



National Transportation Safety Board

Office of General Counsel

490 L'Enfant Plaza East, S.W.  
Washington D.C. 20594-2000

202/314-6080  
Fax 202/314-6090

March 18, 2002

VIA HAND DELIVERY

The Honorable Elaine Kaplan  
Special Counsel  
U.S. Office of Special Counsel  
1730 M Street, NW, Suite 300  
Washington, D.C. 20036-4505

Re: OSC File No. DI-01-1889

Dear Ms. Kaplan:

This follows up on Chairman Blakey's letter of January 18, 2002, and constitutes our investigative report and findings regarding the information presented in your letter of November 29, 2001 (received January 17, 2002). *See* 5 U.S.C. § 1213(d). As Chairman Blakey indicated to you in a separate letter (copy enclosed -- *see* Attachment A), she has delegated responsibility for conducting the investigation to me. After a thorough investigation, we have concluded that there is no evidence of mismanagement of National Transportation Safety Board (NTSB) affairs or danger to public health and safety to be found in the matters you have brought to our attention.

As you know, Complainant, Henry F. Hughes, an NTSB employee, alleges wrong-doing regarding an NTSB decision not to publish a report he helped to produce. You have provided us a copy of the report, which is entitled "Special Investigative Report: Ground Services Safety Oversight (LAX98SA246)." The report is stamped "DRAFT," and someone has written "1998 investigation conducted by the NTSB LAX office investigative file missing" on the front cover.

Your letter indicates that Complainant alleges that NTSB management sought to "suppress" the report upon learning of the details and recommendations contained in the draft. Complainant alleges that at least two boxes of supporting documents are now missing after having been shipped from Los Angeles to Washington, and that these documents were in the custody in Washington of Ms. Debbie Bruce, Chief, Safety Studies Division. Complainant also alleges that the report number -- presumably LAX98SA246 -- was assigned to another investigation, and that this was done for the purpose of ensuring that the draft report at issue would not appear in NTSB records.

My staff and I conducted an inquiry into the matters raised in your letter. Specifically, the matter of the draft "special investigative report" was discussed with Ms. Bruce and other NTSB officials and staff members, and relevant documents and NTSB databases were reviewed. It appears that Complainant's charges are as erroneous as they are serious.

An overview of the NTSB's responsibilities and the processing of safety proposals will help put the complaint in context. The NTSB is an independent Federal agency charged by Congress with investigating and publicly reporting the facts, circumstances and probable cause of every civil aircraft accident in the United States, as well as certain public aircraft accidents and significant railroad, highway, marine and pipeline accidents. The NTSB is not a regulatory body; the principal safety by-products of our work are the non-mandatory safety recommendations that we issue, after dispassionate investigation of all the facts and circumstances surrounding an accident or incident, to regulatory agencies, states, private entities, and other organizations that can effect safety improvements. Although our safety recommendations are not mandatory, more than 80 percent of the more than 10,000 safety recommendations we've issued have been implemented. This success is in large part due to NTSB's reputation, which in turn is based upon the NTSB's subject matter expertise and fostered by well-reasoned and cogent safety recommendations.

The NTSB follows a formal process for all safety recommendations. There are, essentially, two tracks, one for major investigations and reports, and another for all other recommendations, including employee-submitted proposals. In the case of the latter type, Board Order 70, "NTSB Safety Recommendation Program" (copy enclosed -- *see* Attachment B), in effect at the times relevant to the complaint, established a Safety Proposal Review Board (SPRB) to review employee-proposed recommendations. The SPRB is comprised of "Directors or Deputy Directors of the operating/technical offices. The SPRB decides whether to submit a safety proposal to the Board Members for approval as an official NTSB safety recommendation. The SPRB also makes determinations about whether to invest staff resources in further developing a safety proposal, as well as whether to narrow or broaden a safety proposal. These judgments are entrusted by agency policy to the knowledgeable and experienced career officials who comprise the SPRB.

The draft report's genesis, as the accident number it carries signifies, was an incident investigated by an investigator (Debbie Childress) assigned to the NTSB's Los Angeles regional aviation office. The details of this incident are described in the draft report, but, essentially, a ground services employee was killed while de-icing a Northwest Airlines MD-80 series aircraft when he was pinned against the aircraft and, subsequently, fell to the ground. The incident was in the nature of an occupational safety-type accident. Ms. Childress, along with other Safety Board employees, including Complainant, endeavored to expand on their investigation of the Tucson incident and, ultimately, submitted the draft report which was processed as a safety proposal in accordance with formal procedures. The NTSB investigation identification number assigned to the Tucson investigation -- LAX98SA246 -- corresponds to the number marked on the draft report/safety proposal.

Our investigation revealed that the draft report was logged as Aviation Safety Proposal Log 2718, consolidated with Aviation Safety Proposal Logs 2724 and 2727 (which also

pertained to ground service vehicles and related matters), and was considered by the SPRB. The SPRB deliberated the merits of the safety proposal, and sought input from various technical offices. This SPRB review process generated a December 11, 1998 memorandum (copy enclosed -- see Attachment C) assessing Aviation Safety Proposals 2718, 2724 and 2727. Ultimately, the SPRB concluded that none of the proposals warranted creation of any draft safety recommendations for submission to the Board Members. Ordinarily, such a determination would terminate the processing of the proposal. In this instance, however, the thrust of the concerns of staff were conveyed in a January 11, 2000 letter (copy enclosed -- see Attachment D) from the then-Chairman of the NTSB to the Administrator of the Federal Aviation Administration, the agency with direct responsibility for regulating aviation safety.

Complainant's characterizations of various actions are contradicted by readily available evidence. First, the enclosed memorandum's discussion of the contents of the draft report makes it clear that the draft report was considered in the routine course of business and in accordance with formal, established procedures. Second, regarding the allegation about missing documents in furtherance of some nefarious attempt to suppress a staff proposal, Ms. Bruce never "took custody" of such documents, was not aware that they were "lost," and denies that she ever "informed Mr. Hughes that, after she had taken custody of the documents, they were lost." Further investigation, moreover, revealed that Ms. Childress, the investigator-in-charge ("IIC") of the Tucson incident, shipped all documents pertaining to the Tucson investigation to our Freedom of Information Act ("FOIA") personnel on or about September 1, 1998. Under our FOIA procedures, Ms. Childress was responsible, as the IIC, for ensuring that all documents and material associated with the investigation were submitted to our FOIA personnel for routine processing of a FOIA request pertaining to the investigation. In other words, it appears, perhaps, that rather than being lost or discarded, the documents were captured and preserved in accordance with FOIA legislation and procedures. Finally, although the "SA" classification (special occurrence) means that there is no incident narrative publicly available on the NTSB website and incident data is not included in official NTSB statistical compilations, there is a public docket (copy enclosed -- see Attachment E) documenting all of the factual material pertinent to the Tucson incident investigation. The investigation number was not "assigned to another investigation," much less "so that [the draft report/safety proposal] ... would not appear in NTSB records." In sum, our investigation has revealed nothing to suggest any violation by NTSB personnel of the type encompassed by section 1213(a), Title 5, of the United States Code.

I trust that we have adequately addressed your concerns. If, however, you have additional questions, please do not hesitate to contact me on 202-314-6080.

Sincerely,



Ronald S. Battocchi  
General Counsel

Enclosures



# National Transportation Safety Board

Washington, D.C. 20594

Office of the Chairman

March 18, 2002

Elaine Kaplan  
Special Counsel  
U.S. Office of Special Counsel  
1730 M Street, NW, Suite 300  
Washington, D.C. 20036-4505

Re: OSC File No. DI-01-1889

Dear Ms. Kaplan:

This follows up on my letter of January 18, 2002, and constitutes my formal delegation of responsibility for the investigation and report required by section 1213, Title 5, United States Code, to the National Transportation Safety Board's (NTSB) General Counsel, Ronald S. Battocchi. Mr. Battocchi is a 28-year veteran of the NTSB, and the allegations at issue would have occurred prior to the start of my service with the Board. If you have additional questions, please do not hesitate to contact me or Mr. Battocchi. Mr. Battocchi can be reached on (202) 314-6080.

Sincerely,

A handwritten signature in black ink that reads "Marion C. Blakey". The signature is written in a cursive style.

Marion C. Blakey  
Chairman

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**OFFICE OF THE CHAIRMAN**  
**WASHINGTON, D.C. 20594**

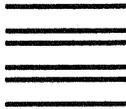
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The Honorable Elaine Kaplan  
Special Counsel  
U.S. Office of Special Counsel

**NATIONAL TRANSPORTATION SAFETY BOARD  
OFFICE OF THE GENERAL COUNSEL  
WASHINGTON, D.C. 20594**

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The Honorable Elaine Kaplan  
Special Counsel  
U.S. Office of Special Counsel



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SAFETY BOARD  
NTSB 641

A



# National Transportation Safety Board

Washington, D.C. 20594

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Sincerely,

A handwritten signature in cursive script that reads "Marion C. Blakey".

Marion C. Blakey  
Chairman

**B**

# National Transportation Safety Board ORDER

Office of the Managing Director  
Washington, D.C.

NTSB 70

10/15/96

**SUBJECT:** NTSB SAFETY RECOMMENDATIONS PROGRAM

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1. **PURPOSE.** This Order establishes and defines procedures for the development, issuance, followup and closing of National Transportation Safety Board safety recommendations. It also establishes the required documentation and coordination of this process.
2. **CANCELLATION.** This Order cancels NTSB Order 82 dated 6/11/87. NTSB Order 82 was the last order to contain the 3 levels of priority classification, i.e. Urgent Action, Priority Action, and Longer Term Action.
3. **POLICY.** Safety recommendations are issued by the Safety Board in accordance with Sections 302 and 304(a)(3) of Public Law 93-633, the "Independent Safety Board Act of 1974," 49 U.S.C. 1116. Safety recommendations are fully justified and adequately supported by the findings of investigations of accidents, the review of accident trends, or conclusions reached as a result of safety studies. Certain safety recommendations may be classified by the Board as "Urgent."

Draft safety recommendations are presented to the Safety Board for consideration via the Board's voting procedure (see NTSB Order 4). After Board approval, each safety recommendation is tracked from the date of issue until the closing of the file. Safety recommendations receive some form of followup activity at least once every 12 months. A computerized permanent record of all safety recommendations (open and closed) is kept. Further, all hard copy documentation related to safety recommendations is maintained electronically by way of optical scanning.

Safety recommendations are closed only by vote of the Safety Board. The votes of the Members typically are registered by initials on the file copy of the letters and memoranda indicating a closed status, by action taken in the adoption of accident reports, safety studies, letters of recommendation, and through other official Safety Board correspondence signed by the Chairman. Safety recommendations issued by the Board, and related responses and follow-up letters are available to the public.

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**DISTRIBUTION:** Chairman Office Directors  
OPI: SR  
Vice Chairman Regional Directors  
Members Division Chiefs

The Safety Board does not conduct formal studies to determine the costs and benefits that may be realized as a result of its safety recommendations.

4. DEFINITIONS.

Safety Recommendation - A suggested course of action that has been adopted by the Board and transmitted by letter to appropriate recipients to correct an identified transportation safety deficiency. This course of action may have been developed through the safety proposal process or in conjunction with the Safety Board's accident investigation reports, safety studies, or special investigations. (See NTSB Order 4.) If the Board determines that the course of action requires urgent attention to avoid imminent loss due to a similar accident, the safety recommendation is designated "Urgent."

Safety Proposal - A proposed safety recommendation. A document being considered for development into a notation (See NTSB Order 4) item for consideration by the Safety Board for issuance as a safety recommendation.

Safety Proposal Review Board - A group consisting of the Directors or Deputy Directors of the operating/technical offices. The group meets at least 9 times per year to review safety proposals submitted by the Regional Offices and other sources. The SPRB determines the suitability of the safety proposals for commitment of staff resources for further development, and establishes schedules for the development of safety proposals into notation items. The SPRB reviews all pending safety proposals at each meeting and updates schedules. The SPRB also reviews safety accomplishments. (See NTSB Order 72.)

Safety Recommendation Response - Any correspondence from the recipient of a safety recommendation discussing the recommendation but, more specifically, indicating an intent to:

- (1) adopt the recommendation in full, pursuant to a proposed timetable, a copy of which is included;
- (2) adopt the recommendation in part, pursuant to a proposed timetable, a copy of which is included. The response sets forth in detail the reasons for the refusal to implement the remainder of the recommended action;
- (3) refuse to adopt the recommendation. The response sets forth in detail the reasons for the refusal; or
- (4) any part or combination of (1), (2), or (3).

An acknowledgment of the receipt of a safety recommendation does not constitute a response.

Response Evaluation Form - A document prepared by staff as a result of a critical review of a

safety recommendation response. The evaluation contains the text of the safety recommendation under review, a synopsis of the response, an evaluation of the response, and a proposed status assignment. The document contains signature lines for the evaluator, the chief of the division of the evaluator, the office director, and the Director, Office of Safety Recommendations (see Appendix A). This document is not to be given to anyone outside of the Board.

Safety Recommendation Status - A classification to track the response to a given safety recommendation and/or to describe the quality of the response and/or the action taken by the recommendation recipient. The following are approved status assignments:

- Open - Await Response  
Safety recommendation issued and no substantive response received from recipient.
- Open - Response Received  
Response has been received from recipient but the staff evaluation of the response has not been approved by the Board Members.
- Open - Acceptable Response  
Response by recipient indicates a planned action that would comply with the safety recommendation when completed.
- Open - Acceptable Alternate Response  
Response by recipient indicates an alternate plan or implementation program that would satisfy the objective of the safety recommendation when implemented.
- Open - Unacceptable Response  
The recipient responds by expressing disagreement with the need outlined in the recommendation or attempts to convince the Board (unsuccessfully) that an alternative course of action is acceptable. The Board believes, however, that there is enough supporting evidence to ask the recipient to reconsider its position.
- Closed - Exceeds Recommended Action  
Action on the safety recommendation has been completed by the recipient. The action taken surpasses what was envisioned by the Safety Board.
- Closed - Acceptable Action  
Action on the safety recommendation has been completed by the recipient. The action complies with the safety recommendation.

- Closed - Acceptable Alternate Action  
The recipient responds with an alternate course of action which is completed and meets the objective of the safety recommendation.
- Closed - Unacceptable Action  
The recipient responds by expressing disagreement with the need outlined in the recommendation. There is no further evidence to offer, and the Safety Board concludes that further correspondence on, or discussion of, the matter would not change the recipient's position. Or, the time frame goals as outlined in this order are not met.
- Closed - Unacceptable Action/No Response Received  
A response to the recommendation has not been received within 270 days of the issuance of the recommendation.
- Closed - No Longer Applicable  
The recommended action has been overtaken by events.
- Closed - Reconsidered  
Recipient rejects the safety recommendation and also supports the rejection with a rationale with which the Board concurs. Reasons for the "Reconsidered" status would include situations where the recipient is able to convince the Board that the proposed action would not be effective or that it might create other problems. This status assignment is also used when the recipient of a recommendation was in compliance before the recommendation was issued or when the recipient was incorrectly chosen and cannot perform the recommended action.
- Closed - (any above status)/Superseded  
Applicable to recommendations held in any open status where a new, more appropriate safety recommendation is issued that includes the necessary elements of the recommendation to be closed. To maintain the record of ongoing action, when a recommendation is superseded, the current status (status at the time of closure) of the recommendation is included.

Safety Recommendation Information System (SRIS) - The database of all relevant information pertaining to safety recommendations and responses extracted and summarized from reports and correspondence. The SRIS is accessible through computer terminals and is maintained by the Office of Safety Recommendations. The responsibility for maintaining the complete, hard copy records and documentation related to safety recommendations rests with the office generating the recommendation and/or providing the primary followup effort. Safety recommendations developed as a result of accident reports and safety studies are given a log number by the Office of Safety Recommendations and placed in the Safety Recommendation Information System when the safety recommendation letter is issued.

5. ADMINISTRATION. This Order is administered jointly by the various operating and technical offices of the Safety Board.

6. PROCEDURES.

a. Development of Safety Proposals.

Safety proposals are proposed safety recommendations that are not processed in conjunction with a major accident investigation, special investigation, or safety study. Safety proposals are subjected to critical review by the Safety Proposal Review Board (SPRB).

- (1) Safety proposals may be submitted by any employee of the National Transportation Safety Board.
- (2) Safety proposals are also accepted from sources outside the Board.
- (3) Safety proposals considered by the SPRB shall meet the procedural requirements that may be set by each individual Office.
- (4) Upon receipt of a safety proposal, the Office of Safety Recommendations gives the proposal a log number and acknowledges receipt via fax (see Appendix C), e-mail, or a letter to the originator.
- (5) The Office of Safety Recommendations develops the SPRB meeting agenda based on all proposals and accomplishments submitted since the previous meeting.
- (6) The SPRB reviews safety proposals and determines whether further analysis will be performed. After an SPRB meeting, all regional and field offices receive via e-mail or fax, an annotated copy of the agenda showing the disposition of the agenda items and names of staff assigned to analyze a proposal.
- (7) Each regional and field office also receives (via fax or e-mail) a copy of the updated listing of pending safety proposals within 48 hours of the SPRB meeting.
- (8) If the staff analysis is that the proposal will support a safety recommendation, he/she develops a notation memorandum and supporting documents for review by the applicable office director. If staff determines that the safety proposal does not support a safety recommendation, a memo to that effect is presented to the SPRB, which determines whether to accept the staff recommendation.

b. Safety Recommendation Letters.

Safety recommendations are always issued to the recipient in the form of a letter that gives pertinent facts and analysis to justify the recommended action. With the exception of recommendations designated by the Board as "Urgent," safety recommendations have no classification or internal priority. The issue date is the date the Chairman signs the letter. The Executive Secretariat assigns the recommendation number.

All safety recommendation letters issued to other than U.S. Department of Transportation recipients shall have the following paragraph inserted between the last recommendation and the Member concurrence line:

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations \_\_\_\_\_ and \_\_\_\_\_ in your reply.

c. Safety Recommendation Followup.

(1) The following is provided as general guidance to Board staff in performing followup. It is recognized that there will be circumstances that may require followup activity different from the normal routine described below. See c(2) for guidance in performing followup on those recommendations that require urgent action.<sup>1</sup>

(a) The Board replies to all responses to safety recommendations with a full evaluation of the proposed action. The reply to the recipient of the recommendation will include a discussion of what further action is necessary to close the recommendation should the first response not contain a description of a completed action.

(b) If no response is received within 90 calendar days of issuance, staff contacts the recipient urging a report on actions considered or taken.

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<sup>1</sup> Section 307 of the "Independent Safety Board Act of 1974" provides for a 90-day response period for recommendations addressed to the U.S. Department of Transportation. The Act contains no response constraints for recommendations issued to recipients other than the USDOT. This provision of the Act should be considered when seeking responses to Urgent Action Safety Recommendations.

- (c) If a response is received after the 90 day contact, that response is evaluated as described in (a).
- (d) If no response is received within 270 calendar days of issuance, staff asks the Board to classify the recommendation "Closed--Unacceptable Action/No Response Received."
- (e) At the end of 3 years, if the response of the recipient has not produced satisfactory action, staff will review the recommendation and associated action. If staff determines that ongoing action is acceptable and there are compelling reasons for going beyond 3 years for implementation, the recommendation will remain in an "Open" status. If staff determines that the action could have been completed in 3 years or less, staff will ask the Board to classify the recommendation as "Closed -- Unacceptable Action" and send a letter to the recipient noting that this status is being assigned due to a lack of timeliness of implementation.
- (f) Staff will monitor all open recommendations, with no longer than 12 months passing without some form of followup activity. Final action on recommendations that did not require urgent attention should be completed in the 3- to 5-year range. If the action has not been completed within 5 years from the issue date of the recommendation, staff will carefully review the file and determine whether further time should be allowed. If staff determines that the action could have been completed within the 5-year period, staff will ask the Board to classify the recommendation "Closed--Unacceptable Action." Safety recommendations should be carried past the 5-year time frame only in rare instances.

(2) Urgent Action Recommendation.

- (a) If no response is received within 30 calendar days of issuance, staff contacts the recipient asking for a written response.
- (b) If no response is received within 90 calendar days of issuance the Board sends the recipient a letter reemphasizing the need for prompt action.
- (c) At the end of 6 months, staff reviews Urgent Action recommendations. Any urgent recommendation that:
  - i) has not been responded to in an acceptable manner, and
  - ii) is not at a point where completion is imminent,will be presented to the Board for reclassification as "Open--Unacceptable Response." A letter to the recipient will be drafted reflecting the reasoning behind the Board's determination.

(d) If, after a review at the 6-month mark, the Board believes the recommendation no longer requires immediate action, the Board may remove that classification. Followup will continue as stated under (1) above.

(e) At the end of 1 year, if all action to satisfy the recommendation is not completed and the Board still believes the recommendation qualifies as an urgent recommendation, it will be classified "Closed--Unacceptable Action."

(3) All Recommendations.

Safety recommendation followup must be documented. Letters on official NTSB letterhead and/or on official letterhead stationery of the recipient are the best and most desired documentation. However, in the interest of simplicity, telephone, personal visit, and fax communications will be accepted as documentation of contact if they are recorded on the NTSB recommendation followup documentation form. (See Appendix B.) This form will be completed and a copy forwarded to the Office of Safety Recommendations for computer entry. The original will be placed in the log file for the recommendation(s) under discussion.

d. Changing Safety Recommendation Status.

(1) Only the Board has the authority to change the status of a safety recommendation.

(2) Appendix D is a logic flow chart that can be used as a guideline to assist in determining the status to be assigned to a safety recommendation.

(3) For record-keeping purposes, the following guidelines apply:

(a) For a single recommendation sent to multiple recipients, the recommendation's status recorded in the database will be based on the majority status of the various individual recipients.

(b) Followup on a single recommendation sent to multiple recipients will be treated the same as followup for a single-recipient recommendation. However, the recommendation should be submitted to the Board for appropriate action when 60% or more of the recipients have responded at the end of the recommended time limits.

(c) Periodically, the Office of Safety Recommendations will compute the "Acceptance Rate" of the recommendations in the SRIS. This number is a percentage calculated by dividing the sum of all ["Closed--Acceptable" + "Closed--Acceptable Alternate" + "Closed--Exceeds Recommended Action" + "Open--Acceptable" + "Open--Acceptable Alternate"] by the Total Recommendations issued less the sum

of ["Closed--Reconsidered" + "Closed--Superseded" + "Closed--No Longer Applicable" + "Open--Await Response" + "Open--Response Received"]. This "Acceptance Rate" is used to measure the responsiveness of recipients of the Board's safety recommendations.

Kenneth U. Jordan  
Managing Director

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C



National Transportation  
Safety Board

## Memorandum

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Date: 12/11/98  
To: Vern Ellingstad  
Through: Elaine Weinstein  
From: Deborah Bruce  
Subject: Aviation Safety Proposal 2727, 2724, and 2718

Based on my involvement with the Part 145 Maintenance Safety Study, I have reviewed several Aviation Safety Proposals associated with airport ground services, particularly those that are provided under contract arrangements with either the air carriers or the airport operating authority.

Part 145 regulations apply to certificated contract repair facilities that perform inspection and maintenance work on aircraft airframes, powerplants, avionics, etc. However, ground support services, such as fueling, de-icing, catering, and cargo/baggage ramp services are distinctly different from aircraft contract maintenance activities addressed under Part 145.

### Aviation Safety Proposal Log 2727

This Safety Recommendation Proposal stems from a fuel truck accident at Reagan Washington National Airport. There are 5 recommendations proposed to the FAA, ATA, Washington Metropolitan Airport Authority, and DynAir. My assessment of each follows:

Airports are the responsibility of the local airport authority. FAA's Airport Safety and Standards Office certifies the airport authority to operate the airport, and the authority does so in accordance with their Airport Certification Manual (ACM). FAA Advisory Circular 139.201-1 provides the airport operators guidance in preparing their Airport Certification Manual (ACM) so that it will be in compliance with the airport certification specifications contained in Part 139 of the Federal Aviation Regulations (FAR). A subparagraph of Part 139 (139.329 Ground Vehicles) directs the certificate holder (airport authority) to "establish and implement *procedures* for the safe and orderly access to, and operation on, the movement areas and safety areas by ground vehicles, including provisions identifying the consequences of noncompliance with the *procedures* by an employee, tenant, or contractor."

The first recommendation proposal calls for the FAA to "conduct an inspection of all vehicle safety interlocks on refueling vehicles to ensure the vehicles will not move when placed in the pumping mode." Part 139 guarantees the FAA inspection rights at airports for the purpose of verifying that airport operating requirements are being accomplished. According to paragraph 139.329, such an inspection would confirm that the airport authority had procedures for ground

vehicle movement. This would appear to have been the case in the Canadair accident since there was a driver testing process.

Mechanical inspection of vehicles would have to be conducted against requirements that are not in the current regulations. So the issue is, should FAA write new regulations to expand its scope of control over airport operations? There are many different types of ground control equipment in use — different power systems (gasoline, diesel, liquid gas), different wheel sizes, different speed capability, etc. In fact, taken as a whole, airport ground vehicles look much more like construction equipment than transport vehicles. And this is one of the reasons they are exempt from DOT requirements. (Let me add that ground vehicle inspection does not seem like an inherent FAA function, nor one that I suspect that they would be very good at.) If we want to pursue this recommendation, then it is necessary to recommend a regulatory change.

The second recommendation calls for FAA to “develop and implement an advisory circular for the proper training and inspection of vehicles and drivers who operate on AOAs, to ensure vehicle safety, and proper training of drivers.” There is an advisory circular that covers these issues: AC 00-34A Aircraft Ground Handling and Servicing. It includes a section on aircraft refueling. A more detailed AC addresses the technicalities of fuel dispensing to aircraft: AC 150/5230-4 Aircraft Fuel Storage, Handling, and Dispensing on Airports. If these are not adequate, then we need to specifically address why.

The third recommendation to the Air Transport Association calls for them to: “develop an industry standard for refueling truck safety interlocks, for use with current vehicles, and as a basis for new trucks”. It would seem that the industry responsible for standards and design of truck safety interlocks would be the other ATA, the American Trucking Association.

The fourth recommendation, to the Washington Metropolitan Airport Authority, asks them to “implement an inspection program for vehicles and drivers authorized to operate in AOAs.” There are two separate issues here: inspect vehicles and review drivers. Inspecting vehicles may be an appropriate action, though if it is appropriate for WMAA, it is also a good recommendation to airport authorities in general (possibly to American Assoc. of Airport Executives or the Airport Operators Council, International). However, for such a program to be effective, it would have to be customized to the types of ground vehicles in use at specific airports. If, on the other hand, the recommendation is addressing only refueling vehicles, then AC 150/5230-4 includes a checklist for mobile refueler daily and weekly preventive maintenance (Appendix 2). As for the issue of drivers, it would seem that procedures are in place for licensing drivers to operate on AOAs, in the case of WMAA, DynAir ignored them.

The fifth recommendation, to DynAir, is to “implement a preventive maintenance program for all their vehicles which operate on the roadway”. I agree that DynAir should have a preventive maintenance program, both for its financial interests and in the interest of airport safety. But I would not restrict the program to those vehicles that operate on the roadway. Most ground vehicles are not licensed, and are transported by flatbed to maintenance repair that cannot be accomplished onsite.

### Aviation Safety Proposal Log 2724

This Safety Recommendation Proposal stems from a Northwest Airlines fatal de-icing accident in Tucson, Arizona in December 1997. On face value, the issues sound very similar to those associated with the re-fueling accident (Log 2727 above). However, when we talk about all airport ground vehicles, some provide services to the airport and some can be more directly qualified as providing services to a specific air carrier. Regardless of whether these services are provided through corporate support or under contract, the air carrier has a direct safety responsibility when they hire someone to work on their aircraft. This de-icing accident revolves around procedures that have a clear line of responsibility back to Northwest Airlines. I agree with the recommendations.

For the purposes of supporting this set of recommendations, I do not think it necessary or advantageous pursue an extended discussion of OSHA's jurisdiction and involvement. Northwest has responsibility for the de-icing operations, whether those services were provided under contract or not (121.629). Our recommendations to Elsinore and Northwest can be based on that alone.

### Aviation Safety Proposal Log 2718

This Aviation Safety Proposal is based on a special investigation of ground services associated with aviation accidents. Including the previously discussed accidents (de-icing at Tucson and re-fueling Washington National), the proposal provides a brief description of 9 accidents that occurred over a 14-year timeframe. Two of the accidents, ValuJet/Miami (1996) and Galaxy charter flight (1985), involved aircraft in flight; both were total losses and the combined fatality count was 175. However, the remaining 7 accidents involved only one fatality and 10 injuries. These accidents do not present a complete picture of the problem.

