-1 All air filters should be kept free of excess dust and combustible material. Unit filters should be renewed or cleaned when the resistance to air flow has increased to two times the original resistance or when the resistance has reached a value of recommended replacement by the manufacturer. A suitable draft gage should be provided for the purpose. Draft gages of a type which will operate a warning light or produce an audible signal when excessive dust loads have accumulated are recommended. If the filters are of the automatic liquid adhesive type, sludge should be regularly removed from the liquid adhesive reservoir.

B-5-2 When renewing filters, care should be taken to use proper type and size and to avoid gaps between filter sections, mounting frames or hardware. Damaged filter sections or media should not be used.

B-5-3 Filters designed and manufactured to be thrown away after use should never be cleaned and reused.

B-5-4 Care should be exercised in the use of liquid adhesives. Use of an adhesive of low flash point would create a serious hazard. (*See 2-4.2.1.*)

B-5-5 Electrical equipment of automatic filters should be inspected monthly, observing the operation cycle to see that the motor, relays and other controls function as intended. Drive motors and gear reductions should be inspected at least semiannually, and lubricated when necessary.

B-6 Fans, Fan Motors and Controls.

B-6-1 Fans and fan motors should be inspected at least quarterly, and cleaned and lubricated when necessary. Care should be exercised in lubricating fans to avoid allowing lubricant to run onto the fan blades. Fans should also be checked for alignment, and to see that they are running freely.

B-6-2 The alignment of fan belt drives should be checked since improper alignment can cause motor overheating as well as premature belt failure.

B-7 Fire Door Assemblies, Fire Dampers, Smoke Dampers, and Ceiling Dampers. Each door or damper should be examined once a year, giving attention to hinges and other moving parts, to see that it is in good operable condition. Remove fusible links (where applicable), operate door or damper, check latch (if provided) and lubricate moving parts if necessary. It is desirable to operate doors or dampers with normal system air flow to assure that they are not held open by the air stream.

B-8 Controls.

B-8-1 Fan controls should be examined and activated at least once a year to assure that they are in operable condition.

B-8-2 All automatic shutdown devices should be tested at least once a year. Special care should be given to smoke sensing devices and fittings to assure that they are clean and properly calibrated in accordance with manufacturer's instructions.

Appendix C Smoke Control

This Appendix is not a part of the NFPA document, but is included for information purposes only.

Background. Tests have shown that the environmental air system may be used effectively to control the movement of smoke within a building. When properly designed and constructed, such systems are able to confine the smoke to the immediate smoke zone and restrict its movement into other areas of the building. The importance of controlling smoke movement is being acknowledged by changes in codes. Environmental air systems which were formerly shut down are being utilized to control smoke movement. Designers must evaluate both methods to determine the best approach for each specific building. This is only one way of developing a smoke control system, and there may be many other designs that would perform in an acceptable manner.

Because neither fan shutdown nor fire dampers can be depended upon to restrict smoke movement through a duct system, it is recommended that designers make use of an engineered smoke control system in all structures where rapid, complete occupant evacuation capability is not obvious.

Smoke Control System. This system utilizes the air handling system which is engineered to control the migration of smoke within buildings as a result of fire. Generally, the smoke control mode of operation should convert the air handling system into a special mode that discontinues the delivery of supply air to the fire area. Since air drawn from the fire area may be smoke laden, it must be discharged to the outside without recirculation or contamination of fresh air intakes. At the same time the return air supply to all or part of the remainder of the building should be shut down while the system continues to supply air from the outside to these spaces. The system should exhaust the smoke and toxic gases from the immediate fire area to the outside and provide pressurized air to adjacent areas and stairwells.

C-1 Introduction.

C-1-1 Chapters 3 and 4 of this standard are principally directed toward prevention of any significant contribution by the air conditioning and ventilating system to the spread of fire or circulation of smoke from the area of the fire origin to other parts of the building. Smoke and toxic gases from a fire will generally move upward through multistory buildings when the outside temperature is less than the indoor temperature (stack effect), and downward when in-

LOG NO. 5800-G-211

PACIFIC AIR PRODUCTS CO.