In an effort to provide some scope of the problem, Flight Safety Foundation's world-wide estimate of 615 million in direct cost of aircraft damage on apron resulting from ground service mishaps is included.<sup>1</sup> For the purposes of the Board, fatalities and injury are more relevant than costs, and this is not provided. Staff reviewed 65 accidents investigated by the Board over a 15-year period and found that more than half (35) were "on ground/water collision with object during taxi/pushback". It would have been relevant to account for the injuries and fatalities associated with these accidents and to include an incident reporting measure for the same timeframe.

For my own interest, I retrieved the past FAA Administrator's reports that were available in our Aviation Safety "rotating" file. I reviewed 72 morning reports spanning a 4-month timeframe; there were 33 ground incidents (the majority were non-aircraft vehicle runway incursions). These 33 incidents involved one minor injury and two fatalities.<sup>2</sup>

<sup>1</sup> I would be quite surprised if the FSF estimate of indirect cost has not been misquoted. It would seem more likely that indirect cost, which includes lost revenue for aircraft out of service, are 2.46 billion (not million). Costs to U. S. operations would be more relevant than the worldwide costs.

<sup>2</sup> Continental MD-80 wing collided with air conditioning cart on pushback; the cart overturned on an employee (Nassau, Bahamas: 10/13/98). Northwest Airlink ramp employee walked into propeller (Memphis: 11/3/98).

The Aviation Safety Proposal includes a page and a half discussion of airport security and makes one recommendation. Security is a broad, complicated issue, and more than any other issue raised in this paper, I don't think we've qualified the problem.

Specifically, with regard to the recommendations, I have the following comments:

- The first recommendation to the FAA is covered under 121.363.
- In the second one, I am doubtful that FAA would coordinate surveillance by all federal and state interests? The list is long: DOL/OSHA, EPA, Agriculture, Commerce, HHS, and all state entities with regulations. This would be a tremendous undertaking and I think it deserves more rationale than this proposal provides.
- I agree with a DOL/OSHA and FAA MOU; and I think this accomplishes the coordination aspects of the previous recommendation.
- I agree that maintenance inspectors responsible for carrier airworthiness certificates should examine air carrier oversight of vendor compliance (as stated in 121.363); vendors working directly for the airport authority would have to be handled by the airport certification inspectors.
- It seems that the responsibility for vehicle safety inspections belongs with the airport authority if the services are provided to the airport, and with the air carrier if the services are performed directly on the aircraft. The FAA has oversight responsibility for both. As a condition for issuing an airport operating certificate, the FAA says the applicant must be adequately equipped and able to provide a safe airport operating environment. The conditions for issuing an airworthiness certificate to an air carrier are even more specific.
- I agree with driver certification for AOAs.
- I don't know anything about NCIC security checks. Larry Roman suggested that there was a change to CFR that affected this process.
- The recommendation to ATA, RAA, ICAO, could also include NBAA, EAA, the Machinist's Union, many organizations. But I think the recommendation should more clearly state exactly what the Board wants these organizations to communicate to their members.
- I see merit in recommending an AOCI symposium. I would also suggest that AOCI be added as recipients to the two recommendations directed to airports. Larry Roman also suggested AAAE as a responsible organization.
- Regarding the last two recommendations, I do not think OSHA needs congressional authority to enter a work site. The Occupational Safety and Health Act of 1970, enforced by the Secretary of Labor, covers virtually every employer in the country. I would think they just need to coordinate with FAA and the certificate holder.
- Aviation's work safety record is good compared to many other industries. It would seem unlikely that OSHA would prioritize its resources to accomplish identifying "aviation support" companies. The recommendation to develop a MOU between OSHA and FAA would seem an appropriate predecessor to this activity.

In sum total, I think there are some nuggets in these recommendations, but this set hits on several different subjects and that dilutes the focus.

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**D**

JAN 11 2000

Honorable Jane F. Garvey  
Administrator  
Federal Aviation Administration  
Washington, D.C. 20591

Dear Ms. Garvey:

I want to bring a safety issue to your attention that may warrant Federal Aviation Administration (FAA) action: airport ground service vehicle and airplane collisions. The National Transportation Safety Board has recently investigated several such incidents. For example, on September 15, 1997, a Beech 1900D operated by Mesa Airlines was substantially damaged when it was struck by a moving baggage tug at Pittsburgh International Airport. On October 1, 1997, a bus collided with a Ryan International Airlines Boeing 727 at Denver International Airport. On December 23, 1997, a Northwest Airlines McDonnell Douglas MD-82 was struck on the left wing cap of the horizontal stabilizer by a contract-deicing vehicle at Tucson International Airport. The operator of the boom turret on the deicing vehicle fell out of the basket and died. On March 9, 1998, a Canadair CL-65 was substantially damaged after it was struck by a baggage tug at Cincinnati/Northern Kentucky Airport. And, on April 8, 1998, a ground refueler was seriously injured when a refueling truck jumped its chocks and struck a Canadair CL-600 at Washington Reagan National Airport.

The Safety Board is concerned that there may be insufficient oversight of ground support operations and inadequate coordination by the various regulatory/enforcement agencies that have jurisdiction over such operations. Our investigations of these incidents indicate that oversight of job performance, training, and vehicle maintenance is not standardized and is often inadequate. They concluded that 42 percent of these accidents were caused by a failure to follow standard operating procedures.

We also found that the regulatory authority exercised by the many different entities at an airport is confusing. For example, airports may have certain licensing and police powers, especially regarding vehicle moving violations, but the scope and effectiveness of this oversight is uneven. Our investigations also suggest that contract personnel were not always aware of FAA requirements and that their enforcement by the air carrier, the airport, or the FAA was often problematic.

Thank you for your attention to this matter.

Sincerely,

ORIGINAL SIGNED BY  
JIM HALL

Jim Hall  
Chairman

AS20co/Ground vehicle letter to FAA 2

Sundeen: rev KRB 7/28; final adh 9/3/99; corrections/final nfc 9/17/99; Chair edits 1/5/00

cc: C, AS-1/2

final proofread by:

JSear 1/5/00

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**E**

NTSB File Number LAX98SA246

No. of  
Pages

Item No.	Description of Item	Doc	Photo
1	Supporting Documentation File Contents, NTSB Form 6120.3	1	
2	Pilot/Operator Aircraft Accident Report, NTSB Form 6120.1/2	8	
3	Summaries of Telephone Interview and Conference	5	
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10	Material Safety Data Sheet	7	
11	OSHA Documents	8	
12	Excerpts from 29CFR 1910	2	
13	Elsinore Aerospace Corporate Structure	2	
	Total Number of Pages	231	0

**NATIONAL TRANSPORTATION SAFETY BOARD  
PILOT/OPERATOR AIRCRAFT ACCIDENT REPORT**  
This form To Be Used For Reporting Civil Aircraft Accidents  
Involving Commercial and General Aviation Aircraft

<b>Location</b>						
Nearest City/Place, State, Zip Code Tucson, Arizona		Date of Accident 12/23/97		Local Time (24 HOUR CLOCK) 0950	Zone MST	Elevation At Accident Site 2641 Feet MSL ____ Feet MSL
If The Accident Occurred On Approach, Takeoff or Within 3 Miles of An Airport, Complete The Following Information						
<b>Proximity To Airport</b>						
1. <input checked="" type="checkbox"/> On Approach		3. <input type="checkbox"/> Within 1/2 Mile		5. <input type="checkbox"/> Within 1 Mile		7. <input type="checkbox"/> Within 3 Miles
2. <input type="checkbox"/> Within 1/4 Mile		4. <input type="checkbox"/> Within 3/4 Mile		6. <input type="checkbox"/> Within 2 Miles		8. <input type="checkbox"/> Beyond 3 Miles
Airport Name Tucson International		Airport Ident TUS		Runway/Landing Surface Conditions:		
		1. <input type="checkbox"/> Direction:	3. <input type="checkbox"/> Width:	5. <input type="checkbox"/> Condition:		
		2. <input type="checkbox"/> Length:	4. <input type="checkbox"/> Surface:			
<b>Phase Of Operation:</b>						
1. <input checked="" type="checkbox"/> Standing		3. <input type="checkbox"/> Takeoff		5. <input type="checkbox"/> Cruise		7. <input type="checkbox"/> Approach
2. <input type="checkbox"/> Taxi		4. <input type="checkbox"/> Climb		6. <input type="checkbox"/> Descent		8. <input type="checkbox"/> Landing
						9. <input type="checkbox"/> Hover/Maneuver
						10. <input type="checkbox"/> Altitude Of In-Flight Occurrence _____ Feet MSL
<b>Aircraft Information</b>						
Registration Mark N302RC		Aircraft Manufacturer McDonnell Douglas		Aircraft Type/Model MD82		Serial Number 48055
						Cert Max Gross WT 140,000 lb
Type Of Aircraft			Type Of Airworthiness Certificate			Amateur Built
1. <input checked="" type="checkbox"/> Airplane		5. <input type="checkbox"/> Blimp/Dirigible		1. <input type="checkbox"/> Normal		5. <input type="checkbox"/> Restricted
2. <input type="checkbox"/> Helicopter		6. <input type="checkbox"/> Ultralight		2. <input type="checkbox"/> Utility		6. <input type="checkbox"/> Limited
3. <input type="checkbox"/> Glider		7. <input type="checkbox"/> Gyroplane		3. <input type="checkbox"/> Acrobatic		7. <input type="checkbox"/> Experimental
4. <input type="checkbox"/> Balloon		8. <input type="checkbox"/> Specify _____		4. <input checked="" type="checkbox"/> Transport		8. <input type="checkbox"/> Specify _____
Landing Gear						No. Of Seats Flight/Cabin Crew 2/5 Pax 148
1. <input type="checkbox"/> Tricycle—Fixed		4. <input type="checkbox"/> Tailwheel—Retractable		7. <input type="checkbox"/> Skid		
2. <input checked="" type="checkbox"/> Tricycle—Retractable		5. <input type="checkbox"/> Tailwheel—Retractable Mains		8. <input type="checkbox"/> Limited		
3. <input type="checkbox"/> Tailwheel—Fixed		6. <input type="checkbox"/> Amphibian		9. <input type="checkbox"/> Specify _____		
Stall Warning System Installed		IFR Equipped		Engine Type		
1. <input checked="" type="checkbox"/> Yes		1. <input type="checkbox"/> Yes		1. <input type="checkbox"/> Reciprocating—Carburetor	3. <input type="checkbox"/> Turbo Prop	5. <input checked="" type="checkbox"/> Turbo Fan
2. <input type="checkbox"/> No		2. <input type="checkbox"/> No		2. <input type="checkbox"/> Reciprocating—Fuel Injected	4. <input type="checkbox"/> Turbo Jet	6. <input type="checkbox"/> Turbo Shaft
Engine Manufacturer Pratt & Whitney		Engine Model/Series JT8D-217		Engine Rated Power 1. _____ Horsepower 2. 14,000 Lbs Thrust		Type Of Fire Extinguishing System Used 1. None <input checked="" type="checkbox"/> 2. Specify _____
Engine(s)	Date of Mfg.	Mfg. Serial No.	Total Time	Time Since Inspection	Time Since Overhaul	
Engine No. 1			Hours	Hours	Hours	
Engine No. 2			Hours	Hours	Hours	
Engine No. 3			Hours	Hours	Hours	
Engine No. 4			Hours	Hours	Hours	
Type Of Maintenance Program			Type Of Last Inspection		Date Last Inspection Performed	
1. <input type="checkbox"/> Annual			1. <input type="checkbox"/> Annual		12/23/97 (M/D/Y)	
2. <input type="checkbox"/> Manufacturer's Inspection Program			2. <input type="checkbox"/> 100 Hours		Time Since Last Inspection _____ Hours	
3. <input checked="" type="checkbox"/> Other Approved Inspection Program(AAIP)			3. <input type="checkbox"/> AAIP		Airframe Total Time _____ Hours	
4. <input checked="" type="checkbox"/> Continuous Airworthiness			4. <input checked="" type="checkbox"/> Continuous Airworthiness			
5. <input type="checkbox"/> Specify _____						
Emergency Locator Transmitter (ELT)		ELT Manufacturer		Model/Series		Serial Number
		Switch 1. <input type="checkbox"/> On 2. <input type="checkbox"/> Off 3. <input checked="" type="checkbox"/> Armed		Operated 1. <input type="checkbox"/> Yes 2. <input checked="" type="checkbox"/> No		Aided In Accident Location 1. <input type="checkbox"/> Yes 2. <input checked="" type="checkbox"/> No
Registered Aircraft Owner Northwest Airlines Inc.				Address 5101 Northwest Drive St. Paul, MN 55111		
Operator Of Aircraft 1. <input checked="" type="checkbox"/> Same As Registered Owner 2. Name _____ 3. DBS: _____				Address 1. <input checked="" type="checkbox"/> Same As Registered Owner 2. _____		

<b>Owner / Operator Information (cont.)</b>											
Operator (Certificate Number)			Operator Designator (4 Letter Designator)								
NWAA301A			NWAA								
<b>Purpose Of Flight And Type Of Operation</b>											
<b>Regulation Flight Conductor Under</b>					<b>Operator Authority</b>			<b>FAR 121, 125, 127, 129, 135 Revenue Operations</b>			
1. <input type="checkbox"/> FAR91 (only)    4. <input checked="" type="checkbox"/> FAR 121    7. <input type="checkbox"/> FAR 133 2. <input type="checkbox"/> FAR91D    5. <input type="checkbox"/> FAR 125    8. <input type="checkbox"/> FAR 135 3. <input type="checkbox"/> FAR 103    6. <input type="checkbox"/> FAR 129    9. <input type="checkbox"/> FAR 137					<b>FAR121</b> 1. <input checked="" type="checkbox"/> Domestic 2. <input checked="" type="checkbox"/> Flag 3. <input checked="" type="checkbox"/> Supplemental			<b>FAR 133</b> 6. <input type="checkbox"/> Rotorcraft External Load  <b>FAR125</b> 7. <input type="checkbox"/> Large Aircraft  <b>FAR 129</b> 8. <input type="checkbox"/> Foreign		1. <input checked="" type="checkbox"/> Scheduled 2. <input type="checkbox"/> Non Scheduled 3. <input checked="" type="checkbox"/> Domestic 4. <input type="checkbox"/> International 5. <input checked="" type="checkbox"/> Passenger 6. <input type="checkbox"/> Cargo 7. Specify _____	
<b>Purpose of Flight</b>											
1. <input type="checkbox"/> Personal    6. <input type="checkbox"/> Aerial Observation 2. <input checked="" type="checkbox"/> Business    7. <input type="checkbox"/> Other Work Use 3. <input type="checkbox"/> Educational    8. <input type="checkbox"/> Public Use 4. <input type="checkbox"/> Executive/Corporate    9. <input type="checkbox"/> Ferry 5. <input type="checkbox"/> Aerial Application    10. <input type="checkbox"/> Positioning											
<b>Pilot Information</b>											
Pilot Name			Pilot Certificate No.		Address _____			Nationality			
Tim R. Howard			001837484								
<b>Certificate (s)</b>											
1. <input type="checkbox"/> Student    3. <input type="checkbox"/> Commercial    5. <input type="checkbox"/> Flight Instructor    7. <input type="checkbox"/> Military    9. <input type="checkbox"/> None 2. <input type="checkbox"/> Private    4. <input checked="" type="checkbox"/> Airline Transport    6. <input type="checkbox"/> Flight Engineer    8. <input type="checkbox"/> Foreign    10. Specify _____											
<b>Rating (s)</b>				<b>Instrument Rating (s)</b>		<b>Instructor Rating (s)</b>					
1. <input type="checkbox"/> None    6. <input type="checkbox"/> Helicopter 2. <input type="checkbox"/> Single Engine Land    7. <input type="checkbox"/> Glider 3. <input type="checkbox"/> Single Engine Sea    8. <input type="checkbox"/> Free Balloon 4. <input checked="" type="checkbox"/> Multiengine Land    9. <input type="checkbox"/> Airship 5. <input type="checkbox"/> Multiengine Sea    10. <input type="checkbox"/> Gyroplane				1. <input type="checkbox"/> None 2. <input type="checkbox"/> Airplane 3. <input type="checkbox"/> Helicopter		1. <input type="checkbox"/> None    6. <input type="checkbox"/> Instrument Airplane 2. <input type="checkbox"/> Airplane S.E.    7. <input type="checkbox"/> Instrument Helicopter 3. <input type="checkbox"/> Airplane M.E.    8. <input type="checkbox"/> Ground Instructor 4. <input type="checkbox"/> Helicopter    9. <input type="checkbox"/> Specify _____ 5. <input type="checkbox"/> Glider					
<b>Type Ratings/Student Endorsements</b>				Date Of Biennial Flight Review or Equivalent (M/D/Y)		<b>BFR Aircraft</b>					
						1. Make _____ 2. Model _____					
<b>Medical Certificate</b>			Date Of Last Medical (M/D/Y)		Limitations			Date Of Birth (M/D/Y)			
1. <input type="checkbox"/> None    3. <input type="checkbox"/> Class 2 2. <input checked="" type="checkbox"/> Class 1    4. <input type="checkbox"/> Class 3			09/23/97		Waivers			07/12/48			
<b>Degree Of Injury</b>		<b>Seat Occupied</b>		<b>Person At Controls At Time Of Accident</b>				<b>Seat Belt Available</b>			
1. <input checked="" type="checkbox"/> None 2. <input type="checkbox"/> Minor 3. <input type="checkbox"/> Serious 4. <input type="checkbox"/> Fatal		1. <input checked="" type="checkbox"/> Left    4. <input type="checkbox"/> Front 2. <input type="checkbox"/> Right    5. <input type="checkbox"/> Rear 3. <input type="checkbox"/> Center		1. <input checked="" type="checkbox"/> Pilot In Control    4. <input type="checkbox"/> Non-Pilot 2. <input type="checkbox"/> Second Pilot    5. <input type="checkbox"/> No One 3. <input type="checkbox"/> Both Pilots				1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No			
<b>Seat Belt Used</b>		<b>Shoulder Harness Available</b>		<b>Shoulder Harness Used</b>		<b>Source Of Pilot Flight Time Information</b>					
1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No		1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No		1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No		1. <input type="checkbox"/> Pilot Logbook    4. <input checked="" type="checkbox"/> Company 2. <input type="checkbox"/> Operators Estimate    5. <input type="checkbox"/> Specify _____ 3. <input type="checkbox"/> FAA Records					
<b>Flight Time</b>		<b>All A/C</b>	<b>This Make &amp; Model</b>	<b>Airplane Single Engine</b>	<b>Airplane Multiengine</b>	<b>Night</b>	<b>Instrument</b>		<b>Rotorcraft</b>	<b>Glider</b>	<b>Lighter Than Air</b>
Total Time		9656	2586				Actual Simulated				
Pilot In Command (PIC)											
Instructor											
This Make & Model											
Last 90 Days		176	176								
Last 30 Days											
Last 24 Hours		7	7								
<b>Second Pilot Information</b>											
<b>Second Pilot Responsibilities At The Time Of Accident</b>											
1. <input checked="" type="checkbox"/> Co-Pilot    2. <input type="checkbox"/> Dual Student    3. <input type="checkbox"/> Safety Pilot    4. <input type="checkbox"/> Check Pilot    5. <input type="checkbox"/> None (Pilot-Rated Passenger)											
Pilot Name			Pilot Certificate No.		Address _____			Nationality			
Gordon B. Jones			002022388								
<b>Certificate (s)</b>											
1. <input type="checkbox"/> Student    3. <input checked="" type="checkbox"/> Commercial    5. <input type="checkbox"/> Flight Instructor    7. <input type="checkbox"/> Military    9. None _____ 2. <input type="checkbox"/> Private    4. <input type="checkbox"/> Airline Transport    6. <input type="checkbox"/> Flight Engineer    8. <input type="checkbox"/> Foreign    10. Specify _____											

**Second Pilot Information (cont.)**

<b>Rating (s)</b>		<b>Instrument Rating (s)</b>		<b>Instructor Rating (s)</b>	
1. <input type="checkbox"/> None	6. <input type="checkbox"/> Helicopter	1. <input type="checkbox"/> None	1. <input type="checkbox"/> None	6. <input type="checkbox"/> Instrument Airplane	
2. <input type="checkbox"/> Single Engine Land	7. <input type="checkbox"/> Glider	2. <input type="checkbox"/> Airplane	2. <input type="checkbox"/> Airplane S.E.	7. <input type="checkbox"/> Instrument Helicopter	
3. <input type="checkbox"/> Single Engine Sea	8. <input type="checkbox"/> Free Balloon	3. <input type="checkbox"/> Helicopter	3. <input type="checkbox"/> Airplane M.E.	8. <input type="checkbox"/> Ground Instructor	
4. <input checked="" type="checkbox"/> Multiengine Land	9. <input type="checkbox"/> Airship		4. <input type="checkbox"/> Helicopter	9. <input type="checkbox"/> Specify _____	
5. <input type="checkbox"/> Multiengine Sea	10. <input type="checkbox"/> Gyroplane		5. <input type="checkbox"/> Glider		

<b>Type Ratings/Student Endorsements</b>	<b>Date Of Biennial Flight Review or Equivalent (M/D/Y)</b>	<b>BFR Aircraft</b> 1. Make _____ 2. Model _____
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<b>Medical Certificate</b> 1. <input type="checkbox"/> None 2. <input checked="" type="checkbox"/> Class 1 3. <input type="checkbox"/> Class 2 4. <input type="checkbox"/> Class 3	<b>Date Of Last Medical (M/D/Y)</b> 09/22/97	<b>Limitations</b> <b>Waivers</b>	<b>Date Of Birth (M/D/Y)</b> 03/06/45
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<b>Degree Of Injury</b> 1. <input checked="" type="checkbox"/> None 2. <input type="checkbox"/> Minor 3. <input type="checkbox"/> Serious 4. <input type="checkbox"/> Fatal	<b>Seat Occupied</b> 1. <input type="checkbox"/> Left 2. <input checked="" type="checkbox"/> Right 3. <input type="checkbox"/> Center 4. <input type="checkbox"/> Front 5. <input type="checkbox"/> Rear	<b>Seat Belt Available</b> 1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No
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<b>Seat Belt Used</b> 1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No	<b>Shoulder Harness Available</b> 1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No	<b>Shoulder Harness Used</b> 1. <input checked="" type="checkbox"/> Yes 2. <input type="checkbox"/> No	1. <input type="checkbox"/> Pilot Logbook 2. <input type="checkbox"/> Operators Estimate 3. <input type="checkbox"/> FAA Records 4. <input checked="" type="checkbox"/> Company 5. <input type="checkbox"/> Specify _____
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Flight Time	All A/C	This Make & Model	Airplane Single Engine	Airplane Multiengine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	5232	1236								
Pilot In Command (PIC)										
Instructor										
Make & Model										
90 Days	208	208								
Last 30 Days										
Last 24 Hours	7	7								

Name	Seat	Address (City & State)	Crew	Non-Revenue		Non-Occupant	FAA	Fatal Serious Minor None							
				Revenue	Revenue										
1. Passengers															
2.								126							
3.															
4.															
5.															
6.															

<b>Flight Itinerary Information</b>			
<b>Last Departure Point</b> 1. Airport ID <u>TUS</u> 2. City/Place <u>Tucson</u> 3. State <u>AZ</u>	<b>Time Of Departure</b> 1. Time _____ 2. Time Zone _____	<b>Destination</b> 1. Airport ID <u>MSP</u> 2. City/Place <u>Minneapolis</u> 3. State <u>MN</u>	<b>Flight Plan Filed</b> 1. <input type="checkbox"/> None 2. <input type="checkbox"/> VFR 3. <input checked="" type="checkbox"/> IFR 4. <input type="checkbox"/> VFR/MFR 5. <input type="checkbox"/> Company (VFR) 6. <input type="checkbox"/> Military (VFR)

If Weather Was Involved, State If Weather Briefing Was Obtained or If Weather Reports Were Checked And How It Was Accomplished

<b>Fuel On Board At Last Takeoff</b> _____ Gallons or _____ Pounds	<b>Fuel Type</b> 1. <input type="checkbox"/> 80/87 2. <input type="checkbox"/> 100 Low Lead 3. <input type="checkbox"/> 100/130 4. <input type="checkbox"/> 115/145 5. <input type="checkbox"/> Jet A 6. <input type="checkbox"/> Automotive 7. Specify _____
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Other Services, If Any, Prior to Departure

<b>Weather Information At The Accident Site</b>			
<b>Source Of Weather Information (Pilot/Operator, Weather Observation)</b>	<b>Light Condition</b> 1. <input type="checkbox"/> Dawn 2. <input checked="" type="checkbox"/> Daylight 3. <input type="checkbox"/> Dusk 4. <input type="checkbox"/> Bright Night 5. <input type="checkbox"/> Dark Night	<b>Visibility</b> _____ Miles	<b>Temp (°F)</b> 36 F

**Weather Information At The Accident Site (cont.)**

<b>Barometric Point</b> 32 F (°F)	<b>Altimeter Setting</b> 30.03 "Hg	<b>Sky/Lowest Cloud Condition</b> 1. <input type="checkbox"/> Clear 2. <input checked="" type="checkbox"/> Scattered 9,000 Feet AGL 3. <input type="checkbox"/> Broken _____ Feet AGL 4. <input type="checkbox"/> Overcast _____ Feet AGL 5. <input type="checkbox"/> Partial Obscuration 6. <input type="checkbox"/> Obscured
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<b>Wind Information</b> 1. Direction var 2. Velocity 4 Kts 3. Gusts _____ Kts	<b>Restriction To Visibility</b>	<b>Type Precipitation</b>	<b>Intensity Of Precipitation</b> 1. <input type="checkbox"/> Light 2. <input type="checkbox"/> Moderate 3. <input type="checkbox"/> Heavy 4. Specify _____
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**Turbulence (Multiple Entry)**  
 1.  None      2.  Light      3.  Moderate      4.  Severe      5.  Extreme      6.  Clean Air      7.  In Clouds

**Damage To Aircraft And Other Property**

<b>Degree Of Aircraft Damage</b> 1. <input type="checkbox"/> None      2. <input checked="" type="checkbox"/> Minor      3. <input type="checkbox"/> Substantial      4. <input type="checkbox"/> Destroyed	<b>Fire</b> 1. <input type="checkbox"/> Yes 2. <input checked="" type="checkbox"/> No 3. <input type="checkbox"/> In-Flight 4. <input type="checkbox"/> On Ground
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**Description Of Damage To Aircraft And Other Property**  
 Horizontal stabilizer tip

**Mechanical Malfunction Failure**

1. <input checked="" type="checkbox"/> No 2. <input type="checkbox"/> Yes      List The Name Of The Part, Manufacturer, Part No., Serial No. And Describe The Failure	<b>Total Time</b>	
	On Part _____ Hours	At Overhaul _____ Hours

**Collision Accident**

If Collision Accident Occurred, Complete The Information For Other Aircraft

<b>Registration Mark</b>	<b>Aircraft Manufacturer</b>	<b>Aircraft Type/Model</b>	<b>Degree Of Aircraft Damage</b> 1. <input type="checkbox"/> Destroyed      3. <input type="checkbox"/> Minor 2. <input type="checkbox"/> Substantial      4. <input type="checkbox"/> None
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<b>Registered Aircraft Owner</b>	<b>Address</b>
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<b>Pilot Name</b>	<b>Address</b>	<b>Pilot Certificate No.</b>
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**Evacuation Of Aircraft**

**Assistance Received**  
 1.  Outside Person (s)      3.  Slide      5.  Ladder  
 2.  Auxiliary Lighting      4.  Rope      6.  Specify \_\_\_\_\_

**Method Of Exit (State Approximate Number Of Persons Using Each Of The Following)**  
 1. Main Door \_\_\_\_\_      2. Auxiliary Door \_\_\_\_\_      3. Emergency Exit \_\_\_\_\_

**Recommendation (How Could This Accident Have Been Prevented)**

Operator/Owner Safety Recommendation (Optional Entry)

**Additional Flight Crew Members**

**Each Additional Flight Crew Member, Exclusive Of Cabin Attendants Complete The Following Information**

<b>Name</b>	<b>FAA Certificate No.</b>	<b>Address</b> _____ _____	<b>Title</b>
<b>Certificate(s)</b>			
1. <input type="checkbox"/> Student	3. <input type="checkbox"/> Commercial	5. <input type="checkbox"/> Flight Instructor	7. <input type="checkbox"/> Foreign
2. <input type="checkbox"/> Private	4. <input type="checkbox"/> Airline Transport	6. <input type="checkbox"/> Flight Engineer	8. Specify _____

<b>Ratings/Endorsements</b>	<b>Total Flight Time</b>	<b>Flight Time This Accident</b>
-----------------------------	--------------------------	----------------------------------

<b>Name</b>	<b>FAA Certificate No.</b>	<b>Address</b> _____ _____	<b>Title</b>
<b>Certificate(s)</b>			
1. <input type="checkbox"/> Student	3. <input type="checkbox"/> Commercial	5. <input type="checkbox"/> Flight Instructor	7. <input type="checkbox"/> Foreign
2. <input type="checkbox"/> Private	4. <input type="checkbox"/> Airline Transport	6. <input type="checkbox"/> Flight Engineer	8. Specify _____

<b>Ratings/Endorsements</b>	<b>Total Flight Time</b>	<b>Flight Time This Accident</b>
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<b>Name</b>	<b>FAA Certificate No.</b>	<b>Address</b> _____ _____	<b>Title</b>
<b>Certificate(s)</b>			
1. <input type="checkbox"/> Student	3. <input type="checkbox"/> Commercial	5. <input type="checkbox"/> Flight Instructor	7. <input type="checkbox"/> Foreign
2. <input type="checkbox"/> Private	4. <input type="checkbox"/> Airline Transport	6. <input type="checkbox"/> Flight Engineer	8. Specify _____

<b>Ratings/Endorsements</b>	<b>Total Flight Time</b>	<b>Flight Time This Accident</b>
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**Narrative History Of Flight**

Describe What Occurred In Chronological Order, The Circumstances Leading To The Accident And The Nature Of The Accident. Describe The Terrain and Include a Sketch Of Wreckage Distribution If Pertinent. Attach Extra Sheets If Needed. State Point Of Departure, Time Of Departure, Intended Destination And Services Obtained.

Deice boom impacted tail.

I Hereby Certify That The Above Information Is Complete And Accurate To The Best Of My Knowledge

Date Of This Report

12/31/97

Signature Of Pilot/Operator

Signature Of Person Filing Report Other Than Pilot/Operator

1. Signature

*W. Mitch Robbins*

2. Type Or Print Name W. Mitch Robbins

3. Title Manager, Flight Safety

**For NTSB Use Only**

NTSB Accident No.

LAX481A063

Reviewed By NTSB Office Located At

Carroll, CA

Name Of Investigator

*D. Childers*

Date Report Received

1-14-98

From: JDZIMME --NWAOFV1  
To: VLHUGHE --NWAOFV1  
cc: THFAHEY --NWAOFV1

Date and time 12/29/97 10:22:28  
PIREPS --NWAOFV1

From: Jeffrey Zimmerman  
Subject: WEATHER INFO FOR NTSB REPORT

Vikki:

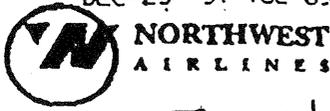
Here are the surface observations for TUS on the time in question (1500Z):

KTUS 230956Z 26004KT 10SM FEW070 01/01 A2996 RMK AO2 SLP139 T00110006=  
KTUS 231056Z 23003KT 10SM SCT043 02/01 A2997 RMK AO2 SLP143 T00170006=  
KTUS 231156Z 17003KT 10SM SCT043 01/00 A2999 RMK AO2 SLP150 70001  
T00060000 10044 20011 51018=  
KTUS 231256Z 16007KT 10SM FEW043 01/M01 A2998 RMK AO2 SLP150  
T00061006=  
KTUS 231356Z 12003KT 10SM FEW043 01/M01 A3002 RMK AO2 SLP163  
T00061006=  
KTUS 231456Z VRB04KT 10SM FEW015 SCT090 02/00 A3003 RMK AO2 SLP166  
T00220000 53013=  
KTUS 231556Z 00000KT 10SM FEW090 03/01 A3006 RMK AO2 SLP174 T00280006=  
KTUS 231656Z 00000KT 10SM FEW025 05/02 A3008 RMK AO2 SLP181 T00500017=  
KTUS 231756Z 26003KT 10SM FEW025 07/02 A3007 RMK AO2 SLP176 T00670017

The forecast which was valid at the time:

KTUS 231130Z  
231212 VRB03KT P6SM VCFG FEW070  
FM1500 VRB03KT P6SM FEW070  
FM2100 33005KT P6SM SCT070  
FM0200 VRB03KT P6SM SKC  
BECMG 0809 14006KT SCT250=

Jeff Zimmerman  
Forecast Techniques Meteorologist  
Phone: 612/726-0319 Mail Stop - MSP/F7050  
\*\*\* Forwarding note from VLHUGHE --NWAOFV1 12/23/97 14:15 \*\*\*  
To: JDZIMME --NWAOFV1



# Air Safety Report

Captain: TIM R. HOWARD Base: MSP Employee No.: 156184  
 First Officer: BURTON B. JONES Base: MSP Employee No.: 090415  
 Second Officer: \_\_\_\_\_ Base: \_\_\_\_\_ Employee No.: \_\_\_\_\_  
 Lead F/A: ANGELA M. ALLINGTON Base: MSP Employee No.: 200579  
 Dispatcher: GREG GANE Base: MSP Employee No.: \_\_\_\_\_

Other Crew: CONNIE JOHNSON, JAVELL MATSON  
 Date: 23 Da DEC Mo 97 Yr Time: 1450 (UTC)

Flight No.: 556 From: TUS To: MSP Divert To: N/A  
 Location/Fix: TUS GATE NASA ASRS Filed? Y or N (Circle)

A/C Type: MD-80 A/C No.: 9302 Logbook Ref: 7281658

Emergency Declared? Y or (N) (Circle)  
 Flight Phase: (Circle One) (Parked) Pushback/Powerback/Taxi-Out/Takeoff/Initial Climb/Climb/Cruise/Holding/Descent/Approach/Landing/Taxi-In/Towing

Altitude/Flt Level: \_\_\_\_\_ ft Runway/Taxiway/Gate ID: GATE 10

IAS/Mach: \_\_\_\_\_ kts Runway/Taxiway Condition: Dry/Wet/Ice/Snow/Slush

Fuel Jettisoned: \_\_\_\_\_ lbs

Configuration: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
 Auto Pilot / Auto Thrust / FLIGHT SAFETY DIVISION Gear / Flap / Slat

Significant Wx: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
 Rain / Snow / Icing / Turbulence

Actual Wx: 160/07 / CLEAR / \_\_\_\_\_ / -1 / 29.98  
 Wind / Vis / Ceiling / Temp / QNH

Description Of Incident: WHILE PARKED AT GATE IN TUSCON PRIOR TO DEPARTURE AS PASSENGERS WERE BOARDING CONTRACT DE-ICE CREW BEGAN FROST REMOVAL. TUS AGENT PREVIOUSLY STATED CREW WOULD DE-ICE LEFT WING, TAIL, RT WING AND THEN MOVE JET BRIDGE TO WORK ON FUSELAGE AND FORWARD A/C. FELT LARGE JOLT TO A/C. F/O AND I RAN OUT TO ASSESS LOCATION AND EXTENT OF DAMAGE.

Other Information: DISCOVERED THAT DE-ICE BOOM/BUCKET HAD CONTACTED FORWARD LEFT <sup>HORIZONTAL</sup> STABILIZER INFLUENCING DAMAGED STAB AND ELEVATOR. PERSON FROM DE-ICE CREW IN BUCKET HAD FALLEN TO GROUND. ARFF WAS CALLED IMMEDIATELY, THEY ARRIVED WITHIN SEVERAL MINUTES. RAMP WAS DRY.

Signature: TIM R. HOWARD

Check if Flight Safety Response is requested.

PILOTS/DISPATCHERS: Fill out report in as much detail as possible. Turn report in at Base Office if at pilot base, or hand to station agent if at outlying station immediately following the flight.

If the event is an urgent safety of flight matter per FOM 15.55.1 contact Flight Safety at 1-800-NWA-SAFE or Dispatch at 1-800-NWA-DISP.

STATION AGENTS: FAX to the Flight Safety Office, at 612-726-8292 and send original through company mail to Department (mail stop) N7180, Minneapolis.

JD 12-23 10:35 AM

<b>National Transportation Safety Board</b>		Time	Date
Record of <input type="checkbox"/> INTERVIEW <input type="checkbox"/> CONFERENCE OR <input type="checkbox"/> TELEPHONE CALL		1109 mst	05/28/98
Name(s) of Person(s) contacted or in conference and location		Routing	
		Symbol	Initials
Carl Blumenstein and Mitch Robbins			
Northwest Airlines, Ground Ops Education and Flight Safety Dept.			
Minneapolis, MN			
LAX98IA063 incident location; Tucson, AZ on 12/23/97			
<b>Subject</b> <b>QUESTIONS ARE LISTED ON SEPARATE SHEET:</b> <ol style="list-style-type: none"> <li>The Purchasing Department gave the audit form to Carl. The audit basically questions whether the vendor deiced the airplane to the crew's satisfaction. They review the quality of the service provided as compared to the dollar value spent. Purchasing sends out the memo every June 1 to be completed by the station managers. If a station manager is unhappy with the service provided, purchasing then reviews the contract.</li> <li>The special audit of the Tucson facility was performed on January 22, 1998. The facility Cleanliness auditors were sent out to perform the audits on eight stations, Tucson was one of the eight stations reviewed. NWA will provide us with a copy of the special audit for Tucson.</li> <li>The special audit looked at record keeping, the person in charge of the station and also the vendor. As a result of the special audits, NWA said they are going to review vendors and stations on an on-going basis. Carl said that they are trying to get the manpower to perform the audits. He explained that right now, he will most likely be the only one going out to do the audits, and he will have to rotate through all the stations. This is a recent change, which was developed in January 1998. Carl will get us a copy of their new audit form.</li> <li>See audit form.</li> <li>The policy referenced on page 5 of the ground deicing operations plan requires the airline to use specific fluids, etc. It mainly addresses FAR Part 121.629.</li> <li>Carl explained that NWA "standards" refers to the deicing policy which is identified in the NWA Operations Manual.</li> <li>NWA reported that they review the contents of the training handbook with employees during the yearly deicing/anti-icing training session. He said every section of the handbook is covered with the "train-the-trainers" and then mentioned in the 8-hour yearly course. He said most of the material mentioned is "safety stuff" which is how NWA chose to provide deicing for it's own employees. He said that NWA requires NWA employees to abide by the contents in the handbook, but that they cannot require contractors to abide by it, per see. He said that they "try to work out any inconsistencies with the vendors" and if a vendor has a question regarding equipment or procedures, he should call either the training department or safety department for clarification. The training is not broken out by section, but is all encompassed in the NWA Record of Training Form, GS-38.</li> </ol>			

8. Carl said he audits every station on a yearly basis and hand enters into the computer a record of each station having completed the required training. He said he could print out a form, which will indicate any station, which has not completed the required deicing training. He said that copies of the current year's FAA Approved Ground deicing and anti-icing operations plan and winter operations manual would be given to each station. Each employee is given a copy of the training handbook upon completion of the 8-hour course. Carl said he had no knowledge of whether the corporate entity of the respective vendor companies were provided with a copy of the ops manual, ground operations plan or training handbook.

Tucson has been designated by NWA as a "winter station." He said that he downloads such things as the 5-year history of the National Weather service, temperature fluctuations and dewpoint ranges for each station to determine its designation. He said that frost is a good indicator of whether a station will be designated as a winter station. He also mentioned that the determination of a winter vs. non-winter station is equipment specific and said that NWA has designated anywhere a DC-9 fly's as a "winter station."


Conclusions, Action Taken or Required

Date

May 28, 1998

Title

Air Safety Investigator

Signature

Debbie Childress

<b>National Transportation Safety Board</b>		Time	Date
Record of <input type="checkbox"/> INTERVIEW <input type="checkbox"/> CONFERENCE OR <input checked="" type="checkbox"/> TELEPHONE CALL		11:24 AM	05/27/98
Name(s) of Person(s) contacted or in conference and location		Routing	
		Symbol	Initials
Mitch Robbins			
Northwest Airlines Flight Safety Department			
Minneapolis, MN			
LAX98IA063, Accident Date 12/23/97, Tucson, AZ			
<p>Subject: Mitch Robbins called me to tell me that the Winter Operations Manual was special ordered and that he will forward me the entire manual as soon as he receives it. He said the entire manual is ours to keep.</p> <p>He explained that the audits that were referred to in the 1996-1997 System Deicing/Anti-Icing Training Handbook were not "technically an audit program." He said that the audit really addresses "the quality of the services that were provided to the crew; i.e., were the pilots happy with the quality of the services that were provided."</p> <p>He said that the audit was a customer service audit, not a safety audit.</p> <p>There was a "special" audit that was done after the "event" in Tucson. He said that the audit was performed by the ground operations and deicing training staff. Mitch said to his knowledge, they didn't find anything out of the ordinary. He stated that the team had reviewed the training records and found them all up to date.</p> <p>Mitch is setting up a conference call with Carl Blumenstein, the Specialist Ground Operations Education/System Deicing-Winter Operations.</p>			
Digest			
Conclusions, Action Taken or Required			
Date	Title	Signature	
May 27, 1998	Air Safety Investigator	Debbie Childress	

National Transportation Safety Board		Time	Date
Record of <input type="checkbox"/> INTERVIEW <input type="checkbox"/> CONFERENCE OR <input type="checkbox"/> TELEPHONE CALL			12/30/98
Name(s) of Person(s) contacted or in conference and location		Routing	
		Symbol	Initials
Larry Ganse			
Northwest Airlines Flight Safety Manager			
Telephone conversation from MSP			
LAX98IA063 Accident location; Tucson, AZ on 12/23/97			
<p><b>Subject</b></p> <p>Larry called to tell me that he was in the process of faxing me the vendor's who are under contract to deice NWA aircraft and their locations. He said QA checks are performed at each station but that the airline looks at maintenance contractors and refueling contracts. He specifically stated that they do not perform QA checks on cleaning services, catering services or de-icing/anti-icing services.</p> <p>He stated again that the Corporate Safety/Health Department sends OSHA material to any Northwest Airline department/individual who may need the information but that they do not distribute any OSHA rules to a contract facility such as Elsinore Aerospace.</p> <p>He said that the lawyers at Northwest told him that the "official Northwest position was that the requirements listed in the Ground Operations manual only applied to Northwest Airlines Employees." He also said that it was legal's position that the airline will meet the applicable FAR's. not that the contractor's will meet Northwest Airlines standards, as stated in the Ground Operations manual and the Northwest Airlines training handbook.</p>			
<b>Conclusions, Action Taken or Required</b>			
<b>Date</b>	<b>Title</b>	<b>Signature</b>	
May 12, 1998	Air Safety Investigator	Debbie Childress	

<b>National Transportation Safety Board</b>		Time	Date
Record of <input checked="" type="checkbox"/> INTERVIEW <input type="checkbox"/> CONFERENCE OR <input type="checkbox"/> TELEPHONE CALL		1030	12/24/97
Name(s) of Person(s) contacted or in conference and location		Routing	
		Symbol	Initials
Mr. Larry Ganse			
Northwest Airlines Flight Safety Manager			
Interview location, Crossroads Courtyard by Marriott, Tucson, AZ			
LAX98IA063 Accident location; Tucson, AZ on 12/23/97			
<p>Digest:</p> <p>Larry explained that Northwest Airlines does a "diligence check" when an initial contract is signed for deicing services with an independent contractor. During this diligence check, he said they make sure that the contractor has the appropriate equipment and training. He said that there is "very little oversight after the initial contract is signed." He also said that Northwest did not check this specific contractor (Elsinore) this year. He explained that someone from Technical Ops will periodically perform Quality Assurance checks of various stations. He said that Northwest performs their own deicing at about 1/2 of the stations that they utilize and the other 1/2 is contracted out. He said that the Corporate Safety/Health Department takes care of the OSHA procedures, but that they only were concerned with Northwest Airlines compliance with the OSHA rules. The Safety/health Department did not perform any audit's of independent contractors. He stated that the contracts are put together by the Manager of Regulatory Support for Ground Operations, Mr. Joe Fillar.</p> <p>Larry ended the interview by promising to follow-up on several items including a list of the contract stations that Northwest Airlines uses and if Northwest Airlines monitor's deicing procedures in Tucson.</p>			
Conclusions, Action Taken or Required			
Date	Title	Signature	
May 12, 1998	Air Safety Investigator	Debbie Childress	



# INDUSTRIAL COMMISSION OF ARIZONA

Division of Occupational Safety and Health

P.O. BOX 19070

PHOENIX, AZ 85005

Phone: (602)542-5795 FAX: (602)542-1614

Tucson Office Phone: (602) 628-5478 FAX: (602)322-8008

## Citation and Notification of Penalty

To:

Elsinore Aerospace Services  
P.O. Box 23338  
Tucson, AZ 85734

Inspection Number: R0204 - 126999606

Inspection Date(s): 12/23/97 - 12/23/97  
Issuance Date: 03/13/98

Inspection Site:

7250 South Tucson Blvd.  
Tucson, AZ 85700

*The violation(s) described in this Citation and Notification of Penalty is (are) alleged to have occurred on or about the day(s) the inspection was made unless otherwise indicated within the description given below.*

An inspection of a place of employment has revealed conditions which we believe do not comply with the provisions of the Arizona Occupational Safety and Health Act. The nature of the alleged violation(s) is described in the enclosed Citation(s) with reference to applicable standards, rules and provisions of the said Act. Furthermore, you are hereby notified, or will soon be notified, whether or not penalty(ies) will be proposed as a result of the cited violation(s). You must abate the violations referred to in this Citation by the dates listed and pay the penalties, unless within fifteen (15) working days (excluding weekends and legal holidays) from your receipt of this Citation and Notification of Penalty you mail a notice of contest to the Division of Occupational Safety and Health at the address shown above.

**Posting** - The law requires that a copy of this Citation and Notification of Penalty be posted immediately in a prominent place at or near the location of the violation(s) cited herein, or , if it is not practicable because of the nature of the employer's operations, where it will be readily observable by all affected employees. This Citation must remain posted until the violation(s) cited herein has (have) been abated, or for 3 working days (excluding weekends and Legal holidays), whichever is longer. The penalty dollar amounts need not be posted and may be marked out or covered up prior to posting.

**Informal Conference** - An informal conference is not required. However, if you wish to have such a conference you may request one with the Supervisor during the 15 working day contest period. During such an informal conference you may present any evidence or views which you believe would support an adjustment to the citation(s) and/or penalty(ies).

If you are considering a request for an informal conference to discuss any issues related to this Citation and Notification of Penalty, you must take care to schedule it early enough to allow time to contest after the informal

conference, should you decide to do so. Please keep in mind that a written letter of intent to contest must be submitted to the Director within 15 working days of your receipt of this Citation. The running of this contest period is not interrupted by an informal conference. Be sure to bring to the conference any and all supporting documentation of existing conditions as well as any abatement steps taken thus far. If conditions warrant, we can enter into an informal settlement agreement which amicably resolves this matter without litigation or contest.

**Right to Contest** - You have the right to contest this Citation and Notification of Penalty pursuant to A.R.S. Section 23-417. You may contest all citation items or only individual items. You may also contest penalties and/or abatement dates without contesting the underlying violations. Unless you inform the Director in writing that you intend to contest the citation(s) and/or penalty(ies) within the 15 working day period provided by law, the citation(s) and the penalty(ies) shall be deemed a final order of the Commission and not subject to review by any court or agency.

If an employer contests the citation, the abatement period specified therein does not begin to run until the date of the Commission's final order in the case provided the employer initiated his contest in good faith and not solely for delay or avoidance of penalties.

**Penalty Payment** - Penalties are due within 15 working days of receipt of this notification unless contested. Please make your check or money order payable to "Industrial Commission of Arizona" and indicate on your remittance the Inspection Number found on Page 1 of this notification.

**Notification of Corrective Action** - For violations which you do not contest, in accordance with A.R.S. 23-417(C), correction of alleged violations must be reported to the Director in writing within the time frame set forth in the Citation(s). Please specify the abatement steps you have taken for each violative condition and related dates, and provide adequate supporting documentation, e.g., drawings or photographs of corrected conditions, purchase/work orders related to abatement actions, air sampling results, etc. For violations having an abatement date of more than thirty days, a written progress report should be submitted each thirty days. The progress report should detail what has been done, what remains to be done, and the time needed to fully abate each such violation. **When the violation is fully abated, the Director must be so advised in writing.**

A followup inspection may be made for the purpose of ascertaining that the employer has posted the citation(s) as required by the Act and corrected the alleged violations. Failure to correct an alleged violation within the abatement period may result in further penalties of up to \$7000 for each day each alleged violation has not been corrected. Timely correction of an alleged violation does not effect the initial penalty.

**Employer Discrimination Unlawful** - The law prohibits discrimination by an employer against an employee for filing a complaint or for exercising any rights under this Act. An employee who believes that he/she has been discriminated against may file a complaint no later than 30 days after the discrimination occurred with the Division of Occupational Safety and Health at the address shown above.

**Employer Rights and Responsibilities** - The Act provides that whoever knowingly gives false information is guilty of a class 2 misdemeanor.

**Notice to Employees** - The law gives you or your representative the opportunity to object to any abatement date set for a violation if he/she believes the date to be unreasonable. The contest must be mailed to the Division Director, P. O. Box 19070, Phoenix, Arizona, 85005-9070 within the abatement period allowed in the citation or within 15 working days from the date of receipt of the citation, whichever is shorter.

conference, should you decide to do so. Please keep in mind that a written letter of intent to contest must be submitted to the Director within 15 working days of your receipt of this Citation. The running of this contest period is not interrupted by an informal conference. Be sure to bring to the conference any and all supporting documentation of existing conditions as well as any abatement steps taken thus far. If conditions warrant, we can enter into an informal settlement agreement which amicably resolves this matter without litigation or contest.

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Industrial Commission of Arizona  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

The alleged violations below have been grouped because they involve similar or related hazards that may increase the potential for injury resulting from an accident.

**Citation 1 Item 2a** Type of Violation: **Serious**

29 CFR 1910.67(c)(2)(ii): Employees were not trained to operate an aerial lift:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ:  
Employees de-icing a McDonald Douglas Super 80 were not trained on the safe operation of an aerial lift, thereby subjecting the employee to risk serious injury or death when struck by aircraft parts and or falling 30' to the ground.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 1500.00

**Industrial Commission of Arizona**  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 1 Item 1 Type of Violation: Serious**

A.R.S. 23-403.A.: The employer did not furnish to each of his employees employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to his employees in that communications devices were not provided for employees who had to communicate with each other while performing de-icing operations around Aircraft noise:

(a) Aircraft parking area, 7250 South Tucson Blvd., Tucson, AZ: The employer did not furnish to each of his employees, employment and a place of employment that were free from recognized hazards that were causing or were likely to cause serious physical harm, or death to his employees in that employees were using a Time Manufacturing Aerial Tower, Serial number G18502 mounted on a 1985 Chevrolet Model Number CP1442 in a high noise area without communications devices during aircraft de-icing which is an operation that which conflicts with recognized practices for Vehicle Mounted Elevating and Rotating Aerial Devices. Such as the practice listed in ANSI A92.2-1900 section 8.13.3(3) which states, "Before and during driving, the driver shall maintain communications between the driver and the operator. This was evidenced by employees on the ground not being able to convey information on the need to move a Aerial Lift Truck during de-icing operations, thereby subjecting the employee to the risk of being struck by the aircraft and or falling 30' to the ground.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 1500.00

Industrial Commission of Arizona  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 1 Item 2b** Type of Violation: **Serious**

29 CFR 1910.67(c)(2)(viii): An aerial lift truck was moved while the boom was elevated in a working position with men in the basket:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ: Employees involved in de-icing operation of a McDonald Douglas Super 80 were transported to various positions around the aircraft with the bucket in the elevated working position, subjecting the employee to the risk of serious injury or death by being struck and or falling 30' to the ground.

Date By Which Violation Must be Abated: 03/17/98

**Citation 1 Item 2c** Type of Violation: **Serious**

29 CFR 1910.67(c)(2)(ix): Lower controls did not provide for overriding the upper controls of an aerial lift:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ: Controls in the aerial lift were not overridden so that elevated employees could not change the position of the bucket while the vehicle was in motion, subjecting them to the risk of serious injury or death should they get struck by the protruding parts of the aircraft and or fall 30' to the ground.

Date By Which Violation Must be Abated: 03/17/98

**Industrial Commission of Arizona**  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

The alleged violations below have been grouped because they involve similar or related hazards that may increase the potential for injury resulting from an accident.

**Citation 1 Item 3a Type of Violation: **Serious****

29 CFR 1910.132(a): Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered:

In the alternative:

29 CFR 1910.67(c)(2)(v): A body belt was not worn with a lanyard attached to the boom or basket when working from an aerial lift:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ:  
Employees did not wear a body belt and lanyard when de-icing a McDonald Douglas Super 80 aircraft from an aerial lift, thereby the employee was subjected to serious injury or death from fall 30 feet to the ground.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 5000.00

Industrial Commission of Arizona  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 1 Item 2d Type of Violation: Serious**

29 CFR 1910.67(c)(2)(viii): Before moving an aerial lift for travel, the boom was not inspected to see that it was properly cradled:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ: An employee was transported inside the bucket after de-icing a McDonald Douglas Super 80 aircraft while the aerial lift was in the raised working position and not in the cradled position with the lower controls overriding the upper, thereby subjecting the employee to a serious fall hazard of 30' to the ground and to being struck by portions of the aircraft that were in the direction of travel of the vehicle.

**Date By Which Violation Must be Abated:** 03/17/98

Industrial Commission of Arizona  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 1 Item 3b** Type of Violation: **Serious**

29 CFR 1910.132(d)(1): The employer did not assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ: The employer did not make an assessment on the need to provide personal protective equipment for employees who de-ice aircraft at heights up to 35', thereby the employee was subjected to serious injury or death from fall 30' to the ground when de-icing a McDonald Douglas Super 80.

Date By Which Violation Must be Abated: 03/17/98

**Citation 1 Item 3c** Type of Violation: **Serious**

29 CFR 1910.132(f)(1): The employer did not provide training as outlined in 1910.132(f)(1)(i) through (v) to each employee required to use personal protective equipment:

(a) Airplane parking pad, Northwest Airlines Gate, 7250 South Tucson Blvd., Tucson, AZ: Employees were not trained on when and how to properly wear a harness and lanyard while de-icing a McDonald Douglas Super 80 from an aerial lift, thereby the employees were subjected to serious injury or death from a fall 30' to the ground.

Date By Which Violation Must be Abated: 03/17/98

**Industrial Commission of Arizona**  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 1 Item 4 Type of Violation: **Serious****

29 CFR 1910.212(a)(1): Machine guarding was not provided to protect operator(s) and other employees from hazard(s) created by:

(a) Aerial lift truck, 7250 South Tucson Blvd., Tucson, AZ: Employees working around an unguarded F.E. Meyers water pump used for de-icing of aircraft were subjected to serious injury when accessing equipment and or coming in contact with the rotating one inch drive belt wrapped around an 18 inch and a 4 inch pulleys which were 12" from the floor for the truck.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 750.00

**Industrial Commission of Arizona**  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 2 Item 1 Type of Violation: Nonserious**

29 CFR 1910.27(b)(1)(ii): The distance between rungs, cleats, or steps of fixed ladders exceeded 12 inches:

(a) Aerial Lift Truck, 7250 South Tucson Blvd., Tucson, AZ: The distance between the rungs of a fixed ladder that was welded to the bumper of the vehicle was 16", subjecting employees to an irregular when accessing the bucket of the aerial lift.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 0.00

**Citation 2 Item 2 Type of Violation: Nonserious**

29 CFR 1910.27(c)(6): The step across distance from the nearest edge of fixed ladder(s) to the nearest edge of equipment or structure was greater than 12 inches:

(a) Aerial lift truck, 7250 South Tucson Blvd., Tucson, AZ: Employees were required to step across 27" from the top step of a fixed ladder when climbing into an aerial lift, subjecting the employee to a fall hazard of 6' 5" to the ground below.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 0.00

**Industrial Commission of Arizona**  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
Issuance Date: 03/13/98



**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 2 Item 3 Type of Violation: **Nonserious****

29 CFR 1910.303(b)(2): Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

(a) Aerial lift truck, 7250 South Tucson Blvd., Tucson, AZ: Employees performing de-icing of a MD Super 80 were plugging a water heater into a four way junction box which was installed onto a flexible cord in a pendant application which was not in accordance with instructions included in the listing.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 0.00

**Citation 2 Item 4 Type of Violation: **Nonserious****

29 CFR 1910.305(g)(2)(iii): Flexible cords were not connected to devices and fittings so that tension would not be transmitted to joints or terminal screws:

(a) Underneath table, exit to flight line, main office, 7250 South Tucson Blvd., Tucson, AZ: Flexible cord connected to a two way electrical outlet showed signs of strain relief problems in that the outer insulation had pulled apart from the plug exposing the inner insulated wires, thereby exposing employee to a possible electrical hazard.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 0.00

See pages 1 through 2 of this Citation and Notification of Penalty for information on employer and employee rights and responsibilities.