3133 West Harvard • P.O. Box 5277
Santa Ana, California 92704
(714) 557-1710

March 25, 1982

Texas Utilities Co.
c/o Comanche Peak NPS
5 Miles North of Glen Rose
Highway 201
Glen Rose, Texas 76043

Attention: Mr. Ken McDonald
Technical Services

Regarding: Texas Utilities Generating Co.
Comanche Peak Steam Electric Station
Gibbs & Hill Project 2323
Spec. 2323-M5-84
PAPCo Job # 5800

Gentlemen:

As you requested, I have prepared this summary report covering the four (4) items of concern that you outlined to me in our original meeting of February 19, 1982, namely:

1. That the seven large fire dampers manufactured by "Advanced Air" would not function.

2. That some of the blade locking clips on the fire dampers manufactured by "Air Balance Co." were not securely fastened to the damper and were falling off due to the closing/opening action of the damper.

3. That the backdraft dampers were showing signs of damage in normal operation and that some of the dampers were not opening fully.

4. That the original agreement to have Pacific Air Products set and certify the actuators had not been done.

To provide some continuity to this report, I would like to address the four concern items separately and present my analysis in the form of - Concern, Cause and Solution. I will try to address my comments as objective statements without adjudging responsibility.

ITEM I: LARGE FIRE DAMPERS (Advanced Air)

CONCERN: The concern here lies in the fact that when the fusable link is released, the damper does not close fully. This was demonstated in the field and I concur that the damper as installed does not perform its intended function.

CAUSE: On March 16, 1982, we had a representative from Interpace/Tuttle & Bailey/Advanced Air, Mr. Al Callander, visit the jobsite to inspect and analyze the situation. We have a report from Mr. Callander, which is attached to and made a part of this report. Listed below is a brief summary of Mr. Callander's report.

Mr. Callendar states there are numerous problems any or all of which can and do affect the operation of the fire dampers.

1. Corrosion - It is evident that the dampers had been stored in an environment less than ideal; probably, for the greater part of three years.

2. The installed condition of these dampers reflects some concerns:

   A. Dirt (See photo No. 1).

B. Damage to damper frames (See Photos No. 2 & 3).

C. Damage to negator springs (See Photo No. 4).

D. Damage to negator spring holding /locking clips (See Photos 4 & 5).

E. Foreign objects in the path of closure (See Photo No. 3).

F. Broken negator springs (See Photo No. 5)

3. In some cases, when grouting in the damper, the damper sleeve (duct) has been bowed in and thereby preventing the blade from sliding shut.

4. It is believed that the negator springs have lost some tension due to being stored outside in the weather.

In addition ....

5. The damper manufacturer has made a duplicate of the dampers on this site and has tested the damper for closure and has had no failures what-so-ever.

   The manufacturer feels that if the dampers are reworked to a "like new" condition, they will indeed perform their intended function - and they probably will. I use the word "probably" because I am not quite convinced that it would be in the best interest of the project to rework the existing dampers because of the poor condition of the dampers.

6. In the very beginning of this project, we submitted to Mr. Ken Cary of Gibbs & Hill, a multi-panel damper assembly for this application and it was not approved. Mr. Cary stated at this time, that we would have to purchase the specified assembly from Advanced Air, who by the way, was a sole source of supply. We complied.

SOLUTION: I believe the solution to this problem is:

A. Take the blades out of the installed dampers.

B. Abandon the frames in the duct.

C. Install new multi-panel fire dampers directly above the abandoned frames.

I feel that this would be the least costly and most efficient solution. In all probability, the new dampers would be able to be installed without the removal of any ductwork. I personally would have much more confidence in a new multi-panel damper assembly than I would have in a reworked single panel assembly.

TIME: If solution No. 2 is selected, we could:

A. Have engineering drawings and a revised seismic calculation ready to submit in ten working days.

B. We could ship the replacement multi-panel dampers three weeks after approval by the engineers.

C. The estimate of the time required to install these dampers would have to made by others.

ITEM II: BLADE LOCKING CLIPS (Air Balance Co.)

CONCERN: That some of the blade locking clips have literally fallen off due to the action of the damper.

On March 16, 1982, we had a representative, Mr. Preston Greer, from Air Balance Company inspect and analyze the problem. We have a report from Mr. Greer which is attached to and made a part of this report. I would like to briefly summarize Mr. Greer's report:

CAUSE:

1. Somebody goofed!

   In my opinion, the method for attaching the blade lock assembly is adequate for the intended purpose (See Photo No. 6, 7, & 8).

   I believe that some of the dampers on the site were affected by "Monday morning syndrome" and the factory assembler bent the tabs that hold the blade locking clip to the damper frame backwards (or not at all).