Industrial Commission of Arizona  
Division of Occupational Safety and Health

Inspection Number: 126999606  
Inspection Dates: 12/23/97 - 12/23/97  
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**Citation and Notification of Penalty**

Company Name: Elsinore Aerospace Services  
Inspection Site: 7250 South Tucson Blvd., Tucson, AZ 85700

**Citation 2 Item 5 Type of Violation: Nonserious**

29 CFR 1910.1200(h): Employees were not provided information and training as specified in 29 CFR 1910.1200(h)(1) and (2) on hazardous chemicals in their work area at the time of their initial assignment and whenever a new hazard was introduced into their work area:

(a) 7250 South Tucson Blvd., Tucson, AZ: The employer did not furnish information and training to employees who were potentially exposed in the workplace to hazardous chemicals, substances and/or materials such as aircraft de-icing fluid, ROL 500 B-4 and janitorial supplies.

Date By Which Violation Must be Abated:	03/17/98
Assessed Penalty:	\$ 0.00

*Derek Mullins*

Director

Industrial Commission of Arizona  
Division of Occupational Safety and Health  
P.O. BOX 19070  
PHOENIX, AZ 85005  
Phone: (602)542-5795 FAX: (602)542-1614



## INVOICE/ DEBT COLLECTION NOTICE

**Company Name:** Elsinore Aerospace Services  
**Inspection Site:** 7250 South Tucson Blvd., Tucson, AZ 85700  
**Issuance Date:** 03/13/98  
**Summary of Penalties for Inspection Number 126999606**

Citation 1, Serious	= \$	8750.00
Citation 2, Nonserious	= \$	0.00
<b>TOTAL PENALTIES</b>	<b>= \$</b>	<b>8750.00</b>

To avoid additional charges, please remit payment promptly to this Office for the total amount of the uncontested penalties summarized above. Please make your check or money order payable to: "Industrial Commission of Arizona" within fifteen (15) working days and indicate on your remittance the Inspection Number found on Page 1 of this Notification.

ADOSH does not agree to any restrictions or conditions or endorsements put on any check or money order for less than full amount due, and will cash the check or money order as if these restrictions, conditions, or endorsements do not exist.

If you fail to make payment within thirty (30) days following receipt of this notice, this matter will be referred to our Legal Department and a D & S judgement lien will be filed in Superior Court. Should that happen you will incur additional liability including collection costs, attorney fees and interest on the judgement.

**Delinquent Charges.** A debt is considered delinquent if it has not been paid within one month (30 calendar days) of the penalty due date or if a satisfactory payment arrangement has not been made.

*Derek Mullins*

Director

Date

3/13/98



# Inspection Report

Tue Feb 3, 1998 7:31am

Rpt ID	Assignment Nr.	CSHO ID	Supervisor ID	Inspection Nr.	Opt. Insp. Nr.
0950411	0	R0204	M0097	126999606	0074

Establishment Name		Elsinore Aerospace Services			
Site Address	7250 South Tucson Blvd Tucson, AZ 85700	Site Telephone	(520) 573-8349		
Mailing Address	P.O. Box 23338 Tucson, AZ 85734	Telephone	(520) 573-8349		
Controlling Corp		Employer ID			
Ownership	A Private Sector	City	0530	County	019
Legal Entity (State Only)		Previous Activity (State Only)			

### Related Activity

Type	Number	Satisfied	Type	Number	Satisfied
A. Accident	360186985				

Employed in Establishment	10	Advance Notice?	No	Category	S. Safety
Covered By Inspection	3	Union?	No	Primary SIC	4581
Controlled By Employer	10	Walkaround?	No	Secondary SIC	
		Interviewed? (State only)	Yes	Inspected (State Only)	

OSHA-200 Log Entries	Not Available	Year	1996	LWDFI Rate	
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Inspection Type	A. Fatality/Catastrophe	Reason No Inspection	
Scope of Inspection	B. Partial Inspection		
Classification			

Anticipatory Warrant Served?	No	Denial Date	Date ReEntered	Date ReDenied	ReEntered
Anticipatory Subpoena Served?	No				

Entry	12/23/97	10:00	First Closing Conference	12/23/97	13:00
Opening Conference	12/23/97	10:25	Second Closing Conference	01/06/98	13:00
Walkaround	12/23/97	10:40	Exit	12/23/97	13:30
Days On Site	2		Case Closed		
			No Citations Issued		

Type	ID	Optional Information

CSHO Signature	<i>Carlos Rodriguez Alfonso</i>	Date	2-3-98
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*Arturo D. Moulon*      2/5/98



# Inspection Narrative

Tue Feb 3, 1998 7:31am

Inspection Nr.	126999606
Opt. Case Number	0074

Establishment Name		Eisinore Aerospace Services	
Legal Entity		Type of Business	Aircraft Servicing

Additional Citation Mailing Addresses	

Organized Employee Groups	

Authorized Employee Representatives	

Employer Representatives Contacted			
Name	Title	Function	Walk Around?
Randy Butler	City Manager, Tucson Air	I C O M	Y

Other Persons Contacted	
Douglas Kuhl(520)682-8179 Aircraft Mechanic - 4945 N Lakayucca Tucson, AZ 85743	John M. Sweeney(520)628-6644 Aircraft Mechanic - 17675 El Cerrito Lane Marana, AZ 85653

Entry	12/23/97	10:00	First Closing Conference	12/23/97	13:00
Opening Conference	12/23/97	10:25	Second Closing Conference	01/06/98	13:00
Walkaround	12/23/97	10:40	Exit	12/23/97	13:30
			Case Closed		

Penalty Reduction Factors					
Size	60	Good Faith	0	History	10

Followup Inspection?	Y	Reason	Serious Citations Issued
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**THE INDUSTRIAL COMMISSION OF ARIZONA**  
**Occupational Safety and Health Division**  
**NARRATIVE**

Date: 01/16/98

Inspection Number: 126999606

Location: 7250 South Tucson Blvd, Tucson AZ 85700

Name of Company: Elsinore Aerospace Services LP  
P.O. Box 23339  
Tucson AZ 85734

On December 23, 1997 our office was notified by Dan Morelos, Communications Supervisor, Tucson Airport Authority about an accident which occurred on a Northwest Airlines Aircraft Parking Area. The accident involved the fall of an employee from an aerial lift bucket that was used in performing De-icing operations. I was assigned by the Tucson Supervisor, Art Morelos, to perform the investigation and responded immediately. Upon arrival to the site I was greeted by Sergeant Ivanoff, Badge 58, Airport Police. At the time of my arrival I was notified by Sgt Ivanoff that the victim was still at the scene and that the other employee who was driving the aerial lift truck was being provided counseling at the Fire Station. The following information was obtained from the investigation.

I: Victim Information:

Name: Ralph Edward Wilkinson  
Add:  
SS#.  
DOB: \_\_\_\_\_  
Married: Yes  
Job Title: Aircraft Mechanic  
Injury Type: Struck By Fatal.

II: Employer Name and Information:

Name: Elsinore Aerospace Services LP  
Add: P.O. Box 23339, Tucson AZ 85734  
Ph#: (520) 573-8349  
Physical Address: 7250 S. Tucson Blvd, Tucson AZ 85700  
Contact: Randy Butler, (Manager)

**THE INDUSTRIAL COMMISSION OF ARIZONA**  
**Occupational Safety and Health Division**  
**NARRATIVE**

Date: 01/16/98

Inspection Number: 126999606

Location: 7250 South Tucson Blvd, Tucson AZ 85700

Name of Company: Elsinore Aerospace Services LP  
P.O. Box 23339  
Tucson AZ 85734

III: Occurrence Information:

Date of Occurrence: 12-23-97

Time of Occurrence: 0740-0745 a.m.

Type of Work: De-icing McDonald Douglas Super 80 Aircraft.

Location of Occurrence: Northwest Aircraft Parking Area,  
Tucson International Airport.

IV: Persons Contacted:

- 1) Randy Butler, Tucson Manager, Elsinore Aerospace Services
- 2) Sergeant Ivanoff, Badge 58, Tucson Airport Police.
- 3) Detective Sergeant Keith Kramer, Tucson Airport Police.
- 4) Debbie Childress, National Transportation Safety Board.
- 5) Douglas Kuhl, Aircraft Mechanic, Elsinore Aerospace.
- 6) John M. Sweeney, Aircraft Mechanic, Elsinore Aerospace.
- 7) Richard A. Barreda, Director, Kolb, Stewart & Associates.
- 8) Ron Penning, Medical Examiner, Pima County

V: Summary of Events:

On 23 December 1997 between 07:30 to 07:45 a.m. two employees of Elsinore Aerospace Services were assigned to de-ice a MD Super 80 aircraft Number 9302 at the Northwest parking area. The aircraft was to be flown after de-icing was completed. Mr Ralph E. Wilkinson and Mr Douglas Kuhl were assigned to perform the operation. The victim, Mr Wilkinson, was assigned to de-ice the aircraft from the bucket on the aerial lift and Mr Kuhl was assigned to operate and move the aerial lift

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P.O. Box 23339  
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truck. The work was performed in order that the Northwest Airlines departure time could be met. The outside temperatures were below freezing and de-icing was required. While inside the bucket Ralph Wilkinson de-iced the front wings of the aircraft without any incident. Mr Kuhl received a beep from United Airlines that they were in need of de-icing an aircraft that was to depart at 7:45 Am. Douglas Kuhl decided to stop the de-icing of the Northwest Aircraft and perform the operation on the United Aircraft since the Northwest Aircraft did not depart until 8:00 Am. Mr Wilkinson was motioned to bring the boom back down and verbal instruction were given on where they were going. Mr Kuhl entered the vehicle and started to drive to the United Aircraft without locking out the upper controls. Mr Wilkinson inadvertently raised the boom prior to going underneath the tail section of the MD Super 80. The boom section struck the tail wing causing damage to the aluminum and in turn the tail wing struck Mr Wilkinson in the arms and chest area. Mr Kuhl then stopped and exited the truck finding Mr Wilkinson on the ground at the rear. Mr Wilkinson had fallen 30 feet to the ground. Mr Kuhl then went to notify the proper authorities. Tucson Airport Authority Emergency Service Organizations responded to the scene and attempted to provide resuscitation with negative results.

Witness statements were reviewed in order to verify what type of fall restraint/arrest system the victim might have been wearing. It is apparent that Mr Wilkinson was not wearing any device that would prevent him from being ejected from the bucket and falling 30 feet to the ground. The harness was still attached to the boom when it was brought back down to the cradled position. Had it been worn it would have been in a belt like fashion since the harness was tied in a knot to the D-ring of the boom. The damaged condition of the harness was such

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Name of Company: Elsinore Aerospace Services LP  
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that it was a dangerous item to wear. The webbing of the harness was damaged/deteriorated in a manner that a three inch section of the webbing no longer met manufactured specifications. Also, there was no lanyard available or attached to the harness.

The opinion published by the Medical Examiner was that the victims' death was due to internal injuries as a result of crushing of the chest and abdomen. There was also evidence of blunt force trauma of the head. Taking into consideration the results of Medical Examiner one can summarize that the contributing cause of death was as a direct result of the victim being struck by the rear tail stabilizer of the aircraft.

VI: Findings:

The scene of the accident had been preserved and the Tucson Airport Authority Police were investigating the accident. The victim was still on site and the boom was in the raised position. Damage to the left tail wing was evident. A damaged fall protection device was hanging from the boom of the aerial lift. Several photographs were taken while the victim was still in place and the lift was examined in order to visualize and comprehend the operation prior to the accident.

During the investigation there were several key factors found that contributed to the accident but it should be noted that Mr Wilkinson and Kuhl were working alone without any supervision and that the supervisor had not come in to work that morning. The supervisor normally acts as the spotter for the employees, thereby, ensuring that the de-icing and traveling around aircraft is accomplished as directed.

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Name of Company: Elsinore Aerospace Services LP  
P.O. Box 23339  
Tucson AZ 85734

(1) The first key factor noted was the commencement of de-icing operations without the employer conducting a hazard assessment addressing the need to protect employees from the fall hazards of the entire project with Personal Protective Equipment. Elsinore Aerospace Services had instructed their personnel to use the fall protection device when de-icing aircraft. The device was a damaged harness that had been installed onto the boom 6 year prior to the accident. It was attached to the D-ring of the Boom in a knotted fashion and worn as a belt. A lanyard was not available. It was possible that if an assessment had been made that the damaged harness would have been replaced with a properly configured harness and lanyard.

(2) Training and instructions given to employees on how to accomplish the work and wear of equipment was often varied. When interviewed, one employee would explain the procedure by saying that he was instructed to wear the belt and that training had been provided by the Airlines on which portions of the aircraft needed to be De-iced. Another might say, the only training that was received was wear the appropriated fall restraint system and De-ice the aircraft following the sequence shown in the video. Training on the hazards that were involved and on how to mitigate those hazards was not performed. Employees were not aware that prior to travel that the upper controls needed to be lockout to prevent the boom from moving during transport.

(3) Elsinore Aerospace Services had a Supervisor, Randy Butler, that normally acts as the spotter for an operation of this type. During the morning of the accident he was not on site to supervise all facets of the De-icing operation, however, Mr Wilkinson and Mr Kuhl continued to De-ice aircraft. Communications Devices were not available for both the

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Name of Company: Elsinore Aerospace Services LP

P.O. Box 23339

Tucson AZ 85734

driver and the bucket operator to use when a spotter was not present. Mr Wilkinson had been hired to work December 1996 and Mr Kuhl had been working for the company since 1990. Both individuals had been observed, by Mr Butler, De-icing an aircraft without incident just one week prior to the accident. Both individual were Aircraft Mechanics who could be counted on to work without any close supervision. The fact that a spotter was not available during the morning of the accident and that employees did not communicated with each other contributed to the accidental collision of the boom with the tail wing of the aircraft.

(4) Inspection of Personal Protective Equipment had not been performed as outlined in industry standards such as ANSI A10.14-1975, Requirements for safety belts, harnesses, lanyards, lifelines, and drop lines for construction and industrial use. Section 4.2 Users' Inspections: requires that "Each belt shall be visually inspected for defects prior to each use. The assembly shall be inspected according to the manufacturer's recommendations not less often than twice annually. The date of each such Inspection shall be recorded on an inspection tag that shall be permanently attached to the belt." No inspections had been performed prior to use by employees and no tag could be found that would identify that a semi-annual inspections had been performed. Evidence did show that the harness was damaged to the point where the webbing no longer retained its original characteristics. A preventive maintenance inspection was performed on the aerial lift truck was conducted 10/24/97, however the condition of the harness was not evaluated at the time. A simple inspection prior to use would have confirmed that the employer need to obtain a new harness prior to any employee being tasked to operate the bucket on the aerial lift truck.

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Name of Company: Elsinore Aerospace Services LP  
P.O. Box 23339  
Tucson AZ 85734

VII: Conclusions:

The accident was one that could have been prevented had the proper procedures been planned and executed.

A.R.S 23-403.A States that the employer must furnish to each of his employees employment and a place of employment which are free from recognized hazards that were causing or likely to cause death or serious physical harm to his employees in that communications devices were not provided for employees who had to communicate with each other while performing De-icing operations around Aircraft Noise. Communications between employees in the air and those on the ground is an industry practice identified for Vehicle Mounted Elevating and Rotating Aerial Devices (ANSI A92.2-1990). Section 8.13.3.(3) states "Before and during driving, the driver shall maintain communications between the driver and the operator." The employer was relying the employee inside the bucket understanding the hand signals and vocal commands of the ground.

29 CFR 1910.67 addresses the standards that employer shall follow when operating a Vehicle-Mounted Elevating and Rotating Work Platforms that has been modified for travel while an employee is in the raised working position. The employer had not trained his employee on how to configure the vehicle when necessary to move onto another Aircraft that need to be De-iced. Employees were not required to lock out the upper controls thus allowing the boom operator access of raising the boom in the working position while in transit and thereby striking sections of the aircraft and or falling 30 feet to the ground.

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Name of Company: Elsinore Aerospace Services LP  
P.O. Box 23339  
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29 CFR 1910.67(c)(2)(v) states that a body belt shall be worn with a lanyard attached to the boom or basket when working from an aerial lift. The employer had provided a damage harness which was used as a belt and no lanyard. The harness had allegedly been knotted onto the D-ring of the boom for over six years and inspections of the harness had not been performed.

29 CFR 1910.132 addresses the standards that employers shall follow whenever personal protective equipment is necessary to be used in protecting employees of hazards capable of causing injury and impairment. The employer had not provided fall protection devices or training, thereby the employee was subjected to serious injury or death for a fall of 30 feet to the ground.

Closing Statement:

Had Elsinore Aerospace Services properly planned the De-icing operation an accident of this type could have been avoided. Proper planning insures that equipment, material and expertise are put into action when developing a safe working environment for a hazardous operation of this nature. Training of employees and adherence to guidelines established by employers is essential for the safe completion of projects which in all likelihood could cause serious injury, illness or death. I discussed my finding with Mr Randy Butler, Elsinore Aerospace Services, Tucson City Manager, and explained contestment rights to him.

**THE INDUSTRIAL COMMISSION OF ARIZONA**  
**Occupational Safety and Health Division**  
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P.O. Box 23339  
Tucson AZ 85734

Citation were recommended for training of employees in Personal Protective Equipment and Aerial Lift Truck operations. The allegedly training given were verbal instructions, however, the training provided varied when asking employees what the instructions were. Mainly the citation recommendations are for lack of Personal Protection Equipment, failure to provide communications devices and non-adherence to recognized practices when operating a Vehicle Mounted Elevating and Rotating Aerial Lift.

VIII: Enclosures

- 1) Accident report form number 360186985.
- 2) Accident investigation summary 170053359.
- 3) Citations.
- 4) Letter to Family.
- 5) Company Safety Program - other documentation.
- 6) Field Notes.
- 7) Personal Interview Statement from Douglas Kuhl.
- 8) Personal Interview Statement from John M. Sweeney.
- 9) Interview Questions/Notes Randy Butler.
- 10) Newspaper article, December 24, 1997, Arizona Daily Star.
- 11) Miscellaneous Notes.
- 12) Posted Photographs.
- 13) Police Department, Medical examiner reports.

Signature:  Date: 01/16/98

Coverage Information/Additional Comments

SAFETY NARRATIVE

Inspection Number	126999606
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**COVERAGE INFORMATION:** The Safety Compliance Section was notified by Dan Morelos, Communications Supervisor Tucson Airport, of an accident involving a fatality in which an employee of Elsinore Aerospace had fallen 30 feet from a Cherry Picker that was being used to de-ice a Northwest Airlines airplane. Art Morelos, Tucson Supervisor, assigned the fatality inspection to Compliance Officer R0204. Upon arrival at the airport the compliance officer met with the Airport Police and evaluated the scene for accident cause and effect. It appeared that the employee was struck by the tail wing of the aircraft, McDonald Douglas Super 80, when he passed underneath the section with the boom raised. The employee, Ralph E. Wilkinson had fallen approximately 30 feet from the bucket that he was riding in and appeared not to have been wearing a fall protection device. Upon lowering the boom an inspection of the fall restraint was made and it was found to be in an unsafe condition. The employer had made available a harness to be worn by employees engaged in de-icing operations. A lanyard was not available. Damage to the webbing of the harness was observed and it was attached to a D-ring of the Boom in a knot fashion that would allow the employee to wear the harness only as a belt. Photographs of the scene and de-icing equipment were taken. The vehicle used in the de-icing operation was evaluated for safety problems. The de-icing pump on the left side needed guarding and a flexible cord was found to have a junction box that was installed as in a pendant application and not per listing. Seat Belts were not available in the Truck that the boom and bucket was mounted on. After investigating the scene, the Compliance Officer opened with the Tucson Manager of Elsinore Aerospace, Randy Butler. During the walkaround Mr Butler was shown the problems with the Boom Truck. Employees were interviewed during the inspection to ascertain the Safety Program of the Company. Hazard Communications training was not provided, Harness training not given and the harness had been installed on the lift in the same manner for over six years. Employees stated that they had been told to wear the belt when working inside the bucket of the boom truck. The Compliance Officer explained to the employees that the belt is really a harness and should have been worn as one with a lanyard. During the course of the inspection several other violations of standards were observed and photos were taken to document the instance. Mr Butler was provided a Closing Briefing on problems found during the inspection of December 23, 1997. On January 5, 1998 a second visit was performed to address problems which were identified in photos and to gain additional information from the employer on the vehicle. A second closing was provided to Mr Butler.

NATURE AND SCOPE

Check Applicable Boxes and Explain Findings:

- Complaint Items
- Referral Items
- Accident Investigation Summary & Findings
- LEP
- Planned Inspection
- Follow-Up Inspection

NATURE AND SCOPE -- UNUSUAL CIRCUMSTANCES (Mark X and explain all that apply:)

- None
- Denial of entry (see denial memo)
- Delays in conducting the inspection

- Strikes
- Jurisdictional Issues
- Trade Secrets
- Other

Comments: No problems delays were observed in the conduct of the investigation or the inspection.

**OPENING CONFERENCE NOTES:** Opened with the employer after investigation was started. Tucson Airport Police Sergeant Keith Kramer was contacted at the scene and he identified himself as the primary Law Enforcement Investigator for the fatality and contact for the Police Report. After evaluation of the scene the Compliance Officer was escorted to the employer's operating location and an Opening was performed with the employer.

**RECORDKEEPING PROGRAMS**  
(Other than 29 CFR 1904 requirements)

Does the employer have a recordkeeping program relating to any occupational health issues (monitoring, medical, training, respirator fit tests, ventilation measurements, etc.)?

Yes  No

Are any programs required by OSHA health standards?

Yes  No

**COMPLIANCE PROGRAMS**  
(engineering controls, PPE, regulated areas, emergency procedures, compliance plans, etc.)

Address any relevant compliance efforts regarding potential health hazards covered by the scope of the inspection.

**PERSONAL HYGIENE FACILITIES AND PRACTICES**  
(showers, lockers, change rooms, etc.)

Are any required by OSHA health standards?

Yes  No

What Standards: None.

**HAZARD COMMUNICATION PROGRAM**

Written Program (complete)

Yes  No

MSDS's (all)

Yes  No

Labeling (adequate)

Yes  No

Training (complete)

Yes  No

Copy MSDS's/Program attached

Yes  No

Comments: Initially a hazard communications program was not available for evaluation. One was found for evaluation during the inspection that was generic in nature. Employees interviewed stated that they had not received training on Material Safety Data Sheets and the Manager verified that training had not been performed or documented.

ACCESS TO EXPOSURE & MEDICAL RECORDS: N/A

FIRE PROTECTION AND EVACUATION PROCEDURES: Fire Protection and evaluations are performed by the Airport Fire Department.

SYSTEMS SAFETY AND EMERGENCY RESPONSE: Response is performed by the Airport Emergency Response Network.

RESPIRATOR PROGRAM: N/A

LOCKOUT TAGOUT/ ELECTRICAL SAFE WORKPRACTICES: N/A

FIRST AID: A First Aid Kit was available in the shop area.

ELECTRICAL SAFE WORKPRACTICES: A flexible cord was found to have a strain relief problem and another cord that was used to plug the heating element for de-icing operations was found to have an outlet installed as a pendant which was not per its listed application.

EXPOSURE CONTROL PLAN: N/A

LABORATORY STANDARD: N/A

ERGONOMIC PROBLEMS: N/A

Yes  No

If yes, complete the items 1 and 2 below.

- 1. Lifting (10% or more similarly exposed employees injured)
  - a. Total # of employees exposed to job:
  - b. Total # of cases for job:
- 2. CTD's (10% or more similarly exposed employees have CTD's; 5% or more CTS cases)
  - a. Total # of employees exposed to job:
  - b. Total # of cases for job:

Other significant injury/illness trends

Yes  No

If yes, explain.

### EVALUATION OF EMPLOYER'S OVERALL SAFETY AND HEALTH PROGRAM

General Industry:

Yes  No Employer has a Safety & Health Program

Yes  No Written

Yes  No Copy Attached

Construction Industry:

Yes  No Accident Prevention Program

Yes  No Written

Yes  No Copy Attached

#### Evaluation of Safety and Health Program

(0=Nonexistent 1=Inadequate 2=Average 3=Above average)

1 Written S&H Program

1 Communication to Employees

1 Enforcement

1 Safety Training Program

Health Training Program

1 Accident Investigation Performed

1 Preventive Action Taken

Comments: Had an effective written, evaluation and training program been available conditions found during the inspection could have be prevented.

#### CLOSING CONFERENCE NOTES:

Were any unusual circumstances encountered such as, but not limited to, abatement problems, expected contest and/or negative employer attitude? If yes, explain below.

Yes  No

19. Closing Conference Checklist ("x" as appropriate)

No Violations Observed

Gave Copy Employer Rights

Reviewed Hazards & Standards

Discuss Employer Rights/Obligations

Encouraged Informal Conference

Offered Abatement Assistance

Discussed Consultation Programs

Employer/Employee Questionnaires

Closing Conference Held with Employee Representative

Jointly

Separately

CSHO Signature	<i>Carlos Rodriguez Alfonso</i>	Date	1-16-98
Accompanied By			

# CONTENTS

- I. Inspection Report.
- II. Accident Report.
- III. Investigative Summary.
- IV. Narrative Sheets.
- V. Letter to Family.
- VI. Company Safety Program - other documentation.
- VII. Field Notes.
- VIII. Information Sheet.
- IX. Posted Photographs.
- X. Extra Photographs.
- XI. Police Department, Medical Examiner Reports in confidential envelope.

Accident Report

The Industrial Commission of Arizona  
Division of Occupational Safety and Health

1. Date <b>12/23/97</b>	2. Reporting ID <b>0950411</b>	3. Previous Activity? If Yes enter Type Number <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	4. Event Number (Identifies this Report) <b>360186985</b>
5. a <input type="checkbox"/> Change? b Establishment Name <b>ELSINORE Aerospace Services</b>	6. Employer ID (State's option)		
7. a <input type="checkbox"/> Change? b Site Address (Street, City, State, ZIP) <b>7250 South Tucson Blvd Tucson AZ 85700</b>	7. City Code <b>0550</b>	8. County Code <b>019</b>	
9. Event Address (If different) (Street, City, State, ZIP)			

Industry Ownership	10. Type of Business <b>Aircraft Servicing</b>	11. Primary SIC <b>4581</b>	12. No. of Employees <b>10</b>
	13. Ownership (Mark "X" in one box) a. <input checked="" type="checkbox"/> Private Sector b. <input type="checkbox"/> Local Government c. <input type="checkbox"/> State Government d. <input type="checkbox"/> Federal Agency/Code		

Report Information	14. Reported By <b>DAN MORELOS</b>	15. Date <b>12/23/97</b>	16. Time <b>0940</b> <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM
	17. Job Title <b>Communications Supervisor</b>	18. Telephone Number <b>573-9182</b>	
Employee Representation	19. Group Name(s)		

SIC Contact	20. Name and Location <b>Randy Butler, 7250 S. Tucson Blvd, Tucson AZ 85700</b>	22. Telephone Number <b>520-573-8349</b>
	21. Job Title <b>Manager</b>	

Classification	23. (Mark "X" in one box) a. <input checked="" type="checkbox"/> Fatality b. <input type="checkbox"/> Catastrophe c. <input type="checkbox"/> Non-Fatality/Catastrophe Reported by Employer or Media d. <input type="checkbox"/> Non-Fatality/Catastrophe Reported by Employee or Other Party			
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24. Event Date <b>12/23/97</b>	25. Event Time <b>7:40</b> <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	26. Number of Fatalities <b>1</b>	27. Number of Hospitalized Injuries <b>0</b>	28. Number of Nonhospitalized Injuries <b>0</b>	29. Number Unaccounted for <b>0</b>
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30. Type of Event (e.g., Fall from scaffold)  
**STRUCK BY AIRCRAFT WHILE PERFORMING DE-ICING, FALL 30 Feet.**

31. Preliminary Description  
**Aircraft Mechanic fell 30 feet from an Aerial Lift after striking Tail section of Aircraft. Employee was on a cherry picker de-icing an Aircraft**

32. Inspection Planned? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If No, Reason:	33. Supervisor(s) Assigned a. <b>MOB97</b>   b.	34. CO(s) Assigned a. <b>RO204</b>   b.
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35. Optional Information					
Name	ID	Value	Type	ID	Value
36. Total Entries					

37. Comments:

Investigation Summary

U.S. Department of Labor  
Occupational Safety and Health Administration



3. Related Inspection Numbers		3.1 Type Number I   126999606		3.2 Type Number I		3.3 Type Number I		3.4 Type Number I		4. Total Entries /	
1. Reporting ID 0950411				2. Summary Number (Identifies This Summary) <b>170053359</b>							

5. Injured/Deceased (Name)	6. Inspection Number (3.1, 3.2 etc.)	7. Sex	8. Age	9. Injury			10. Nature of Injury	11. Part of Body	12. Source of Injury	13. Event Type	14. Environmental Factor	15. Human Factor	16. Task		17. Substance Code	18. Occupation Code
				a. Fatality	b. Hospitalized	c. Nonhospitalized							a. Reg. Assigned	b. Not Reg. Assigned		
				Mark "X" in only one box									Mark "X" in only one box			
1. Ralph Edward Wilkinson	3.1	M	47	X			21	04	24	01	18	10	X			515
2.																
3.																
4.																
5.																
6.																
7.																
8.																
9.																
10.																

19. Type of Event **STRUCK BY AIRCRAFT AND FALL TO GROUND**

20. Abstract

Abstract Line Number

1. **EMPLOYEE WAS STRUCK BY AIRCRAFT A FELL TO GROUND, 30 Feet, While**

2. **RIDING AN AERIAL LIFT TRUCK BUCKET IN TRANSIT TO DE-ICE AN**

3. **AIRCRAFT, EMPLOYEE DIED AT THE SCENE OF MULTIPLE INJURIES**

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

The Arizona Division of  
Occupational Safety and Health



Worksheet

Tue Feb 3, 1998 8:26am

Inspection Number		126999606			
Opt. Insp. Number		0074			
Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	001
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	23.0403(A)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:

A.R.S. 23-403.A.: The employer did not furnish to each of his employees employment and a place of employment which were free from recognized hazards that were causing or likely to cause death or serious physical harm to his employees in that communications devices were not provided for employees who had to communicate with each other while performing de-icing operations around Aircraft noise.

(a) Aircraft Parking Area, 7250 S Tucson Blvd, Tucson AZ: The employer did not furnish to each of his employees, employment and a place of employment that were free from recognized hazards that were causing or were likely to cause serious physical harm or death to his employees in that employees were using a Time Manufacturing Aerial Tower, Serial Number G18502 mounted on a 1985 Chevrolet Model Number CP1442 in a high noise area without communications devices during aircraft de-icing which is an operation that which conflicts with ANSI A92.2-1900 section 8.13.3.(3) which states, "Before and during driving, the driver shall maintain communications between the driver and the operator. This was evidenced by employees on the ground not being able to convey information on the need to move an of Aerial Lift Truck during de-icing operations, thereby subjecting the employee to the risk of being struck by the aircraft and or falling 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	1500.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		

Employee Name	John M. Sweeney	
Address		Phone

Instance Description:      A. Hazard    B. Equipment    C. Location    D. Injury/Illness    E. Measurements

4. Date/Time
12/23/97    1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees were required to work around aircraft noise without the aid of communications devices.
- b) Equipment: Radio's and headphones.
- c) Location: Aircraft Parking Ramp, 7250 S Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Injury or Death.
- e) Measurements: None.

21. Photo Number	Location on Video
1, 2, 3	

23. Employer Knowledge: The employer was aware that employees were to perform work on the flight line and that employee needed to communicate with each other during aircraft de-icing operations.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, was asked if employees were provided radio and whether hand signals had been developed. Mr Butler stated that at the time of the fatality there were no radios available and that a system of hand signals had not been developed. Yes, some hand signals were used, but not a formal set of signals. Employees simply waved their hands in the direction they wanted the bucket to move and yell instruction to the employee in the bucket.

The need to maintain communications while operating an aerial lift is a common industry practice that is identified as follows: ANSI/SIA A92.2-1990 Section 8-13 Operation. Sub paragraph 8.13.3 states "Mobile Operations. Before and during driving the driver shall:" 8.13.3.(3) "Maintain communications between the driver and the operator." The guidance provided by ANSI Standard A92.2-1990 is the bases used for issuing this citation. Working around aircraft noise alone would cause employee not to respond to instructions issued by others just several feet away. In this case the employees were working 30 feet apart relying on hand signals and verbal commands.

25. Other Employer Information: This inspection was conducted as a result of an employee death. Ralph E. Wilkinson, the victim, was transported to de-ice another aircraft with the boom in the working position. The victim subsequently was struck by the tail section of the aircraft that he had been de-icing. Both the tail wings and forward wings of an MD Super 80 aircraft need to be de-iced. Communications devices between ground personnel and bucket operator are necessary to ensure that the employee in the bucket would have taken action to secure the bucket onto the truck prior to movement to another aircraft. On a second visit to the employer the compliance officer was shown radios and headsets that were subsequently purchased and made available to employees.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

Probability = 7      Severity = 10  
No. of Employees = 10  
Freq. of Exposure = 5  
Prox. to Danger = 10  
Stress = 3  
TOTAL = 28

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	1500.00		



Worksheet

Due Feb 3, 1998 8:26am

Inspection Number		126999606			
Opt. Insp. Number		0074			
Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	002 (a)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0067( c)( 2)( ii)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:

The alleged violations listed below have been grouped because they involve similar or related hazards that may increase the likelihood of injury or accident.

29 CFR 1910.67(c)(2)(ii): Employees were not trained to operate an aerial lift.

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ: Employees de-icing a McDonald Douglas Super 80 were not trained on the safe operation of and aerial lift, thereby subjecting the employee to risk serious injury or death when struck by aircraft parts and or falling 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	1500.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time
12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees were required to de-ice aircraft were not properly trained on fall protection devices and the operation of an aerial lift.
- b) Equipment: Aerial Lift Controls.
- c) Location: Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Injury/Death
- e) Measurements: Measurement information was taken from the technical data provided by the Manufacturer.

21. Photo Number	Location on Video
1,4	

23. Employer Knowledge: The employer was aware that an aerial lift was required to perform de-icing of aircraft and had authorized m employees to perform de-icing of MD Super 80's per Airline specifications.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, explained the procedures his employees use when moving a lift truck with an employee was in the basket. The Compliance Officer advised Mr Butler that the Truck should not be put in motion until the boom has been put in its cradle. Mr Butler stated that it would be impossible to meet aircraft times if he had to do so. The compliance officer continued to discuss the procedure with Mr Butler, suggesting an approach that would meet with the time limits. Mr Butler was not aware that the truck was designed for travel provided that the boom was in its cradle and the operator controls in the bucket were locked out to where the operator could not override the controls while in travel status. It was not standard procedure for employees to Lockout the upper controls prior to the vehicle being moved to another location. This was evidenced during an operation indirectly caused the death of an employee, Ralph E. Wilkinson who was struck by the tail wing of a MD Super 80 aircraft while the truck was traveling underneath. The controls had not been lock out at the time of the accident.

25. Other Employer Information: The victim , Mr Wilkinson, had been trained by the driver of the truck, Douglas Kuhl, on how to de-ice a Reno MD super 80. Mr Butler stated that he had observed the victim de-ice aircraft on 12-10-97. He saw no problem with the way the job was performed by the victim. Mr Butler did not observe if the employees had lock out the controls when the vehicle was moved. John M. Sweeney, Aircraft Mechanic provided a verbal and written statement. Training had not been provided to Mr Sweeny. Employees receive training on what portions of the aircraft they are to de-ice by the airlines, however, they are only told to wear the appropriate safety devices and not how to wear them or how to move around aircraft when de-icing.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>	=7	<u>Severity</u>	=10
No. of Employees	=10		
Freq. of Exposure	=4		
Prox. to Danger	=10		
Stress	=4		
<b>TOTAL</b>	<b>=28</b>		

nt ce	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	1500.00		



Worksheet

Tue Feb 3, 1998 8:26am

Inspection Number	126999606
Opt. Insp. Number	0074

Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	002 (b)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0067( c)( 2)( vii)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.67(c)(2)(viii): An aerial lift truck was moved while the boom was elevated in a working position with men in the basket:

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ: Employees involved in De-icing operation of a McDonald Douglas Super 80 were transported to various positions around the aircraft with the bucket in the elevated working position, subjecting the employee to the risk of serious injury or death by being struck and or falling 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed/Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10	Min/Aircraft	Frequency	Seasonal	
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10	min/Aircraft	Frequency	Seasonal	
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10	Min/Aircraft	Frequency	Seasonal	
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees were required to travel inside the bucket in the working position while the aerial lift truck was being moved to another aircraft that needed to be de-iced.
- b) Equipment: Lanyard, Harness and boom overriding controls.
- c) Location: Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Injury/Death
- e) Measurements: Measurement information was taken from the technical data provided by the Manufacturer.

21. Photo Number	Location on Video
4	

23. Employer Knowledge: The employer was aware that an employee would be working inside the bucket and had authorized the employee to perform aircraft de-icing.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, explained the procedures his employees use when moving a lift truck with an employee was in the basket. The Compliance Officer advised Mr Butler that the Truck should not be put in motion until the boom has been put in its cradle. Mr Butler stated that it would be impossible to meet aircraft times if he had to do so. The compliance officer continued to discuss the procedure with Mr Butler, suggesting an approach that would meet with the time limits. Mr Butler was not aware that the truck was designed for travel provided that the boom was in its cradle and the operator controls in the bucket were locked out to where the operator could not override the controls while in travel status. It was not standard procedure for employees to Lockout the upper controls prior to the vehicle being moved to another location. This was evidenced during an operation indirectly caused the death of an employee, Ralph E. Wilkinson who was struck by the tail wing of a MD Super 80 aircraft while the truck was traveling underneath. The controls had not been lock out at the time of the accident. Also the absence of an appropriate fall protection device was a contributing factor. A Lanyard was not available and the harness used showed sign of severe damage, was tied in a knot to the booms D-ring and was used as a belt. Mr Butler did not know the condition of the device or what type of device that was available. He stated that a belt was being used and that the device had been in the installed over six years ago. Since then the truck was used for de-icing operations only. Mr Butler also stated that he knew the requirement to have a properly configured Harness and Lanyard since he had to purchase one for a part time job that he started working at several months ago. The Boom Truck was inspected/serviced 10-24-97, however, Mr Butler was not aware of the condition of the harness at the time. A new harness and lanyard was order and made available for employee use, because, the company needed to be operational for the next days flights.

25. Other Employer Information: John M. Sweeney was questioned on the condition of the harness. He provided verbal and written statement. He stated that it was a belt that was available. The compliance officer asked him if he would be surprised to know that it was really a harness and that a lanyard should be worn with it. Mr Sweeney stated that he was not surprised. Training had not been provided to Mr Sweeney. Employees receive training on what portions of the aircraft they are to de-ice by the airlines, however, they are only told to wear the appropriate safety devices and not how to wear them or how to move around aircraft when de-icing.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=7	<u>Severity</u>	=10
No. of Employees	=10'			
Freq. of Exposure	=4			
Prox. to Danger	=10			
Stress	=4			
TOTAL		=28		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	0.00		

The Arizona Division of  
Occupational Safety and Health



Worksheet

Tue Feb 3, 1998 8:26am

Establishment Name		Elsinore Aerospace Services			
Type of Violation	S Serious	Citation Number	01	Item/Group	002 (c)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0067( c)( 2)( ix)				

Inspection Number	126999606
Opt. Insp. Number	0074

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.67(c)(2)(ix): Lower controls did not provide for overriding the upper controls of an aerial lift:

(a)-Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ: Controls in the Aerial Lift were not overridden so that elevated employees could not change the position of the bucket while the vehicle was in motion, subjecting them to the risk of serious injury or death should they get struck by the protruding parts of the aircraft and or fall 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description:	A. Hazard	B. Equipment	C. Location	D. Injury/Illness	E. Measurements
4. Date/Time					



No. of Employees = 10  
Freq. of Exposure = 4  
Prox. to Danger = 10  
Stress = 4  
TOTAL = 28

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	0.00		

The Arizona Division of  
Occupational Safety and Health



Worksheet

Tue Feb 3, 1998 8:26am

Inspection Number		126999606			
Opt. Insp. Number		0074			
Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	002 (d)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0067(c)(2)( xii)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.67(c)(2)(viii): Before moving an aerial lift for travel, the boom was not inspected to see that it was properly cradled:

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ: An Employee was transported inside the bucket after de-icing a McDonald Douglas Super 80 Aircraft while the aerial lift was in the raised working position and not in the cradled position with the lower controls overriding the upper, thereby subjecting the employee to a serious fall hazard of 30 feet to ground and to being struck by portions of the aircraft that were in the direction of travel of the vehicle.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10	Min/Aircraft	Frequency	Seasonal	
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10	min/Aircraft	Frequency	Seasonal	
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10	Min/Aircraft	Frequency	Seasonal	
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time
12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees were required to travel inside the bucket in the working position while the aerial lift truck was being moved to another aircraft that needed to be de-iced and the lift was not in the cradle position with the lower controls overriding the upper controls.
- b) Equipment: Lanyard, Harness and boom overriding controls.
- c) Location: Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Injury/Death
- e) Measurements: Measurement information was taken from the technical data provided by the Manufacturer.

21. Photo Number	Location on Video
1, 2, 3, 4	

23. Employer Knowledge: The employer was aware that an employee would be working inside the bucket and had authorized the employee to perform aircraft de-icing.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, was asked if he knew that the lift truck should not be moved while an employee was in the basket while the boom is the working position. Mr Butler stated that it would be impossible to meet aircraft times if he had to do so. The compliance officer suggested a different approach that should not degrade the time required to de-ice aircraft. Mr Butler was not aware that the truck was designed for travel provided the lower controls locked out the buckets and the boom was in its cradle. The procedure would override the upper control while in travel status. Lockout of the controls was not performed by the truck operator prior to the accident thereby allowing the employee the capability to move the bucket up and down while the truck was in motion. The operation indirectly caused the death of an employee, Ralph E. Wilkinson who was struck by the tail wing of a MD Super 80 aircraft while the truck was traveling underneath. Another factor to consider is the absence of appropriate fall protection devices being worn. Mr Butler did not know the condition of the harness or what type of device that was available. He stated that a belt was being used and that the device had been in the installed six years ago. Since then the truck was used for de-icing operations only. Mr Butler also stated that he knew the requirement to have a properly configured Harness and Lanyard since he had to purchase one for a part time job that he started working at several months ago. The Boom Truck was inspected/serviced 10-24-97, however, Mr Butler was not aware of the condition of the harness at the time. A new harness and lanyard was ordered and obtained. The company needed to be operational for the next days flights.

25. Other Employer Information: John M. Sweeney was questioned on the condition of the harness. He provided a verbal and a written statement. He stated that it was a belt that was available. The compliance officer asked him if he would be surprised to know that it was really a harness and that a lanyard should be worn with it. Mr Sweeney stated that he was not surprised. Training had not been provided to Mr Sweeney. Employees receive training on what portions of the aircraft they are to de-ice by the airlines, however, they are only told to wear the appropriate safety devices and not how to wear them or how to move around aircraft when de-icing.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=7	<u>Severity</u>	=10
No. of Employees	=10			
Freq. of Exposure	=4			
Prox. to Danger	=10			
Stress	=4			
<b>TOTAL</b>		<b>=28</b>		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	0.00		



Worksheet

Feb 3, 1998 8:26am

Inspection Number		126999606			
Opt. Insp. Number		0074			
Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	003 (a)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0132( a)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:

The alleged violations listed below have been grouped because they involve similar or related hazards that may increase the likelihood of injury or accident.

29 CFR 1910.132(a): Protective equipment was not used when necessary whenever hazards capable of causing injury and impairment were encountered:

In the alternative:

29 CFR 1910.67(c)(2)(v): A body belt was not worn with a lanyard attached to the boom or basket when working from and aerial lift:

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ. Employees did not wear a body belt and lanyard when de-icing a McDonald Douglas Super 80 Aircraft from an aerial lift, thereby the employee was subjected to serious injury or death from fall 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	1500.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	John M. Sweeney						

Address

Phone

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees were required to de-ice aircraft in an aerial lift while wearing a damaged harness as a belt and no lanyard at a height of 30 feet to the ground.
- b) Equipment: Harness and Lanyard.
- c) Location: Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Fall Injuries or Death.
- e) Measurements: The boom was capable of extending 35 Feet into the air. Measurement of 30 feet were as provided by the Tucson Airport Authority Police Report.

21. Photo Number

Location on Video

5, 6, 7

23. Employer Knowledge: The employer was aware that fall protection device was necessary and had provided a harness for employee to use when de-icing aircraft.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, was asked if he knew the condition of the fall protection device that was made available to the victim, Ralph E. Wilkerson. Mr Butler did not know and stated that the device was a belt that had been installed six years ago, when the company washed aircraft. Since then the truck was used for de-icing operations only. Mr Butler also stated that he knew the requirement to have a properly configured harness and lanyard, because he purchased one for a part time job that he had start working at several months ago. The Boom Truck was inspected/service 1-24-97, however, Mr Butler was not aware of the condition of the harness at the time. A new harness and lanyard was ordered due to the company needing to be operational for the next days flights.

25. Other Employer Information: John M. Sweeney, Aircraft Mechanic, was questioned on the condition of the harness. He provided a verbal and written statement. He stated that is was a belt that was available. Training had not been provided to Mr Sweeney.

26. Classification:

Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=7	<u>Severity</u>	=10
No. of Employees	=10			
Freq. of Exposure	=5			
Prox. to Danger	=10			
Stress	=4			
<b>TOTAL</b>		<b>=29</b>		

Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
Z Add transaction	A Add	S Serious	1500.00		

The Arizona Division of  
Occupational Safety and Health



Worksheet

Tue Feb 3, 1998 8:49am

Inspection Number		126999606			
Opt. Insp. Number		0074			
Establishment Name	Elsinore Aerospace Services				
Type of Violation	S Serious	Citation Number	01	Item/Group	003 (b)
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0132( d)( 1)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.132(d)(1): The employer did not assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment:

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ. The employer did not make an assessment on the need to provide Personal Protective equipment for employees who de-ice aircraft at a heights up to 35 feet, thereby the employee was subjected to serious injury or death from fall 30 feet to the ground when de-icing a McDonald Douglas Super 80.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3			Duration	10 min/Aircraft	Frequency	Seasonal
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description:	A. Hazard	B. Equipment	C. Location	D. Injury/Illness	E. Measurements
4. Date/Time					





Worksheet

Tue Feb 3, 1998 8:26am

					Inspection Number	126999606
					Opt. Insp. Number	0074
Establishment Name: <b>Elsinore Aerospace Services</b>						
Type of Violation	S Serious	Citation Number	01	Item/Group	003 (c)	
Number Exposed	10	No. Instances	1	REC	A Accident	
Std. Alleged Vio.	1910.132(f)(1)					

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.132(f)(1): The employer did not provide training as outlined in 1910.132(f)(1)(i) through (v) to each employee required to use personal protective equipment:

(a) Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ. Employees were not trained on when and how to properly wear a harness and lanyard while de-icing a McDonald Douglas Super 80 from an aerial lift, thereby the employees were subjected to serious injury or death from a fall 30 feet to the ground.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	G Greater	10	5000.00	60	0	10	0.00
Repeat Factor:		0					

Employee Exposure:						
Occupation	Aircraft Mechanic		Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal	
Employee Name	Douglas Kuhl					
Address				Phone		
Occupation	Mechanic		Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal	
Employee Name	Ralph E. Wilkinson					
Address				Phone		
Occupation	Aircraft Mechanic		Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal	
Employee Name	John M. Sweeney					
Address				Phone		

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: Employees that were required to de-ice aircraft in an aerial lift while wearing a harness and lanyard were not provided training.
- b) Equipment: Harness and Lanyard.
- c) Location: Airplane Parking Pad, Northwest Airlines Gate, 7250 S. Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Fall Injuries or Death.
- e) Measurements: The boom was capable of extending 35 Feet into the air. Measurement of 30 feet were as provided by the Tucson Airport Authority Police Report.

21. Photo Number	Location on Video
5, 6, 7	

23. Employer Knowledge: The employer was aware that fall protection device was necessary and had provided a harness for employee to use when de-icing aircraft.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, was asked if he knew the type of the fall protection device that was made available to the victim, Ralph E. Wilkerson. Mr Butler did not know and stated that the device was a belt that had been installed six years ago, when the company washed aircraft. Since then the truck was used for de-icing operations only. Mr Butler also stated that he knew the requirement to have a properly configured harness and lanyard, because he purchased one for a part time job that he had start working at several months ago. The Boom Truck was inspected/service 1-24-97, however, Mr Butler was not aware of the condition of the harness at the time. A new harness and lanyard was ordered due to the company needing to be operational for the next days flights.

25. Other Employer Information: John M. Sweeney, Aircraft Mechanic, was questioned on the condition of the harness. He provided a verbal and written statement. He stated that is was a belt that was available. Training had not been provided to Mr Sweeney.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

Probability	=7	Severity	=10
No. of Employees	=10		
Freq. of Exposure	=5		
Prox. to Danger	=10		
Stress	=4		
<b>TOTAL</b>	<b>=29</b>		

Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
Z Add transaction	A Add	S Serious	0.00		



Worksheet

Tue Feb 3, 1998 8:26am

					Inspection Number	126999606
					Opt. Insp. Number	0074
Establishment Name	Elsinore Aerospace Services					
Type of Violation	S Serious	Citation Number	01	Item/Group	004	
Number Exposed	3	No. Instances	1	REC	A Accident	
Std. Alleged Vio.	1910.0212( a) ( 1)					

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:	
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29 CFR 1910.219(d)(1) & (e)(1)(i): Horizontal drive belts were not fully enclosed and pulleys were not guarded:

(a) Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ: Employees working around an unguarded F. E. Meyers Water Pump used for De-icing of aircraft were subjected to serious injury when accessing equipment and or coming in contact with the rotating one inch drive belt wrapped around an 18 inch and a 4 inch pulleys which were 12" from the floor for the truck.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
H High	L Lesser	03	2500.00	60	0	10	750.00
Repeat Factor	0						

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 min/Aircraft	Frequency	Seasonal
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description:	A. Hazard	B. Equipment	C. Location	D. Injury/Illness	E. Measurements
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4. Date/Time
12/23/97 1040 Am

20. Instance Description - Describe the following:
- a) Hazards-Operation/Condition-Accident: Rotating parts of a de-icing pumper were not guarded to prevent exposure to employees.
  - b) Equipment: Guard.
  - c) Location: Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ.
  - d) Injury/Illness: Broken Bones, Amputations, Serious Physical Harm.
  - e) Measurements: None.

21. Photo Number	Location on Video
8	

23. Employer Knowledge: The employer had purchased the vehicle in 1986 with the de-icing pump installed and had authorized Tucson employees to use the equipment to de-ice aircraft.

24. Comments (Employer, Employee, Closing Conference): The vehicle was initially found to need a guard on the de-icing pump when it was it was evaluated at the scene of an accident involving a company employee. Upon opening with the employer representative Randy Butler, the Compliance Officer took him to where the vehicle was parked and validated the violation. Mr Butler acknowledged the need for a guard and stated that one would be obtained.

25. Other Employer Information: During a subsequent visit to the employer on 1/6/97, the compliance officer was shown the abatement action taken to correct the violation. An expanded metal guard had been manufactured and installed on the pump. Photo was taken of the abatement action.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
Yes	Yes	S	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=4	<u>Severity</u>	=8
No. of Employees	=3			
Freq. of Exposure	=4			
Prox. to Danger	=9			
Stress	=3			
<b>TOTAL</b>		<b>=19</b>		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	S Serious	750.00		



Worksheet

Due Feb 3, 1998 8:26am

		Inspection Number	126999606		
		Opt. Insp. Number	0074		
Establishment Name	Elsinore Aerospace Services				
Type of Violation	NonSerious	Citation Number	02	Item/Group	001
Number Exposed	10	No. Instances	1	REC	A Accident
Std. Alleged Vio.	1910.0027( b)( 1)( ii)				

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
29 CFR 1910.27(b)(1)(ii): The distance between rungs, cleats, or steps of fixed ladders exceeded 12 inches:

(a) Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ: The distance between the rungs of a fixed ladder that was welded to the bumper of the vehicle was 16 inches, subjecting employees to an irregular when accessing the bucket of the Aerial Lift.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
N Minimal	L Lesser	00	.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic	Employer	Elsinore Aerospace Services				
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic	Employer	Elsinore Aerospace Services				
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic	Employer	Elsinore Aerospace Services				
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time





Worksheet

Due Feb 3, 1998 8:26am

					Inspection Number	126999606
					Opt. Insp. Number	0074
Establishment Name	Elsinore Aerospace Services					
Type of Violation	N NonSerious	Citation Number	02	Item/Group	002	
Number Exposed	10	No. Instances	1	REC	A Accident	
Std. Alleged Vio.	1910.0027( c)( 6)					

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
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AVD/Variable Information:  
 29 CFR 1910.27(c)(6): The step across distance from the nearest edge of fixed ladder(s) to the nearest edge of equipment or structure was greater than 12 inches:

(a) Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ: Employees were required to step across 27 inches from the top step of a fixed ladder when climbing into an aerial lift, subjecting the employee to a fall hazard of 6 foot 5 inches to the ground below.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
N Minimal	L Lesser	00	.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3			Duration	10 min/Aircraft	Frequency	Seasonal
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:

- a) Hazards-Operation/Condition-Accident: The step across distance on a fixed ladder to an aerial lift was 27 inches.
- b) Equipment: Fixed ladder.
- c) Location: Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ.
- d) Injury/Illness: Serious Injury Not Likely.
- e) Measurements: Measurements were taken with a Stanley Leverlock 16 foot Tape Measure.

21. Photo Number	Location on Video
9	

23. Employer Knowledge: The employer had purchased the aerial lift for aircraft servicing operations and had authorized employees to climb onto the bucket of the aerial lift in order to de-ice aircraft.

24. Comments (Employer, Employee, Closing Conference): Randy Butler, Manager, was asked how long the step ladder was on the truck. Mr Butler stated that he did not know. Measurements were taken of the step across of the step ladder to the bucket. Step across measured 27 inches. Mr Butler was advised that the ladder should be extended in order that the employee be provided with a maximum of 12 inch step across. Mr Butler stated that the ladder would be modified to a higher height so that the employee could be afforded a safe working platform.

25. Other Employer Information: The step ladder was two rungs high and the spacing between them was 16 inches.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
No	Yes	O	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>	=5	<u>Severity</u>	=3
No. of Employees	=10		
Freq. of Exposure	=5		
Prox. to Danger	=3		
Stress	=3		
<b>TOTAL</b>	<b>=21</b>		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	N NonSerious	0.00		



Worksheet

Due Feb 3, 1998 8:26am

		Inspection Number		126999606	
		Opt. Insp. Number		0074	
Establishment Name	Elsinore Aerospace Services				
Type of Violation	N NonSerious		Citation Number	02	Item/Group
Number Exposed	3		No. Instances	1	003
Std. Alleged Vio.	1910.0303( b)( 2)				
REC A Accident					

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
-----------------	--

AVD/Variable Information:  
29 CFR 1910.303(b)(2): Listed or labeled electrical equipment was not used or installed in accordance with instructions included in the listing or labeling:

(a) Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ: Employees performing de-icing of a MD Super 80 were plugging a water heater into a four way junction box which was installed onto a flexible cord in a pendant application which was not in accordance with instructions included in the listing.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
N Minimal	L Lesser	00	.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 min/Aircraft	Frequency	Seasonal
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:
- a) Hazards-Operation/Condition-Accident: A flexible cord was attached to a four way junction box and the application was not in accordance with its listing.
  - b) Equipment: Flexible Cord and Pendant.
  - c) Location: Aerial Lift Truck, 7250 S Tucson Blvd, Tucson AZ.
  - d) Injury/Illness: Serious injury not likely.
  - e) Measurements: None.