EXAMPLE: If the two tabs are bent down toward the bottom of the damper, the blade striking the damper would not loosen the clip but the action of opening the damper would.

If the two tabs were bent up towards the top of the damper, the blade striking the blade locking clip would loosen and probably dislodge the blade locking clip. If the top clip was bent up and the bottom clip bent down, the blade clip should be secure. This is the factory recommendation and field proven method.

SOLUTION: The fire dampers on the site should be inspected to determine that all blade locking clip tabs are properly secured.

If the blade locking clips are improperly secured, then the blade locking clip should either be secured in the proper manner or the blade locking clip should be pop rivited in place per the procedure furnished by Air Balance Company.

OBSERVATION: Most of the dampers on the project have a generous supply of "Texas dirt" on them. As wonderful as Texas is, this does little to promote effective smooth operation. The dampers should be returned to a "like new" condition to insure proper operation.

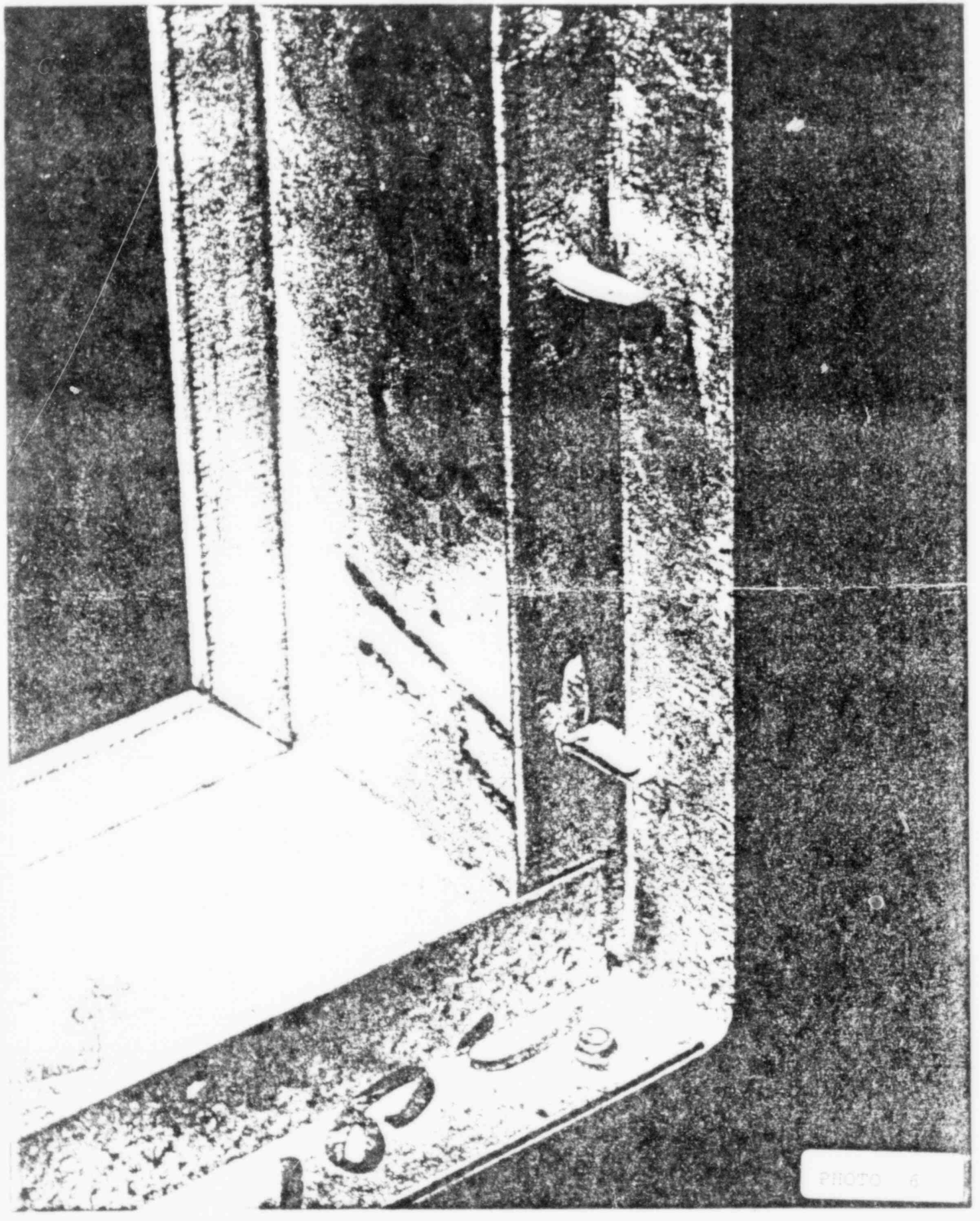


PHOTO 6

PHOTO 7

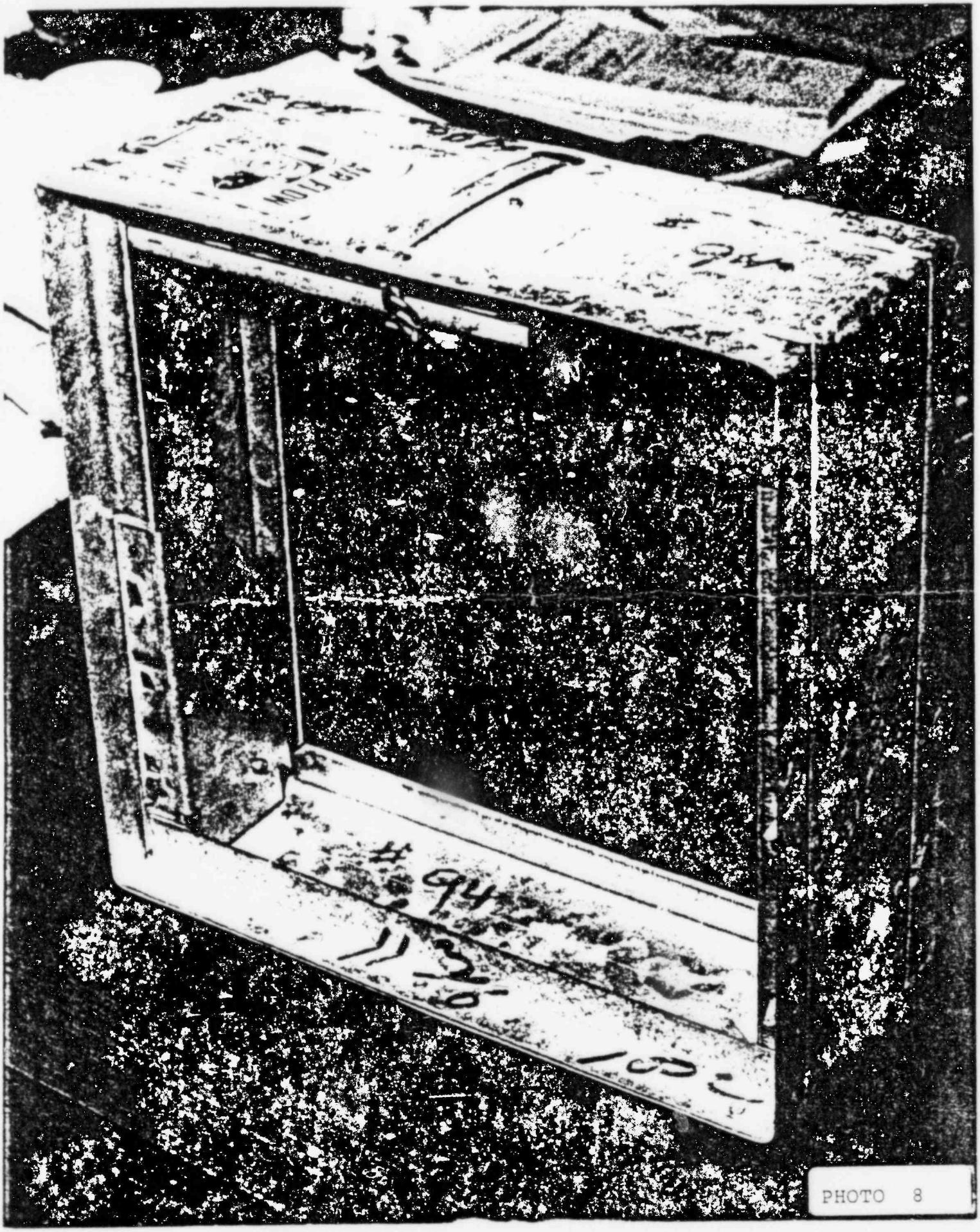


PHOTO 8