21. Photo Number:	Location on Video
10	

23. Employer Knowledge: The Manager Randy Butler knew that the cord with four way junction box was utilized by employees when using the heater.

24. Comments (Employer, Employee, Closing Conference): Mr Butler was advised that the application of both items was not correct. Mr Butler stated that he would abate the problem by getting rid of the cord and four way junction box. The cord and four way was used by employees in order that the water heater be energized.

25. Other Employer Information: This violation was noticed when doing an evaluation of the scene and was brought to the attention of Mr Butler when performing a walkaround with him.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
No	Yes	O	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=3	<u>Severity</u>	=3
No. of Employees	=3			
Freq. of Exposure	=4			
Prox. to Danger	=3			
Stress	=3			
<b>TOTAL</b>		<b>=13</b>		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	N NonSerious	0.00		



Worksheet

Tue Feb 3, 1998 8:26am

Establishment Name		Elsinore Aerospace Services		Inspection Number	126999606
Type of Violation		N NonSerious	Citation Number	02	Item/Group
Number Exposed		3	No. Instances	1	004
Std. Alleged Vio.		1910.0305( g)( 2)( iii)			
				REC	A Accident

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
0					

Substance Codes	
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AVD/Variable Information:  
 29 CFR 1910.305(g)(2)(iii): Flexible cords were not connected to devices and fittings so that tension would not be transmitted to joints or terminal screws:

(a) Underneath Table, Exit to Flight Line, Main Office, 7250 S Tucson Blvd, Tucson AZ: Flexible cord connected to a two way electrical outlet showed signs of strain relief problems in that the outer insulation had pulled apart from the plug exposing the inner insulated wires, thereby exposing employee to a possible electrical hazard.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
N Minimal		00		60	0	10	0.00
Repeat Factor		0	.00				

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 min/Aircraft	Frequency	Seasonal
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	0			Duration	10 Min/Aircraft	Frequency	Seasonal
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements  
 4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:
- a) Hazards-Operation/Condition-Accident: Flexible cord showed signs of strain relief problem in that the cord had pulled away from the plug.
  - b) Equipment: Strain Relief Device.
  - c) Location: Underneath Table, Exit to Flight Line, Main Office, 7250 S Tucson Blvd, Tucson AZ.
  - d) Injury/Illness: Serious injury not likely.
  - e) Measurements: None.

21. Photo Number	Location on Video
//	

23. Employer Knowledge: Employer knew that the flexible cord was used to power items in the office and had authorized the use of the flexible cord. Randy Butler, Manager, comes into this location on a daily basis.

24. Comments (Employer, Employee, Closing Conference): During the Walkaround Mr Butler was shown the problem with strain relief and he stated that it would be corrected.

25. Other Employer Information :

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
No	Yes	O	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>		=3	<u>Severity</u>	=3
No. of Employees	=3			
Freq. of Exposure	=3			
Prox. to Danger	=3			
Stress	=3			
<b>TOTAL</b>		<b>=12</b>		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	N NonSerious	0.00		



# Worksheet

Tue Feb 3, 1998 8:26am

					Inspection Number	126999606
					Opt. Insp. Number	0074
Establishment Name	Elsinore Aerospace Services					
Type of Violation	N NonSerious	Citation Number	02	Item/Group	005	
Number Exposed	10	No. Instances	1	REC	A Accident	
Std. Alleged Vio.	1910.1200(h)					

Abatement Period	MultiStep Abatements			Final Abatement	Action Type/Dates
	PPE Period	Plan	Report		
3					

Substance Codes	
-----------------	--

AVD/Variable Information:  
29 CFR 1910.1200(h): Employees were not provided information and training as specified in 29 CFR 1910.1200(h)(1) and (2) on hazardous chemicals in their work area at the time of their initial assignment and whenever a new hazard was introduced into their work area:

(a) 7250 S Tucson Blvd, Tucson AZ: The employer did not furnish information and training to employees who were potentially exposed in the workplace to hazardous chemicals, substances and/or materials such as Aircraft De-icing Fluid, ROL 500 B-4 and janitorial supplies.

Penalty Calculations				Adjustment Factors			Proposed Adjusted Penalty
Severity	Probability	Gravity	GBP	Size	Good Faith	History	
N Minimal	L Lesser	00	.00	60	0	10	0.00
Repeat Factor		0					

Employee Exposure:							
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	4	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	Douglas Kuhl						
Address				Phone			
Occupation	Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 min/Aircraft	Frequency	Seasonal		
Employee Name	Ralph E. Wilkinson						
Address				Phone			
Occupation	Aircraft Mechanic			Employer	Elsinore Aerospace Services		
Nr of Employees	3	Duration	10 Min/Aircraft	Frequency	Seasonal		
Employee Name	John M. Sweeney						
Address				Phone			

Instance Description: A. Hazard B. Equipment C. Location D. Injury/Illness E. Measurements

4. Date/Time

12/23/97 1040 Am

20. Instance Description - Describe the following:
- a) Hazards-Operation/Condition-Accident: Employees were not trained on requirements of written hazard communications program.
  - b) Equipment: None.
  - c) Location: 7250 S Tucson Blvd, Tucson AZ.
  - d) Injury/Illness: Serious Injury Not Likely.
  - e) Measurements: None.

21. Photo Number	Location on Video
12, 13, 14	

23. Employer Knowledge: The employer had provided the chemicals used in the workplace so that aircraft servicing could be accomplished by employees.

24. Comments (Employer, Employee, Closing Conference): Randy Butler was asked if training had been provided to his employees on the requirements of a hazard communications program. Mr Butler stated that training had not been conducted and that there was no documentation on training of MSDS.

25. Other Employer Information: Employees interviewed stated that hazard communication training had not been performed.

26. Classification:				
Serious	Knowledge	S or O	Repeat?	Willful?
No	Yes	O	No	No

First Repeat	Second Repeat	Repeat Penalty
No	No	No

<u>Probability</u>	=5	<u>Severity</u>	=3
No. of Employees	=10		
Freq. of Exposure	=4		
Prox. to Danger	=3		
Stress	=3		
TOTAL	=20		

Event Date	Event Code	Action Code	Citation Type	Penalty	Abate Date	Final Order
	Z Add transaction	A Add	N NonSerious	0.00		



# THE INDUSTRIAL COMMISSION OF ARIZONA

## DIVISION OF OCCUPATIONAL SAFETY & HEALTH

2675 EAST BROADWAY ROAD, SUITE 239  
TUCSON AZ 85716

GAY CONRAD KRUGLICK, CHAIRMAN  
MIKE PETCHEL, VICE CHAIRMAN  
MICHAEL G. SANDERS, MEMBER  
LUIS M. RODRIGUEZ, MEMBER  
JEAN PIERRE ANGELCHIK, M.D., MEMBER

DEREK MULLINS, DIRECTOR  
(602) 542-1693  
FAX (602) 542-1614

LARRY ETCHECHURY, DIRECTOR  
TERESA HILTON, SECRETARY

January 14, 1998

Mrs. Rose Wilkinson  
2904 South Vaugh Drive  
Tucson, AZ 85730

RE: Elsinore Aerospace Services  
7250 South Tucson Blvd.  
Tucson, AZ 85706

Dear Mrs. Wilkinson:

Please accept our sincerest sympathy regarding the tragic accident that resulted in the death of you husband, Ralph Edward Wilkinson.

The Arizona Division of Occupational Safety and Health is conducting an investigation of the accident and would like to keep you informed, if you so desire, of our developments and findings.

Investigations of workplace accidents are initiated by the Division to determine:

1. The cause of the accident.
2. Whether a violation of safety and health standards related to the accident occurred.
3. What effect the standard violation had on the occurrence of the accident.

If standards were violated the Division may issue citations and seek civil or criminal penalties against the employer.

If you feel that you or another family member may have information concerning this accident, please contact us so that an interview can be scheduled.

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Special Services at (602) 542-5991. Anyone wishing to make a request for a reasonable accommodation using the TDD may do so by calling Karen Moriarty at (602) 542-7082 relay 800-842-6481.

Mrs. Rose Wilkinson

Page Two

Arizona Revised Statutes 23-408.E. governs the release of information concerning accident investigations conducted by the Division. The Division does not release information from enforcement investigation files until the file is closed, or until the investigation has been completed and any resulting citations are issued. If you so desire, we will keep you informed on the progress of the investigation through copies of citations, appeal letters, results of any informal settlements and any other actions taken towards the resolution of this matter.

Once the investigation file is closed or a citation has been issued, the information in the casefile becomes public record pursuant to Arizona Revised Statutes 23-408(e), and the releasable portions of the file will be made available upon request for your review at either our Phoenix office located at 800 West Washington Street, 2nd floor, or our Tucson office located at 2675 East Broadway Blvd., Suite 239.

If you have any questions regarding the investigation or any of the above procedures, please feel free to contact:

Arturo Morelos  
Division of Occupational Safety and Health  
2675 East Broadway Blvd., Suite 239  
Tucson, AZ 85716-5342  
(520) 628-5478

Again please accept our heartfelt condolences and please let us know if we can be of any assistance to you, your family, or friends.

Sincerely,



Arturo D. Morelos  
Compliance Supervisor

AM/ss



# THE INDUSTRIAL COMMISSION OF ARIZONA

## DIVISION OF OCCUPATIONAL SAFETY & HEALTH

2675 EAST BROADWAY ROAD, SUITE 239  
TUCSON AZ 85716

GAY CONRAD KRUGLICK, CHAIRMAN  
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JEAN PIERRE ANGELCHIK, M.D., MEMBER

DEREK MULLINS, DIRECTOR  
(602) 542-1693  
FAX (602) 542-1614

LARRY ETCHECHURY, DIRECTOR  
TERESA HILTON, SECRETARY

January 14, 1998

Forensic Science Center  
ATTN: Judy  
2825 E. District Street  
Tucson AZ 85714

Dear Judy,

This letter serves to confirm our conversation today and our request for a copy of an autopsy report MC97-1695 for Ralph Edward Wilkinson who passed away on 12/23/97 and who autopsy was performed by your organization.

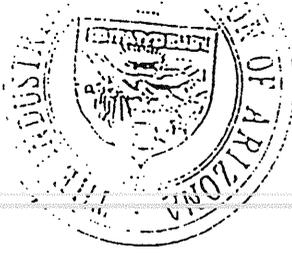
Please contact me at (520) 628-5478 and/or forward a copy of the autopsy report to the above referenced address. Do not hesitate to call if any additional information required.

Thank you again for your time and assistance on this matter.

Sincerely,

  
Carlos T. Rodriguez-Alfonzo  
Safety Compliance Officer

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Special Services at (602) 542-5991. Anyone wishing to make a request for a reasonable accommodation using the TDD may do so by calling Karen Moriarty at (602) 542-7082 relay 800-842-6481. Requests should be made as early as possible to allow time to arrange the accommodation.



INDUSTRIAL COMMISSION OF ARIZONA  
FASCIMILE COVER SHEET

TO:

NAME Judy  
FIRM Forensic Science Center  
CITY 2825 E. District St Tucson AZ  
FAX PHONE NUMBER (520) 294-9402

FROM:

NAME Carlos Rodriguez  
DEPARTMENT AZ OSHA Tucson Office  
PHONE (520) 628-5478

SPECIAL INSTRUCTIONS:

Judy, I can come by when ready. The file need  
not be mailed

DATE OF TRANSMISSION: 1-

TOTAL NUMBER OF PAGES, INCLUDING COVER LETTER: 2

IF YOU DO NOT RECEIVE ALL OF THESE PAGES, PLEASE CALL US AT:

(520) 628-5478

OUR FAX NUMBER IS (520) 322-8008

THE INDUSTRIAL COMMISSION OF ARIZONA

CLAIMS DIVISION

P.O. BOX 19070  
PHOENIX, ARIZONA 85005-9070

KAREN HAMILTON ELLERMAN  
CLAIMS MANAGER  
(602) 542-4661  
FAX (602) 542-3373

GAY CONRAD KRUGLICK, CHAIRMAN  
MIKE PETCHEL, VICE CHAIRMAN  
MICHAEL G. SANDERS, MEMBER  
LUIS M. RODRIGUEZ, MEMBER  
JEAN PIERRE ANGELCHIK, M.D., MEMBER

JANUARY 8, 1998

LARRY ETSCHECHURY, DIRECTOR  
TERESA HILTON, SECRETARY

EMPLOYERS INSURANCE OF WAUSAU  
C/O % WAUSAU INSURANCE CO  
7600 N 16TH ST STE 215  
PHOENIX AZ 85020-4447

NOTIFICATION OF CLAIM FOR DEPENDENT'S BENEFITS - FATALITY

Re: Name of Deceased Worker: RALPH E. WILKINSON  
ICA Case No: 98006-221170  
Social Security No:  
Date of Injury: 12-23-1997  
Date of Death: 12/23/97  
Employer: ELSINORE  
Carrier Claim No: Unknown

Dear Claim Representative:

Attached is a copy of the Claim for Dependent's Benefits filed by ROSE ELISA WILKINSON.

You are required to issue a Notice of Claim Status indicating your acceptance or denial of the claim within TWENTY-ONE DAYS from the date of this notice pursuant to A.R.S. 23-1061.

The Claims Division  
Compliance Section

98 JAN 13 AM 8:16

ICA-SAFETY

Enclosure

X: DSha Fatal V  
Research & Statistics attn: Susan Diaz

# BEFORE THE INDUSTRIAL COMMISSION OF ARIZONA

## CLAIM FOR DEPENDENT'S BENEFITS — FATALITY



**CHECK APPROPRIATE BOX:**

- SPOUSE
- SPOUSE WITH DEPENDENT CHILDREN
- DEPENDENT CHILDREN  
*(Must be filed by guardian)*
- PARENTS
- OTHER DEPENDENTS
- BURIAL EXPENSE ONLY

980016-221170

**INFORMATION REGARDING DECEASED:**

- Name of Deceased: Ralph Edward Wilkinson, Sr Soc. Sec. #:
- Date of Birth: FEB 3, 1950 Date of Death: DEC 23, 1997
- Date of Injury (if different from date of death): \_\_\_\_\_
- Deceased's Address: \_\_\_\_\_

- Employer at Time of Death: ELISINDRE
- Employer's Address: P.O. BOX NEWPORT BEACH CA 92658-8447  
Phone - (714) 263-5750

- Briefly State Cause of Death: killed BY DE-ICING  
AN AIRCRAFT WAS CRUSHED TO DEATH

- List name and address of health care providers that treated deceased in the last two years and state condition treated:  
NONE

ICM CLAIMS  
11 DEC 31 AM 10:45

**CLAIM FOR SPOUSAL BENEFITS:** *(Provide certified copy of marriage certificate.)*

- Your Full Name: ROSE ELISA WILKINSCH Date of Birth: APRIL 24, 1950
- Your Address: \_\_\_\_\_

- Date of Marriage to Deceased: 28 JAN 1969
- Place of Marriage: NORTH CAROLINA

- Were You or Deceased Married Previously?  Yes  No If yes, state details and provide copies of divorce certificates. \_\_\_\_\_

Did you reside with deceased at time of death?  Yes  No If living apart provide reason, such as divorced, divorce pending, annulment, abandonment.

CLAIM FOR DEPENDENT CHILDREN: (Provide certified copies of birth certificates.)

1. List dependent children:

NAME	DATE OF BIRTH	RELATIONSHIP TO DECEASED	ADDRESS AT TIME OF DEATH

2. Which of these children are still in your care and custody?

Is a posthumous (unborn) child expected?  Yes  No If yes, provide anticipated date of delivery:

OTHER DEPENDENTS:

1. Name: \_\_\_\_\_

2. Address: \_\_\_\_\_

3. Relationship to Deceased: \_\_\_\_\_

4. Extent of Dependency:  Full  Partial Please give details: \_\_\_\_\_

INDIA CLAIMS

12-30-97  
DATE

Rose E. Wilkinson  
SIGNATURE OF/OR ON BEHALF OF DEPENDENT

TELEPHONE NUMBER

**LICENSE AND CERTIFICATE OF MARRIAGE**  
State of North Carolina

LICENSE NUMBER

**FEB 17 1969**

**PASQUOTANK**  
COUNTY

**1993**

1. GROOM-NAME FIRST: <b>Ralph</b> MIDDLE: <b>Edward</b> LAST: <b>Wilkinson</b>	
2a. RESIDENCE-STATE: <b>Arizona</b>	2b. COUNTY: <b>Maricopa</b> CITY, TOWN, OR LOCATION: <b>Phoenix</b>
2c. STREET AND NUMBER	STATE OF BIRTH (If Not in U.S. - Name Country): <b>Arizona</b> DATE OF BIRTH: <b>12.24.41</b> AGE: <b>27</b>
2d. FATHER NAME: <b>Leroy Wilkinson</b>	3. STATE OF BIRTH (If Not in U.S.A., Name Country): <b>Alabama</b> 4. MOTHER: <b>Texas</b>
5a. RACE-GROOM: <b>White</b>	5b. NUMBER OF THIS MARRIAGE: <b>First</b> IF PREVIOUSLY MARRIED: <b>None</b>
6. BRIDE-NAME FIRST: <b>Rose</b> MIDDLE: <b>Lina</b> LAST: <b>Francisco</b>	7. STATE OF BIRTH (If Not in U.S.A., Name Country): <b>Virginia</b> DATE OF BIRTH: <b>11.23.41</b> AGE: <b>27</b>
8a. RESIDENCE-STATE: <b>Maryland</b>	8b. COUNTY: <b>Prince Georges</b> CITY, TOWN, OR LOCATION: <b>Lanham</b>
8c. STREET AND NUMBER	9. STATE OF BIRTH (If Not in U.S.A., Name Country): <b>Virginia</b> DATE OF BIRTH: <b>11.23.41</b> AGE: <b>27</b>
9a. FATHER: <b>George Michael Francisco</b>	10. MOTHER: <b>Arizona</b>
11a. RACE-BRIDE: <b>White</b>	11b. NUMBER OF THIS MARRIAGE: <b>First</b> IF PREVIOUSLY MARRIED: <b>None</b>
12. LAST MARRIAGE ENDED BY: <b>None</b>	13. EDUCATION-SPECIFY HIGHEST GRADE COMPLETED: <b>High School</b>
14. DATE	15. MONTH YEAR
16. MONTH YEAR	17. MONTH YEAR
18. MONTH YEAR	19. MONTH YEAR
20. MONTH YEAR	21. MONTH YEAR

To any ordained minister of any religious denomination, minister authorized by his church, or any Justice of the Peace or Magistrate, you are hereby authorized to say here within 60 days from the date hereof, to celebrate the proposed marriage at any place within the said county.

January 28, 1969  
DATE ISSUED

*G. C. Spencer*  
REGISTER OF DEEDS

OFFICIANT

15a. OFFICIANT SIGNATURE: <i>[Signature]</i>	15b. DATE SIGNED: <b>Jan 28, 1969</b>
15c. WITNESS SIGNATURE: <i>[Signature]</i>	15d. WITNESS SIGNATURE: <i>[Signature]</i>
15e. WITNESS SIGNATURE: <i>[Signature]</i>	15f. WITNESS SIGNATURE: <i>[Signature]</i>

The minister or other person celebrating this marriage is required within 10 days to fill out and sign both copies of this Certificate of Marriage, and return them to the Register of Deeds who issued the license. Failure to do so constitutes a misdemeanor and also subjects person celebrating the marriage to a forfeiture of \$100.00 to anyone who sues for the same.

RETURNED TO REGISTER OF DEEDS:

**2-3-69**  
DATE

*[Signature]*  
REGISTER OF DEEDS DEPUTY ASSISTANT

FORM VS-60  
REV. 1/1/68  
1743-10UM

STATE BOARD OF HEALTH COPY

**322677**

## ELSINORE'S SAFETY RULES AND REGULATIONS

Elsinore LP, in the interest of safety for its employees and property, has compiled the following list of safety rules and regulations. All employees are expected, as a condition of employment, to be safety conscious and to assist the Company in finding and reporting conditions on the premises that may cause harm to persons or property. The list is not all inclusive, but meant to be a guideline by which all employees are expected to abide. Failure to follow safety rules and regulations will result in disciplinary action up to and including termination. Management reserves the right to determine what is or is not an unsafe act.

1. Work areas shall be kept clean at all times. All emergency exits, including access to all emergency equipment, are to be kept clear and free from any obstruction.
2. All fire extinguishers are to be kept accessible at all times and are located throughout your work area. Learn where the extinguishers are kept.
3. Guards on equipment are to be left in place at all times.
4. Do not climb on equipment. Use a ladder when required.
5. Before operating any piece of equipment, be sure that you have had proper instruction and that you fully understand how it is to be operated--if you don't understand, ASK.
6. Report unsafe conditions or acts immediately to your supervisor.
7. Be alert when entering an aisle where there may be forklift traffic.
8. Obey posted warning signs (speed limits, no smoking, use of protective gear, etc.).
9. Do not lift anything you feel is too heavy or awkward. Do not perform any act that you feel is unsafe and if you need help, ask for it. Check with your manager for proper procedures with regard to lifting or moving heavy objects.

## Elsinore's Safety Rules and Regulations (Cont.)

10. Your supervisor will show you where the following items are:
  - Material Safety Data Sheets
  - First aid kit
  - Fire extinguishers
  - Closest exit
  - Emergency shut-off switches for electrical, gas and water
  - Emergency phone numbers (posted on phones)
11. No employee is to be permitted or required to work if their ability or alertness is so impaired by fatigue, illness or other causes that might unnecessarily expose the employee or others to injury.
12. Chemicals shall be handled only after proper training and with proper safety equipment issued to you by your supervisor.
13. Employees who are taking any prescribed medication that may induce drowsiness or impair their abilities must report it to their supervisor prior to working their regularly scheduled shift.
14. All hazardous chemicals must be clearly labeled.
15. Gasoline is not to be used as a cleaning agent.
16. Employees must have a valid Driver's License before driving/operating equipment.
17. Employees will exhibit safe driving practices at all times including, but not limited to, the posted speed limit.
18. Employees are prohibited from operating any equipment that they have not been properly trained on.
19. Report all accidents to your Station Manager/supervisor immediately.
20. Horseplay on equipment or in the work area is not allowed.
21. No running on Company or its Customer's property.

## Elsinore's Safety Rules and Regulations (Cont.)

22. Employees are required to wear assigned proper protective equipment, appropriate attire that is Elsinore's issued uniforms or approved attire for that particular Station. (Jewelry, loose and baggy clothing, etc., are considered inappropriate.)
23. No employee shall willfully damage another employee's property or any Company's property.
24. Employees shall comply at all times with all State, Federal and local safety laws!

The following rules if violated are subject to immediate termination:

1. Fighting on Company property, regardless of who is at fault.
2. Theft of any kind from Elsinore, Elsinore employees or its Customers.
3. Possession of or being under the influence of illegal drugs or alcohol while at Elsinore.
4. Any acts of violence, threats or intimidating anyone, even in a joking manner while on Elsinore or its Customer's property.
5. Possession of any weapon, explosives or other dangerous devices on Company or Customer's property.
6. Refusal to obey orders given by authorized management representatives of Elsinore.
7. Falsification of any records or forms.
8. Punching another employee's time card or signing another employee in or out of work.
9. Smoking in unauthorized areas.

## ELSINORE'S EMERGENCY EVACUATION POLICY

Elsinore employees are working at airports, therefore, we are required to follow Department of Airport's Emergency Evacuation Plans. Station Managers will make every effort to attend Department of Airport's meetings, emergency drills, and training. Internal training will be provided using Department of Airport's guidelines.

## ELSINORE'S SECURITY POLICY

Again, since our employees are working at airports, we are required to follow Department of Airport's Security Plan.

Management personnel at all levels will assure that employees under their control are aware of the Department of Airport's security policies and security program requirements.

Management will assure that employees observe the Department of Airport's security program requirements and take appropriate corrective action in cases of deviation from policy or standard procedures. The performance of each Manager/supervisor in respect to this responsibility will be considered in management reviews.

All employees of the Company are personally responsible for compliance with security policies and procedures. Violation of any security policy or procedure will result in disciplinary action up to and including termination.

It is each employee's responsibility to review with their immediate Manager/supervisor any aspect of the Company's security program in which the employee does not understand. The Company welcomes any suggestions an employee may have to help make its security program more effective.

## **ELSINORE'S HAZARDOUS COMMUNICATION PROGRAM**

Although the substances used during the course of work are not considered toxic, to protect our employee's health, it is the policy of Elsinore to communicate the hazards associated with the handling of all substances we have in our operations.

Our customers are providing the cleaning agents, therefore, they are supplying Elsinore with Material Safety Data Sheets as well as training guidelines. Elsinore is using the customer guidelines to provide hazard communication training to all affected employees.

## ELSINORE'S EMPLOYEE ACKNOWLEDGEMENT

I understand it is my responsibility to read, understand, and follow the guidelines as outlined in the Safety Rules and Regulations that follow. My signature below indicates I have received a copy of Elsinore's Safety Guidelines and I agree to adhere to them.

Employee Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Employee Name (Printed): \_\_\_\_\_

Witness: \_\_\_\_\_

# FAX

Date

12/23/97

Number of pages including cover sheet

TO:

Carlos Rodriguez  
OSHA

FROM:

Gussie Mustain  
Director of H R  
Elisnore LP

Phone

Phone

(714) 253-5706

Fax Phone

(520) 322-8008

Fax Phone

(714) 252-1947

CC:

REMARKS:

Urgent

For your review

Reply ASAP

Please Comment

OSHA #200 forms for TUCSON!

If you should have any questions -  
please do not hesitate to call!

Thank-You



Reason Related	Performance Measures			Measure Without Loss of Merit
	Measure High End No. Days	Measure Low End No. Days	Measure No. Days	
107	109	110	111	112
108	109	110	111	112
109	109	110	111	112
110	109	110	111	112
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149	109	110	111	112
150	109	110	111	112

NESSIES

P. of HR One 1/24/97

O LATER THAN FEBRUARY 1.













**NOTE:** This form is required by Public Law 91-502 and must be kept in this office for 5 years. Failure to maintain and provide same may result in the assessment of civil penalties and/or criminal sanctions. (See penalty requirements on the reverse side of form.)

**RECORDABLE CASES:** You are required to record information about every occupational injury, illness, or death, every occupational injury or illness which results in one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment beyond first aid. (See definitions on the reverse side of form.)

(A) OSHA No. 200	(B) Date of Injury or Onset of Illness	(C) Employer's Name	(D) Occupation	(E) Department	(F) Description of Injury or Illness	(G) Injury Result	(H) Initial Injury	(I) Initial Injury	(J) Initial Injury	(K) Initial Injury	(L) Initial Injury	(M) Initial Injury	(N) Initial Injury	(O) Initial Injury	(P) Initial Injury	(Q) Initial Injury	(R) Initial Injury	(S) Initial Injury	(T) Initial Injury	(U) Initial Injury	(V) Initial Injury	(W) Initial Injury	(X) Initial Injury	(Y) Initial Injury	(Z) Initial Injury
44-02107	4/4/91	Randy Rotter	MSR	Dept 473	Lifting object - Pain Elbow	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
44-08102	8/19/91	Dana Kuhl	Plc Mech	474	Act by door - Ankle Sprain	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
44-09195	4/1/91	SAK Sweaver	Plc Mech	476	Spinal Fall - Neck Pain	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
44-09703	4/1/91	David L. Tober	Researcher	476	Blunt Force - Head Pain	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

HANDWRITTEN

Company Name: ESMOR  
 Establishment Name: ESMOR  
 Establishment Address: 1100 W. 11th St. Anson, IA

Certification of Annual Summary Total by Bernie Hoffman  
 POST ONLY THIS PORTION OF THE LAST





FATALITY REPORT

1. Person reporting accident:

NAME: Dan Morelos TITLE: Communications Supervisor

HOW REPORTED: PHONE:  LETTER: \_\_\_\_\_ OTHER: \_\_\_\_\_

DATE & TIME OF REPORT: 23 December 1997 0940

2. NAME OF DECEASED: Wilkinson, Ralph Edward DOB: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SS#: \_\_\_\_\_ DEPENDENTS: Married/wife: Rose

3. EMPLOYER: Elsegore Aerospace Services PHONE: \_\_\_\_\_

ADDRESS: 7250 S. Tucson Blvd Tucson AZ 85700

DATE & TIME OF ACCIDENT: 12/23/97 0740 AM DATE OF DEATH: 12-23-97

EXACT LOCATION: Airport Northwest Airlines Parking Ramps

DESCRIPTION OF ACCIDENT:  
Employee fell 30 feet when Cherry Picker was moved that the employee was standing in while working on aircraft

NAME OF SUPERVISOR: Ralph Butler

NAMES OF WITNESSES: Douglas Kuehl. Truck operator

4. NAME OF PERSON TAKING REPORT: Carlo Shadingoff R9284

WAS OSHA NOTIFIED?: (642-6795) yes

NAME OF WORKERS' COMPENSATION CARRIER: Warsaw Insurance

Employee started working for Elsinore in December 96.  
Was an Air Force Aircraft Mechanic prior to starting work.

THE INDUSTRIAL COMMISSION OF ARIZONA  
Occupational Safety and Health Division  
FIELD NOTES

Date 12-23-97

Compliance Officer No. 10204

Visit No. 126999606

Arrived at site of accident # 915 Northwest aircraft tail # 9302

- Observed the body of the deceased Adam Edwards with age 47. Photos taken no harness on.
- Checked in with Sgt Swanson badge 58
- Pima County Photo ID Section on site taking photos as directed and requested by Air port Police
- Det Sgt Keith Kramer advised to investigate. Made contact with and will provide copy of investigation file to OSHA in Yuma AZ.
- Boom was on the air approximately 50' - appeared to have struck tail section of Northwest Aircraft # 9302 McDonnell Douglas Super 80
- Witness statements were taken by Airport Police.
  - appears to be more than just the panel fan operators as witnesses will be reviewed Police report
  - Photo taken of scene identified area where Boom struck aircraft.
- No lanyard or secured body belt knotted to the Boom permanently.
  - Body Harness appeared damaged and frayed.
  - Photos taken
  - Look at harness to see if it might have been worn during operation. Opinion is that it was not.
  - Rose MFG model 502506 10-16-85 Anise A-11 Englewood CA. Tazcan Harness
- Standards, citations and the truck. E-plate could used as non approved hook or pin listing
- Pumper truck needs to have pulley attached to prevent rope part and employee exposure
- Police report # A97120537 Det Sgt Keith Kramer
- Pima County Del Section Tank Photos. Second Set

THE INDUSTRIAL COMMISSION OF ARIZONA  
Occupational Safety and Health Division  
FIELD NOTES

Date 12-23-47

Compliance Officer No. R0204

Visit No. 126999606

- Only one truck has the boom operation for  
the line of material
- Mr. Wilkerson (Lyle Edward) came 0600 hrs
- 0645 start the line approximately
- 0730, approximate time of accident
- Only two people on site
- Mr. Wilkerson
- Douglas Kuhl
- Manager at home when the accident called  
around 0730 about accident. Reported -
- No Hazard Communication program
- Material Safety Data Sheets available
- No training provided
- No documentation of training
- No PPE provided

- Harness has been at company since Rudy started  
work. Only one company has on site
- Only training is to wear it
- No hazard avail
- Just OSHA only
- We request from the company to  
regulate the harness by Raully
- Rudy States Company would  
have restricted if asked for one
- Truck used middle of hike to  
end of Gold Street
- Owns his own belt and lanyard for  
side jobs 3 months
- Lash used as a work truck -  
same harness on it
- Company uses Manager's judgement to  
correct problems
- Busie maintain Resource manager in past last month  
did not look at equipment

THE INDUSTRIAL COMMISSION OF ARIZONA  
Occupational Safety and Health Division  
FIELD NOTES

Date 12623-97

Compliance Officer No. R0204

Visit No. 1269996A

Danyska Kuchan

- Was driving the truck when accident happened
- Not trained in class provided OJT
- first time with walkman
- Walkman, checked out last year
- Could not tell if wearing harness on bucket
- Has been tied to the boom the same way for past ~~two~~ 6 years
- Company policy this was he understood

John M. Sweeney

17675 EL Sereno Lane

Marrana AZ 85653

- Employed in Nov 1984 14 years
- Was operated truck week before last on Wed & Thu 10-14-12 of Dec 97.
- Used the harness - put belt around waist
- Received no formal training
- Noticed no damage on belt.
- Looked over it for damaged portions
- No lanyard available
- Hooked up the same way for almost 6 years
- Has MSDS for Steelband
- Not trained at Hazcom
- Says Company may have

Harness: Englewood California - Rose MFG model 502506 dated 10-16-85  
ANSI A-10-114 removed by Tucson Police held as evidence

Autopsy Report: Requested 1-14-98 from Judy at Forensic Science Center  
Police Report: Requested from Sgt Keith Kramer. Will provide what he has.

PERSONAL INTERVIEW STATEMENT

Date: 12-23-97 Time: 1010

Tucson, AZ  
Place of Interview:

I, (Mr./Mrs.) John M Sweeney

of \_\_\_\_\_  
(street address)

Telephone No. \_\_\_\_\_

Social Security No. \_\_\_\_\_

Age \_\_\_\_\_ (was am) employed by Elsworpe Aerospace

Whose address is P.O. Box 23338 Tucson AZ 85734  
(complete address of employer)

From Nov 1997 to Present  
(if still employed "present").

My occupation is A & P mechanic in the Service  
\_\_\_\_\_ dept. I (am am not) a member of a  
union or labor organization. (the union or labor organization I  
belong to is NA)

The safety belt has not been inspected by  
Qualified Personnel as far as I know. Check  
with management people as I am not here  
Everyday. I normally look at safety belt  
myself for when we thread bare spots.  
I did not know that a safety harness was  
Required, till the man from OSHA told me.  
No formal training on belt. I used  
the device track on 10/9/11 of December.  
We are normally not moving boom when  
track is moving.

PERSONAL INTERVIEW STATEMENT

Date: 23 Dec 97 Time: 12:00

Elsmore Tucson  
Place of Interview:

I, (Mr./Mrs.) Douglas Kuhl

of \_\_\_\_\_  
(street address) \_\_\_\_\_ (city) \_\_\_\_\_ (state) \_\_\_\_\_ (zip) \_\_\_\_\_

Telephone No. \_\_\_\_\_ Social Security No. \_\_\_\_\_

Age \_\_\_\_\_ (was/am) employed by Elsmore Aerospace Service

Whose address is Elsmore Aerospace P.O. Box 23338 Tus AZ 85785  
(complete address of employer)

From 1990 Dec to Present  
(if still employed "present")

My occupation is Aircraft mech. in the Service

\_\_\_\_\_ dept. I (am/am not) a member of a union or labor organization. (the union or labor organization I belong to is N/A).

@ 7:30AM Dec 23, 1997, I pulled the deice truck up to Northwest's M80 LF wing to be deiced. Mr Wilkins started to deice the LF wing a part of the fuselage. At this time I was called on my beeper by United Airlines that they needed deicing and their departure was 7:45am. I instructed Mr Wil that we were only going to do the left wing on Northwest and then go deice United, and then come back and finish Northwest because their departure was until 8:00am. As Mr Wilkins finished deicing the left wing...

120479606

573-8182

573-8349

Questions still needing answers from the employer.

Answers provided by Randy Butler, Manager  
1-6-98

When was the Aerial Lift Manufactured?

put into service in 2-20-86 per Aerial Device  
Stability Report

Who is the Manufacturer?

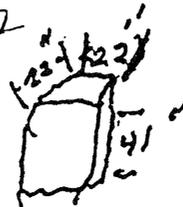
Time Manufacturing model VT.29. E. DCI  
Serial No. G18502

Mounted on Blue  
model CP 1492  
1685321573

What are the dimensions of the bucket?

22" wide x 22" wide x 41" high

{See reverse page}



What is the maximum height that the boom can be extended?

Can extend 35' / Rated at 150' 450 lbs tested -  
Mounted 1/2 ton or larger. Bucket Rated at 300 lb

Are there any records of inspection that were performed on the  
Aerial Lift?

accomplished 10-24-97 servicing of fuels,  
oils and tune-ups. Checked for visual levels of Hydraulic fluid  
Perform by Ground Support Mechanic Frank Billock & Super  
How often are the lift controls tested?

prior to season. No procedures for daily inspection

What are your procedures for ensuring that inadvertent movement of  
the Boom Truck does not occur during deicing operations?

Not available, have not experienced inadvertent  
movement by itself

Are wheel chocks available for the truck that was used during the  
day of the accident?

No wheel chocks on boom truck

Is there a copy of the Manufacturers Instructions available?

Copies were available and reviewed by Compliance Officer  
Kept inside Truck.

What type of devices or methods are made available for employees to communicate when performing deicing operations?

Are portable radios available?

None were available at the time of the accident

Are hand signals used?

Hand signals and yelling. No specifically designed  
Hand Signals.

How are your employees notified that they need to move onto another aircraft for servicing?

Hand signals and yelling as above answered. Now being accomplished by radios and ear pieces.

Are Instructions available on proper methods to use when climbing into aerial buckets.

Verbal instructions given by Supervisor hands

Are Instructions available on movement of vehicles around aircraft?

yes, however not written company policy. Verbal.  
Lifting moving and positioning of lift

Are spotters used during periods of poor lighting?

Two people operation with a third as spotter. day of accident spotter was not available.

When Deicing a MD Super 80 which portion of the aircraft need to have solutions applied?

Top Surface of fuselage, upper and lower surfaces of both wings and upper lower portion of horizontal stabilizer

Did Mr Ralph Wilkinson receive any training on Deicing from Northwest Airlines?

Records on file with Northwest. Film plus test.

Was Mr Ralph Wilkinson scheduled to receive Deicing Training from Northwest Airlines?

Had received recurring training before the

Since Mr Ralph Wilkinson had received training from Reno Airlines on MD Super 80, was he also required to receive training from other airlines that use your services?

*yes and had received from Reno, United and Northwest.*

Did anyone make an assessment of Personal Protective Equipment that would be required in the workplace prior to the Accident involving Mr Wilkinson?

*No hazard assessment for each task require of an employee.*

Has anyone evaluated employees in the performance of deicing operations?

*one week prior 12-10-92. Observed Roger Wilbur in bucket not known if he wore harness*

Have the procedures used by an employee to gain access into the bucket of the lift be evaluated?

*No. Supervisor comments were that it is necessary since he has employee of different heights*

Who constructed the metal ladder that employees use to gain access?

*Came with the truck*

What are the dimensions of the rungs on the metal ladder?

*16" each only two rungs available 27" diagonal step to bucket and then 26" step to top of bucket.*

Do employees step onto the top rung of the metal step ladder in order to gain access onto the bucket of the lift?

*yes*

Have complaints been received on access to the bucket?

*Have not received any complaints*

# Kids

Continued from Page 1B

"to make a Christmas party for them," Levy said. The children are removed from their homes because of abuse or behavioral problems, she said. The few belongings they own often get left behind, she said. "Our children come to us with what few belongings they have in garbage bags. They don't have suitcases."

Anonymous donors have paid for "a significant number of gifts so the children will have presents under the tree on Christmas," followed by runner at a steakhouse and a movie Christmas gift, she said.

The lawsuit states that the Sheriff's Department failed to provide adequate warning devices to stop the driver from the Sheriff's Department spokesman, has said.

# Worker de-icing airplane is killed in fall

A 47-year-old man fell to his death while de-icing a plane yesterday at the Tucson International Airport.

Ralph Wilkinson Sr., 47, of Tucson, was doing a routine de-icing of a Northwest Airlines plane at 7:30 a.m. when he fell 35 feet from a lift truck. He was working from a bucket secured on the lift.

De-icing is routine work for this time of year to rid plane wings of frost or snow, said Patrick Kenna, president of Elsinore, the

Los Angeles-based company in charge of the work. In Tucson, de-icing is done from October through the winter, Kenna said.

Elsinore contracts with airlines to provide ground services. Elsinore has about 600 employees who work at 30 locations nationwide.

Wilkinson had worked full time for the company as an aircraft mechanic for about a year, Kenna said. This is the company's first accident of this kind, he said.

# WHERE TO GO



purchase

## 30-70% off retail

- Nike Factory Store
- E & J's Designer Shoe Outlet
- Mikasa
- Sunglass Warehouse
- Vitamin World
- Linens'n Things
- Paper Warehouse Outlet
- Caner's For Kids
- American Outdoor
- Rolfe Leather Goods
- Games & Noble Bookellers
- Leggo Manes & Pavier
- Ross Dress For Less
- Banister Shoe Studio
- Black & Decker Factory Store
- Cost Cutlers Outlet
- Dr. 5TH - Saks Fifth Avenue Outlet
- Donna Karan Company Store
- Samsonite Company Store
- Big Dog Sportswear
- Dress Barn/Dress Barn Woman
- Bugle Boy Factory Outlet
- Keaton's Restaurant Bar & Grill
- Stage 35 Powered by Sega

...AND LOTS, LOTS MORE!

# GOOTHILLS MALL

## OUTLETS & ENTERTAINMENT

# Diapers

Continued from Page 1E

And for the first time in the four years the drive has taken place, people are stealing diapers from collection bins, Gottlieb said.

Gottlieb said employees at businesses with collection bins have asked that the diapers be picked up more frequently because the boxes contain chemicals as the day goes on.

Last year, the drive reached its goal of 100,000 diapers.

- Diapers can be dropped off at:
  - Any Norwest Bank branch
  - Any Magpies Gourmet Pizza
  - Diaper Drive Headquarters, which also accepts financial donations. Make checks out to December Diaper Drive and mail to ReSoive Inc., 4433 E. Broadway, Suite 202, Tucson 85711.

# Hungry

Continued from Page 1E

whose Ward 6 includes the soup kitchen, yesterday declined to comment about the changes at the Toole Avenue facility.

"We are not up to speed on this issue," said Andy Squire, an aide to Ronstadt.

The Toole Avenue site has drawn criticism since it opened early in 1993. Some business leaders and neighborhood groups have complained that the center detracts from the quality of life in the downtown area.

The city's pilot program at Toole, which aims to connect people with services and programs as part of an effort to disperse homeless services to locations throughout Tucson.

Closing the Toole Avenue center would force business leaders have suggested would harm downtown businesses and residences. Which says having 250 homeless homeless people in the downtown area is not good for the city.

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# Plunge fatal to airport worker

A mechanic de-icing a Northwest Airlines jet falls from the bucket of a crane.

By TODD M. HARDY and MICHAEL R. GRAHAM  
Citizen Staff Writers

An aircraft mechanic fell 30 feet to his death yesterday when he attempted to remove ice from the wings of a Northwest Airlines jet at Tucson International Airport.

About 10:30 a.m. on Tuesday, a McDonnell-Douglas MD-80 plane, which was preparing to take off for Minneapolis, Olive said.

He said most of the passengers were aware that Wilkinson had fallen from the bucket onto the pavement.

The flight was canceled, and passengers were rerouted to the destinations on other flights.

Elsinore President Pat Kenn said it was the first time one of the company's employees had died while de-icing a plane.

Workers are required to wear safety harness while de-icing planes, Kenn said, and it was known whether Wilkinson was properly secured.

Elsinore provides ground assistance at 30 airports around the United States.

Wilkinson also assisted in baggage handling and directing airplanes for Northwest.

The Tucson Airport Authority and Elsinore are conducting independent investigations of the incident. The National Transportation Safety Board also will investigate.

Federal Aviation Administration regulations require the de-icing of airplanes anytime there is ice or frost on the wings.

So far this winter, Northwest Airlines has de-iced only one other airplane at TIA.

Kenna said Wilkinson is survived by his wife, Rose, and a son, Ralph Jr.

## Caverns sap

**Melissa Wills is still reeling from the shock.**  
Just over a week ago, a fire destroyed her South Side mobile home and nearly all of her family's belongings, including the Christmas tree and presents.  
"I lost everything," Wills, 35,

stepped in to pay for some at a hotel and gave the family cashers for food and clothing.  
"Thanks to the Red Cross, we all have clothes on our backs," Wills said.  
Wills, her 15-year-old daughter, Jeremy Turner, 17-year-old son, and 2-year-old daughter

Diamond said the party, the sixth the chapter has given, was a way for the organization to keep in touch with some of the families it has helped over the past year.  
"You don't just walk away from a family (after helping them)," she said. "You hope you can be the

**"I lost everything. Thanks to the Red Cross, we all have clothes on our backs."**

# GENERAL INDUSTRY INFORMATION SHEET

Inspection # \_\_\_\_\_

Present Credentials

Present copy of Act / Poster

Site

Date 12-25-97

Time 10:35

Reason for Inspection (G.S., Referral, Complaint)

Company Name (Legal) Elite Aire Airspace Services LP

Address 7750 So. Tucson Blvd Tucson AZ 85700

Mailing Address P.O. Box 23338 Tucson AZ 85734

Business Phone (520) 573-9349

Correspondence (Attention of:) Pat Kenna 14300 I.E. Jansick Santa Ana, CA 92707

Management Officials Randy Butler City Manager, Tucson Hospital

Walkaround Representative Randy Butler

Nature of Business Aircraft Services Years in Business: 17

Parent Company Same Name in VA

Address 14300 I.E. Jansick Santa Ana CA 92707

Number of Employees 10 At time of Inspection 3 In AZ 10 In USA \_\_\_\_\_

Union Y (N) Steward Name \_\_\_\_\_ Local Number \_\_\_\_\_

Union Name & Address \_\_\_\_\_

Employee Rep. Y N Rep's Name \_\_\_\_\_

Workers' Comp. Carrier Warren Insurance Co

Haz Comm Written \_\_\_\_\_ MSDS  Training \_\_\_\_\_ Labeling \_\_\_\_\_

Safety Program Formal  Informal  Nonexistent \_\_\_\_\_ Safety Committee \_\_\_\_\_

ADOSH Training Provided \_\_\_\_\_

Personal Protective Equipment Required None

Data Not Available [ \_\_\_\_\_ ] LWDI Rate: \_\_\_\_\_

OSHA-200 Log of Injuries						Occupational Illness Cases							LWDI Rate:					
1	2	3	4	5	6	7a	7b	7c	7d	7e	7f	7g	8	9	10	11	12	13

OSHA-101 Sample Cases or Workers Compensation Insurance Records (records must be present within 6 workdays after knowledge of incident)

Name	Injury / Illness	Date Injured	Date Back to Work	# of Lost Workdays

## SCOPE OF INSPECTION

Walkaround ( may designate a rep )

Monitoring ( may be used )

ANSI A10.14-1975

# American National Standard

requirements for  
safety belts, harnesses, lanyards,  
lifelines, and drop lines for  
construction and industrial use



american national standards institute, inc.  
1430 broadway, new york, new york 10018

A10.14-1975

ANSI  
A10.14-1975

**American National Standard  
Requirements for  
Safety Belts, Harnesses, Lanyards,  
Lifelines, and Drop Lines for  
Construction and Industrial Use**

Secretariat  
National Safety Council

Approved: April 30, 1975  
American National Standards Institute, Inc

# American National Standard

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

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Printed in the United States of America

A14M675/350

**Foreword** (This Foreword is not a part of American National Standard Requirements for Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use. A10.14-1975.)

This standard is one of a series of American National Standards on safety requirements for construction and demolition operations. Others in the series, approved by ANSI to date, cover powder actuated tools; personnel and material hoists; demolition; transportation, storage, handling, and use of explosives; scaffolding; concrete construction and masonry; space heating devices; safety nets; steel erection; asphalt pavement construction; and safeguarding building construction and demolition operations against fire. Complete titles are given in a listing on the back cover.

This standard was prepared by American National Standards Committee on Safety in Construction and Demolition Operations, A10. The A10 Committee believes that this standard represents the first nationwide attempt to standardize the construction and use of safety belts and harnesses, and their appurtenances. The Standards Committee realizes that this standard will raise many questions that are not at present covered and that the state of the art will advance considerably in the future. This standard, therefore, will be in a continuous state of review by the A10-14 Subcommittee.

It should, perhaps, be explained that the A10 Committee feels that belt and lanyard specifications and structures should be carefully tailored to the use to which they are to be put. In all instances the structure must be designed to interrupt the most severe fall that can occur on the job without doing injury to the person. Additionally, the belt or harness must be designed to provide reasonable comfort and freedom of movement. It seems essential to the Standards Committee to consider each general type of belt or harness together with its associated hardware and lanyard as a system for delivering personal safety. It does not seem possible to achieve a safe system otherwise, and this is the philosophy which the Committee has tried to follow consistently in the writing of this standard. As a single example, if a D ring and snap hook are designed to mate, it will not be possible for the ring to bring pressure on the keeper in such a way as to be released. A change in either component may make inadvertent release possible and negate the safety of the system although each component, considered alone, is still perfectly satisfactory. This is why tests of systems as units have been specified.

The A10 Committee solicits comment, experience, and injury or accident case histories that may be pertinent to the revision of this standard.

Suggestions for improvement of this standard will be welcome. They should be sent to the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

This standard was processed and approved for submittal to ANSI by American National Standards Committee on Safety in Construction and Demolition Operations, A10. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the A10 Committee had the following members:

Fred M. Livingston, Jr, Chairman  
Robert M. Farrell, Vice-Chairman  
J. P. O'Donovan, Secretary

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American Federation of Labor & Congress of Industrial Organization . . . . .	Samuel J. Henry (Alt) Paul H. Connelley Robert M. Farrell J. Short
American Institute of Architects . . . . .	(Representation Vacant) J. R. Dowling (Alt)
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Individual Members . . . . .	Dan C. Christie W. B. Garyotis Robert L. Jenkins Robert L. Peterson Gustave J. Provenzano A. J. Scardino, Jr F. A. Van Atta Ingo Zeise

Subcommittee 7.10-14 on Safety Belts and Lifelines, which was responsible for developing this standard, had the following members:

J. C. Nelms, Jr. Chairman

Doug Brown  
Frederick H. Deeg  
P. C. Ervin, Jr.  
Jonathan E. Sharp (Alt)  
Robert J. Evans  
Preston George  
Rolf E. Hamstron  
J. W. Joy  
W. B. Murphy  
Wilmer F. Noser (Alt)  
Allen H. Neustater  
C. N. Sumwalt, Jr (Alt)  
Arthur Spiegelman  
F. A. Van Atta  
Franklin H. Young

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# American National Standard Requirements for Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use

## 1. General

1.1 **Scope.** This standard establishes performance criteria for the construction and use of safety belts, harnesses, lanyards, lifelines, and drop lines, and their appurtenances. It does not include linemen's body belts and pole straps, window washers' belts, or safety ladder belts.

### 1.2 Purpose

1.2.1 This standard details equipment and methods for protecting workers from injuries secondary to falls and for preventing falls.

1.2.2 This standard is designed for use by employers and employees. It has been so written that it may also be adopted by regulatory agencies or serve as a guide in the formulation of regulations.

1.3 **Variations.** Variations from the requirements of this standard may be granted by the authority having jurisdiction when it is clearly evident that the workers are equally protected by the procedure or equipment permitted by the variation. The authority having jurisdiction should recognize and approve newly developed techniques, methods, or equipment when it has been established that they will provide equal or greater safety.

## 2. Definitions

2.1 **Shall.** The word "shall" is to be understood as mandatory.

2.2 **Should.** The word "should" is to be understood as advisory.

2.3 **Buckle.** Any device for holding the belt or harness closed around the wearer's body.

2.3.1 **Tongue Buckle.** A buckle that depends upon a tongue passed through holes in the webbing or strength member of the belt to maintain its position.

2.3.2 **Single-Pass, Fixed-Bar Friction Buckle.** A buckle that maintains its position on the webbing by means of a single pass of the webbing over the fixed center bar.

2.3.3 **Single-Pass, Sliding-Bar Friction Buckle.** A buckle that maintains its position on the webbing by means of a single looping of the webbing over the sliding center bar.

2.3.4 **Double-Pass Friction Buckle.** A buckle that maintains its position on the webbing by friction and requires a double pass of the webbing over the center bar.

2.3.5 **Quick-Release Buckle.** A multiple component buckle that can be released with one positive action and whose releasing mechanism is positively locked in normal use.

2.4 **Drop Line.** A vertical line from a fixed anchorage, independent of the work surface, to which the lanyard is affixed.

2.5 **Fixed Anchorage.** A secure point of attachment, not part of the work surface, for drop lines, lifelines, or lanyards. The fixed anchorage must be capable of supporting a minimum deadweight of 5400 pounds (2450 kg) per worker.

2.6 **Lanyard.** A flexible line to secure a wearer of a safety belt or harness to a drop line, lifeline, or fixed anchorage.

2.6.1 **Lanyard Connecting Toggle.** A length of flexible wire rope terminating in a positively controlled, manually locking T mechanism adapted for insertion in a fixed anchorage through either open or blind holes having a maximum diameter of 1-1/4 inches (3.2 cm).

2.7 **Lifeline.** A horizontal line between two fixed anchorages, independent of the work surface, to which the lanyard is secured either by tying off or by means of a suitable sliding connection. The lifeline must be capable of supporting a minimum deadweight of 5400 pounds (2450 kg) per person applied at the center of the lifeline.

**2.8 Safety Belt or Harness.** A device for the specific purpose of securing, suspending, or retrieving a worker in or from a hazardous work area.

**2.8.1 Body Belt.** A simple or compound strap with means for securing it about the waist and for securing a lanyard to it.

**2.8.2 Chest Harness.** A design of simple or compound straps with means for securing it about the rib cage, with shoulder straps to ensure proper chest strap positioning, and with provision for attaching a lanyard in the back between chest and shoulder level.

**2.8.3 Body Harness.** A design of simple or compound straps that may be secured about the wearer in such a manner as to distribute the stopping forces over the thighs, buttock, chest, and shoulders, or any combination thereof, and with provision for attaching a lanyard in the back between chest and shoulder level.

**2.8.4 Suspension Belts.** A design of simple or compound straps that may be secured about the wearer's body as an independent work support. These are commonly referred to as saddle belts, bosuns' chairs, or tree trimmers' belts.

**2.9 Strength Member.** Any portion of an assembly that could be subject to shock loading.

### 3. Belts and Fittings

#### 3.1 Materials

**3.1.1 Strength Members.** Strength members of belts may be made of any material, except leather, that will result in a finished belt capable of meeting the specified minimum performance tests described in Section 5.

**3.1.2 Hardware.** All hardware, except rivets, shall be of drop-forged or pressed steel with a corrosion-resistant finish.<sup>1</sup> Surfaces shall be smooth and free of sharp edges.

#### 3.1.3 Buckles

**3.1.3.1 Tongue buckle frames** shall be of drop-forged steel with a corrosion-resistant finish.<sup>1</sup> Corners shall have a minimum radius of 1/4 inch (6.4 mm). Buckle frames shall be capable of withstanding a tensile test of 4000 pounds (1815 kg) without failure. Failure of the frame shall be breaking or cracking.

**3.1.3.2 Friction buckles** shall be drop forged or stamped of steel with a corrosion-resistant finish.<sup>1</sup> Corners shall have a minimum radius of 1/4 inch (6.4 mm). All metal components shall be of drop-forged steel with a corrosion-resistant finish.<sup>1</sup> The buckle shall withstand

a tensile test of 4000 pounds (1815 kg) without failure. Failure shall be cracking or breaking of any part.

**3.1.3.3 Quick-release buckles** consist of three parts: (1) an engaging frame, (2) a locking lever with keeper tongue assembly, and (3) a keeper tunnel. Positive closure is obtained by engaging the locking lever through the engaging frame and fully inserting the keeper tongue into the keeper tunnel. Rapid removal of the belt is accomplished through the quick release of the buckle by pulling the keeper tongue out of the keeper tunnel, which creates a lever action disengaging the locking lever assembly from the engaging frame, allowing the belt to drop free of the wearer. All metal components shall be of drop-forged or pressed steel with a corrosion-resistant finish.<sup>1</sup> The buckle shall withstand a tensile test of 4000 pounds (1815 kg) without failure. Failure shall be cracking or breaking of any part.

**3.1.4 D Rings and Snap Hooks.** D rings and snap hooks that may be subjected to impact loads shall be of drop-forged steel with corrosion-resistant finish.<sup>1</sup> They shall withstand a 5000-pound (2300-kg) tensile test without failure. Failure of a snap hook shall be distortion sufficient to release the keeper. Failure of the D ring shall be breaking or cracking.

**3.1.4.1 Exception.** Snap hooks used for *positioning only* may be of steel rolled stock with a corrosion-resistant finish.<sup>1</sup> Such hooks shall be capable of withstanding a tensile test of 1500 pounds (680 kg) with a maximum permanent deformation of 1/64 inch (0.4 mm).

**3.1.5 Lanyards.** Lanyards may be made of any fibrous or metallic material satisfactory for the application and which will result in a finished lanyard capable of meeting the qualification tests indicated in Section 5.

#### 3.2 Construction

**3.2.1** The body strap shall be not less than nominal 1-3/4-inch webbing.

**3.2.2** D rings shall be so proportioned as to minimize the possibility of accidental disengagement of a snap hook by depression of the snap hook keeper latch by the D ring.

**3.2.3** Snap hooks shall be proportioned to minimize the possibility of accidental disengagement. The snap keeper shall be restrained by the snap nose to absorb side loads.

**3.2.3.1** Snaps with a gate opening of 1 inch or more, such as ladder snaps and reinforcing bar snaps, shall not be used over D rings.

**3.2.3.2** Lanyards shall not be lengthened by connecting two snap hooks together.

**3.2.4** Rope lanyards shall be spliced directly to the belt through an integral rope loop, spliced to a D ring,

<sup>1</sup> Refer to 5.2.

or spliced to a snap hook for attachment to the D ring. Splices to hardware shall be over suitable thimbles.

3.2.5 Webbing lanyards used on belts without D rings shall terminate in a sewn eye of sufficient size to accommodate the width of the belt, but no larger. A snap hook, as described in 3.1.4, shall be sewn to the free end, which shall result in a finished lanyard capable of meeting the qualification tests indicated in Section 5.

3.2.6 Drop lines shall have 5400 pounds minimum tensile strength (2450 kg) and at the least a 3/4-inch (19-mm) nominal diameter if natural fiber rope is used or a 3/8-inch (9.5-mm) nominal diameter if wire rope is used, and be at least equal in strength to the fixed anchorage specified in 2.5. Not more than one person shall be tied off to a fiber rope drop line. If more than one person is tied off to a wire rope drop line, the fixed anchorage strength shall be increased in proportion to the number of persons tied to the drop line.

3.2.7 Lifelines shall be of wire rope, at least 1/2 inch (12.5 mm) in diameter, attached to at least two fixed anchorages. The fixed anchorages shall be capable of supporting a 5400-pound (2450-kg) deadweight load per person applied at the center of the lifeline.

### 3.3 Classification according to Use

3.3.1 Safety belts, harnesses, and lanyards are classified according to their intended use as:

Class I: Body belts (work belts), used to restrain a person in a hazardous work position and to reduce the probability of falls.

Class II: Chest harnesses, used where there are only limited fall hazards (no vertical free fall hazard) and for retrieval purposes, such as removal of a person from a tank or bin.

Class III: Body harnesses, used to arrest the most severe free falls.

Class IV: Suspension belts, independent work supports used to suspend or support the worker.

3.3.2 Lanyards shall be kept as short as reasonably possible to minimize the possibility and length of a free fall. Whatever the length of the lanyard, it shall be tied off as short as possible. Care shall be used to see that the lanyard is attached to a fixed anchorage by means that will not reduce its required strength. A knot will reduce the strength of a rope lanyard by at least 50%.

3.3.3 The free ends of lanyards of synthetic materials shall be lightly seared and, in the case of round rope, shall also be seized (whipped).

3.3.4 Wire rope or rope-covered wire lanyards shall not be used where impact loads are anticipated or where there is an electrical hazard.

3.3.5 When subjected to a fall, body belts (Class I) together with their associated lanyards shall produce a stopping force of not more than 10X gravity.

3.3.6 Chest harnesses (Class II) and suspension belts (Class IV) shall not be used for stopping falls and are not subject to impact requirements.

3.3.7 When subjected to a fall, body harnesses (Class III) together with their associated lanyards shall produce a stopping force of not more than 35X gravity.

3.3.8 Belts and lanyards that have been subjected to impact loading shall be removed from service and destroyed.

## 4. Certification and Inspections for Belt and Lanyard Assemblies

4.1 Manufacturers' Certification. Each belt and lanyard assembly shall bear identification marks, either indelibly printed into the belt or stamped into permanently attached tags, which shall identify the manufacturer. The identification shall also bear the date of manufacture and the number of this standard. The number of this standard shall constitute a certificate that the minimum requirements have been met. All of these markings shall be in easily legible characters and so applied that they shall be indelible during the life of the belt.

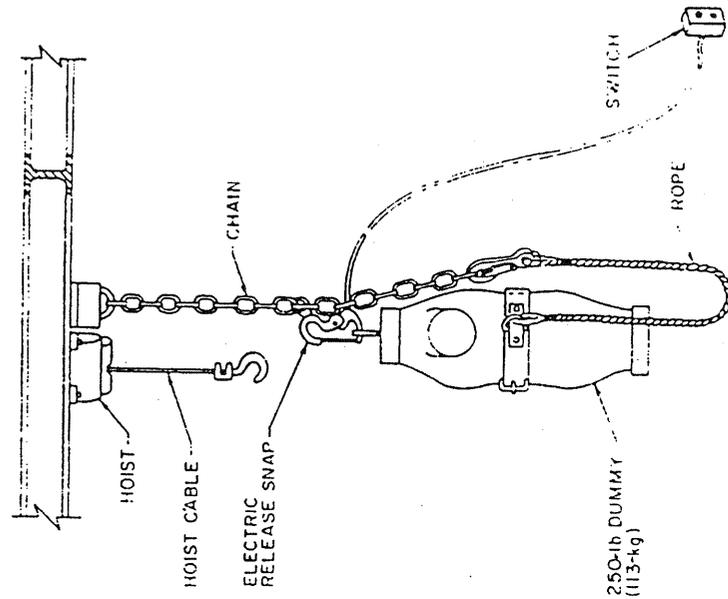
4.2 Users' Inspections. Each belt and lanyard assembly shall be visually inspected for defects prior to each use. The assembly shall be inspected according to the manufacturer's recommendations not less often than twice annually. The date of each such inspection shall be recorded on an inspection tag that shall be permanently attached to the belt.

## 5. Qualification Tests

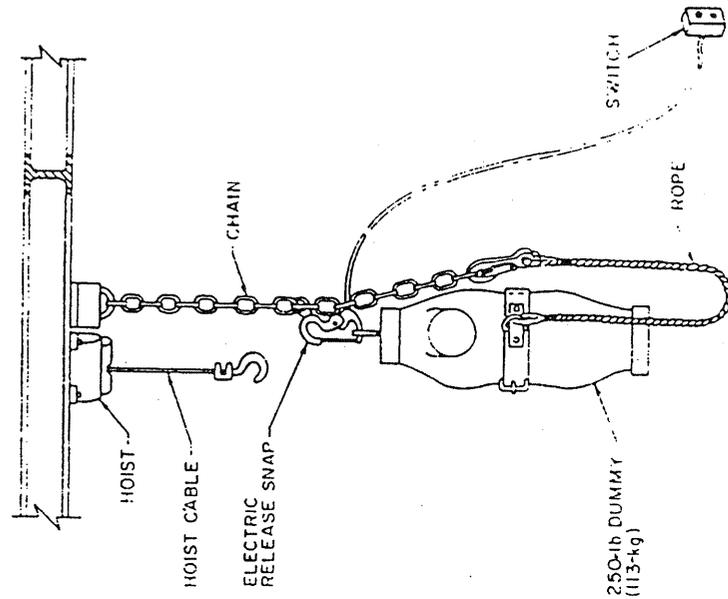
5.1 All belts, harnesses, and lanyard shall be made of high-quality materials only and assembled in a workmanlike manner.

5.2 Samples of each type and class of hardware, except rivets, shall pass without corrosion a 50-hour salt spray test by the method given in American National Standard Salt Spray (Fog) Testing, Z118.1-1974 (ASTM B117.73).

5.3 Samples of each type and class of belt, harness, and lanyard assembled together as a unit shall withstand without failure a test consisting of three successive drops of a 250-pound (113-kg) rigid weight falling free through a distance of 6 feet (1.8 m). (See Fig. 1 and 2.) The free fall distance shall be established by permitting the weight in the belt to hang free supported by the lanyard. The weight shall then be lifted 6 feet (1.8 m) plus or minus 1 inch (2.5 cm) and released by a quick-release

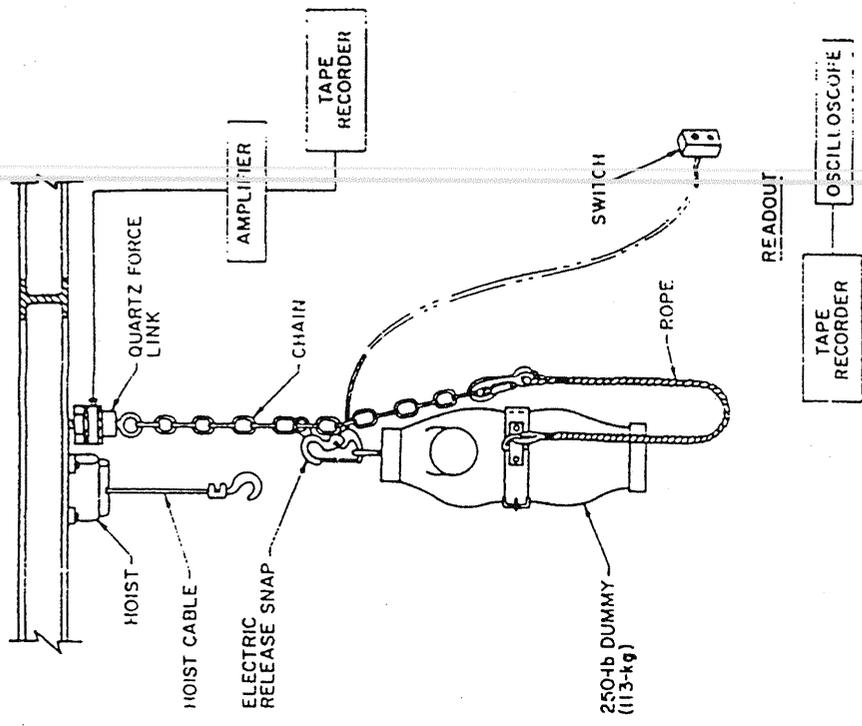


Hoisting Procedure  
(a)

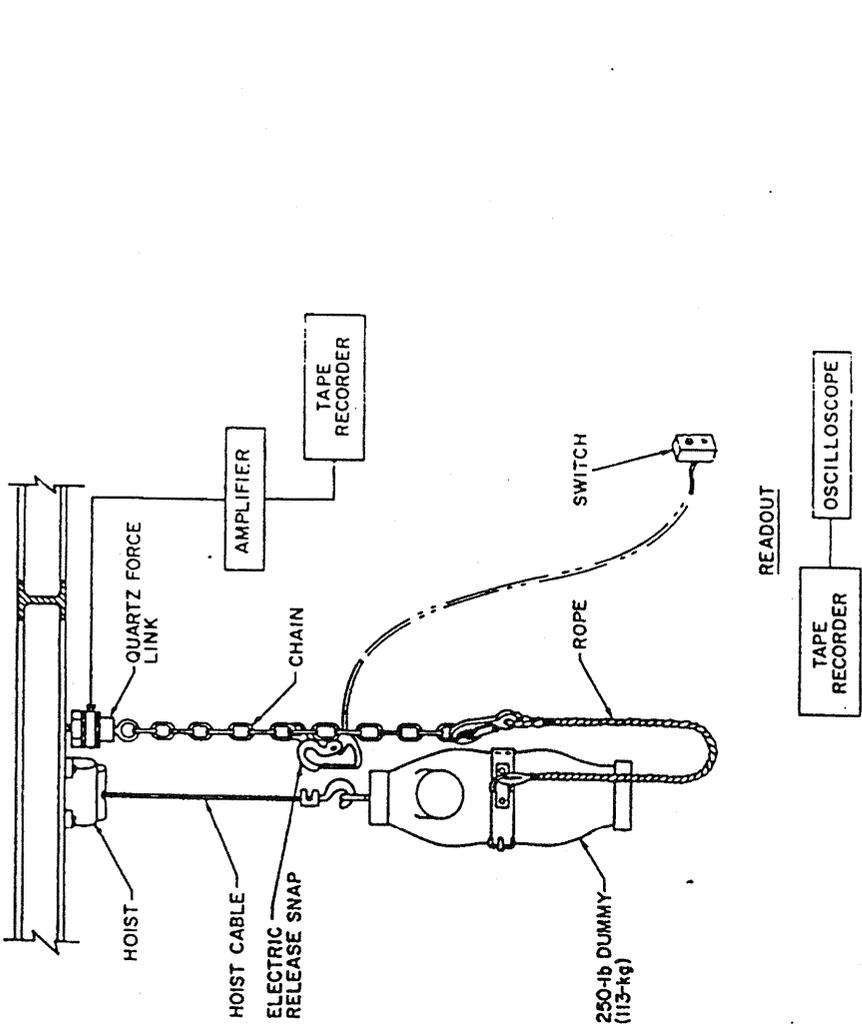


Configuration When Ready for Drop  
(b)

Fig. 1  
Uninstrumented Drop Test



Hoisting Procedure  
(a)



Configuration When Ready for Drop  
(b)

Fig. 2  
Instrumented Drop Test

trip. The weight shall be a rigid cylindrical or torso-shaped object with a girth of 38 inches (97 cm) plus or minus 2 inches (5.0 cm) and shall weigh 250 pounds (113 kg) plus or minus 1/4 pound (0.1 kg). The lanyard for this test shall be 6 feet (1.8 m) plus or minus 1 inch (2.5 cm) from the anchorage to the attachment on the belt. The anchorage shall be rigid. The belt or harness

shall be applied to the weight as it would be to a man. Failure shall consist of any breakage or slippage sufficient to permit the weight to fall.

5.4 Belts, harnesses, and lanyards that have been subjected to drop tests shall not be used except for display and education.

## **American National Standards on Safety Requirements for Construction and Demolition Operations**

- A10.3-1972 Powder Actuated Fastening Systems, Safety Requirements for
- A10.4-1975 Personnel Hoists, Safety Requirements for
- A10.5-1975 Material Hoists, Safety Requirements for
- A10.6-1969 Demolition, Safety Requirements for
- A10.7-1970 Transportation, Storage, Handling, and Use of Commercial Explosives and Blasting Agents in the Construction Industry, Safety Requirements for
- A10.8-1969 Scaffolding, Safety Requirements for
- A10.9-1970 Concrete Construction and Masonry Work, Safety Requirements for
- A10.10-1970 Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry, Safety Requirements for
- A10.11-1971 Safety Nets, Minimum Requirements for
- A10.13-1972 Steel Erection, Safety Requirements for
- A10.14-1975 Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use, Requirements for
- A10.15-1974 Dredging, Safety Requirements for
- A10.17-1975 Asphalt Pavement Construction, Safe Operating Practice for
- A10.21-1973 Safeguarding Building Construction and Demolition Operations (NFPA No. 241-1973)

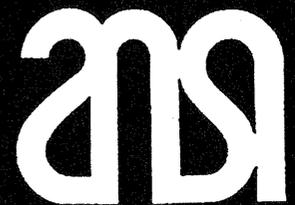
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ANSI A92.2-1989

# American National Standard

for vehicle-mounted  
elevating and rotating  
work platforms



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A92.2-1969

**American National Standard  
for Vehicle-Mounted Elevating and Rotating  
Work Platforms**

**Sponsors**

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**Approved November 3, 1969  
American National Standards Institute, Inc**

# Appendix

(This Appendix is not a part of American National Standard A92.9-1969, but is included for information purposes only.)

## A1. Recommendations Concerning Equipment

**A1.1 Installation.** If an aerial device is mounted or remounted by other than the manufacturer or authorized dealer, the method of mounting should be in accordance with 5.1 and 5.3 of this standard.

The manufacturer's manual of instructions relating to installation and truck-frame reinforcement should be followed.

**A1.2 Modifications.** The manufacturers should be consulted *prior* to alterations of the basic design of the aerial device.

**A1.3 Replacement Parts.** The manufacturer's manual should be used in the selection of replacement parts or components to assure that they are identical to, or safer than, their counterparts in the original device.

**A1.4 Moving Operations.** When the aerial device is used in a moving operation, care should be taken that the design considerations are not exceeded.

**A1.5 Maintenance.** All recommendations made in the manufacturer's manual should be followed with respect to maintenance, repairs, and adjustments.

**A1.6 Periodic Inspection and Tests.** Inspections and tests should be performed at regular intervals, including: loading, stability, visual inspection, and insulation. The following are suggestions for field testing:

(1) Test stability on level ground using 1.5 times the rated capacity. Be sure that wheels stay on the ground. This will also act as a load test, and defects such as cracks may be noted at this time.

(2) Inspect visually for evidence of defects.

(3) Insulated units may be tested by:

(a) Using Section 5 of this standard as a guide where adequate test facilities are available.

(b) Field test, using the manufacturer's built-in monitoring device, if provided (see Fig. A1).

(c) For units rated under 69 kV by placing an ammeter in the circuit between a test power-line and the metal assembly of the upper end of the insulated boom. The minimum voltage of the test line should be that of any circuit on which the device is to be used. The current should not exceed one milliamperere at 69 kV.

## A2. Recommendations for Selection and Training of Operators

**A2.1 Operators.** Only competent and careful operators should be assigned the duties of operating aerial devices. They should be physically and mentally fit and trained in safe operations.

**A2.2 Training.** Operators should be familiar with the manufacturer's manual, especially those parts which relate to operation, maintenance, and safety. They should follow all recommendations made in the manual.

## A3. Basket Liner

If a basket liner is used, it should be tested separately with water electrodes. The water level should be within six inches of the top of the liner. The liner should withstand a minimum of 50 kV, 60 Hz for one minute. The current  $i$  to be expected can be determined by calculation considering the dielectric constant  $K$  of the liner material, the thickness  $t$  of the liner, the test surface area  $A$ , and the applied voltage  $E$ . If  $t$  is in inches,  $A$  in square inches, and  $E$  in kilovolts, then the current at a frequency of 60 Hz can be estimated by:

$$i (ma) = 8.48 \times 10^{-7} \frac{AK E}{t} \quad (\text{Eq A1})$$

### Make of Work Platform

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

Platform Height \_\_\_\_\_

Rated Line Voltage \_\_\_\_\_

### Capacity Rating

When the unit is mounted in accordance with factory instructions on a vehicle type approved by the factory and is in service on a firm and level surface with outriggers extended to solid footing, its capacity is:

\_\_\_\_\_ lbs per bucket or platform

\_\_\_\_\_ lbs total (both buckets or platforms)

The capacity without outriggers extended is:

\_\_\_\_\_ lbs per bucket or platform

\_\_\_\_\_ lbs total (both buckets or platforms)

For ratings other than above, consult factory for information.

Maximum hydraulic pressure \_\_\_\_\_ psi

Maximum pneumatic pressure \_\_\_\_\_ psi

### Operation

#### WARNING

Before operating unit, read and understand all operating and safety information in manual and all information on this placard.

#### General Instructions

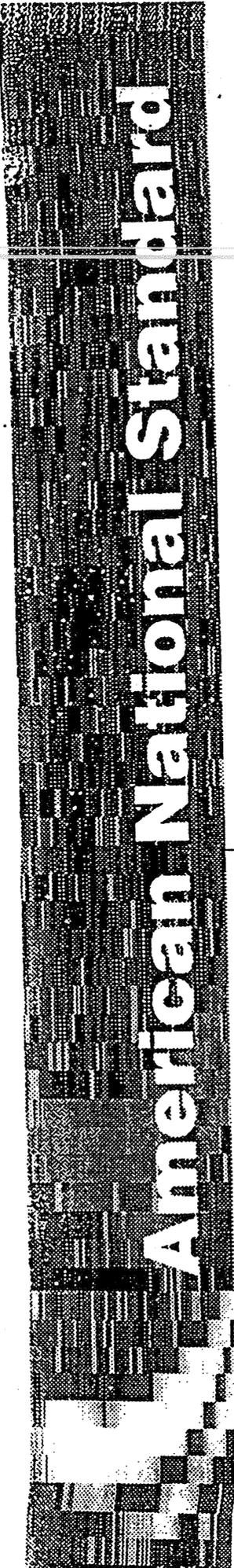
1. Check level in hydraulic oil reservoir daily.
2. Grease all fittings, weekly.
3. Check oil level in turret gear box weekly.
4. Check unit for visible defects or loose objects.
5. Check insulated boom and other insulating material for cleanliness.
6. Start engine or engage truck power take off (pto).
7. Set vehicle park brake securely before operating.
8. Extend hydraulic outriggers to a solid footing.
9. Operate all hydraulic controls slowly and deliberately for smooth bucket or platform motion.

WORK PLATFORM MANUFACTURING COMPANY, YOUR CITY, STATE, U.S.A.

Fig. A1

Operating Instruction Plate

ANSI/SIA A92.2-1990



**American National Standard**

*for*  
*Vehicle-Mounted Elevating  
and Rotating Aerial Devices*

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ANSI/SIA A92.2-1990

**7.4 Manuals.** Upon delivery of the equipment to the owner or user, the dealer or installer shall provide the manuals as required by Paragraph 6.4 of this standard and manuals for its auxiliary equipment added by the installer.

**7.5 Installations.** The installer shall comply with Sections 5 and 6 of this standard relating to proper installation and shall follow the instructions of the manufacturer. In the event the original manufacturer no longer exists, an equivalent entity may provide these instructions.

The installer of an aerial device shall, before the mobile unit is placed in operation, perform stability tests in accordance with the requirements of 4.5.1 and 4.5.2, the operational and visual tests in accordance with the requirements of 6.6.1 and 6.6.2, and the appropriate electrical tests required in 5.4.3 of this standard. The installer shall comply with all requirements of the applicable Federal Motor Vehicle Safety Standards in effect at the time of installation. Certification as a manufacturer (alteration, intermediate or final) of a motor vehicle under the Federal Motor Vehicle Safety Standards is required. The travel height of the mobile unit shall be posted in a location that is readily visible to the vehicle operator.

For insulated aerial devices, the installer shall assure conformance to the Qualification test requirements of 5.3.2 by either obtaining certification of the test and performing a periodic test after installation, or by performing the Qualification test.

**7.6 Quality Assurance.** The installer shall have a quality assurance program which will ensure compliance with this standard.

**7.7 Welding.** All welds made by the installer, whose failure could result in motion of the platform(s) shall meet the Structural Welding Code ANSI/AWS D1.1-90 and ANSI/AWS D1.2-90. The installer shall establish applicable welding quality assurance procedures for all weldments.

**7.8 Training.** The dealer or installer shall offer operator training initially in the operation of the aerial device(s) to the purchaser.

## 8. Responsibilities of the Owners and Users

**8.1 General Responsibilities.** Each owner or user shall comply with the requirements of this section.

The following responsibilities pertain to owner and user inspection, testing, maintenance and modification. These activities shall be performed by qualified person(s).

## 8.2 Inspection and Testing Classifications

**8.2.1 Initial Inspection and Test.** Prior to initial use, all new or modified mobile units shall be inspected and tested to ensure compliance with the provisions of this standard. Verification by the manufacturer, the installer or an equivalent entity(s), meets this requirement.

**8.2.2 Regular Inspection and Tests.** The inspection procedure for mobile units is divided into two classifications based upon the intervals at which inspections and tests shall be performed. Safe intervals shall be set by the user based on the recommendations that shall be supplied by the manufacturer.

Such intervals are dependent upon component function and exposure to wear, deterioration and other agents which adversely affect component life. Two classifications are designated:

- (1) Frequent Inspection and Test: Daily to monthly intervals
- (2) Periodic Inspection and Test: One to twelve month intervals

**8.2.3 Frequent Inspection and Test.** Items determined by the user based on recommendations by the manufacturer for each specific aerial device shall be inspected for defects.

Inspection and tests referred to as critical in the manufacturer's manual shall be strictly adhered to.

The following tests and inspections shall be performed by the operator once daily, prior to first use:

- (1) Operating controls and associated mechanisms for conditions interfering with proper operation
- (2) Visual and audible safety devices for malfunction
- (3) Hydraulic or pneumatic systems for observable deterioration or excessive leakage
- (4) Fiberglass and other insulating components for visible damage or contamination
- (5) Missing or illegible operational markings
- (6) Electrical apparatus for malfunction, signs or excessive deterioration, dirt, and moisture accumulation

Any suspected items shall be carefully examined and a determination made by a qualified person as to whether they constitute a safety hazard. All unsafe items shall be replaced or repaired before use.

**8.2.4 Periodic Inspection and Test.** An inspection of the mobile unit shall be performed at the intervals defined in 8.2.2 depending upon its activity, severity of service, and environment, or as specifically indicated below. (These inspections shall include the requirements of 8.2.3).

- (1) Structural members for deformation, cracks or corrosion
- (2) Parts, such as pins, bearings, shafts, gears,

rollers, locking devices, chains, chain sprockets, wire ropes, and sheaves for wear, cracks or distortion

- (3) Hydraulic and pneumatic relief valve settings
- (4) Hydraulic system for proper oil level
- (5) Hydraulic and pneumatic fittings, hoses, and tubing for evidence of leakage, abnormal deformation, or excessive abrasion
- (6) Compressors, pumps, motors and generators for loose fasteners, leaks, unusual noises or vibrations, loss of operating speed, and excessive heating
- (7) Hydraulic and pneumatic valves for malfunction and visible cracks in the external valve housing, leaks, and sticking spools
- (8) Hydraulic and pneumatic cylinders and holding valves for malfunction and visible damage
- (9) Hydraulic and pneumatic filters for cleanliness and the presence of foreign material in the system indicating other component deterioration
- (10) Electrical systems and components for deterioration or wear including those not readily visible on a frequent inspection
- (11) Performance test of all boom movements
- (12) Condition and tightness of bolts and other fasteners
- (13) Welds, as specified by the manufacturer
- (14) Legible and proper markings of controls, ratings, and instructions
- (15) If the aerial device is rated and used as an insulated device, the electrical insulating components and system(s), after a thorough inspection for lack of cleanliness and other hazards, shall be tested for compliance with the rating of the aerial device in accordance with one of the applicable methods and procedures as outlined in section 5.4.3 of this standard.

(a) If the aerial device is used for A.C. bare-hand work, the unit shall undergo a 60 hertz test as shown in Table 2 at least every three years.

(b) If the aerial device is used for D.C. bare-hand work, the unit shall undergo a D.C. test as shown in Table 2 at least every three years.

(c) After repair or modification of any component that crosses the insulating system(s), or the repair or replacement of an insulating component(s), the unit shall be dielectrically tested in accordance with section 5.4.3.

(d) An insulated replacement boom shall be tested to insure conformance to 5.3.3 by the supplier.

(e) Bare-hand work units shall be tested as shown in Table 1 after any major repair to the insulated boom or any insulated boom replacement.

Any suspected items shall be carefully examined and a determination made by a qualified person as to whether they constitute a safety hazard. All unsafe

items shall be replaced or repaired before use.

### 3.3 Inspection and Test Records.

(1) Items to be inspected shall be designated to the operator or other authorized person making frequent inspections. Records of frequent inspections need not be made. However, where a safety hazard is found, it shall be reported in writing to a person responsible for the corrective action and that report and a record of the correction shall be maintained for five years, or as required by applicable regulations.

(2) Written, dated and signed reports and records shall be made of periodic inspections and tests and retained for a period of five years or as required by applicable regulations.

**8.4 Maintenance.** Maintenance and frequency of maintenance shall be determined by the user based on the recommendations of the manufacturer.

Maintenance referred to as critical in the manufacturer's manual shall be strictly adhered to.

Welding repairs or components or welds, designated as critical in the manufacturer's manual, shall be made in accordance with the manufacturer's recommendations. Should the original manufacturer no longer exist an equivalent entity may determine the required procedure.

**8.5 Modifications.** No modifications or additions which affect the stability, mechanical, hydraulic, or electrical integrity or the safe operation of the aerial device shall be made without the written approval of the manufacturer. If such modifications or changes are made, the capacity, operation, and maintenance instruction markings shall be changed accordingly. In no case shall the safety factors be reduced below those specified in this standard or below the manufacturer's design safety factors, whichever are greater.

Should the original manufacturer no longer exist, an equivalent entity may approve required modification.

**8.6 Weight Distribution.** Changes in loading or additions made to the mobile unit after the final acceptance that affect weight distribution shall meet applicable regulations by governmental agencies. In no case shall axle loads of the fully loaded vehicle exceed the Gross Axle Weight Ratings (G.A.W.R.) assigned by the manufacturer.

**8.7 Transfer of Ownership.** When a change in ownership of an aerial device occurs, it shall be the responsibility of the seller to provide the manufacturer's manual(s) for that aerial device to the purchaser. It is the responsibility of the purchaser to notify the manufacturer of the unit model and serial number and the name and address of the new owner within 60 days.

**8.8 Markings.** The markings on the aerial device shall not be removed, defaced, or altered. All missing or illegible markings shall be promptly replaced.

**8.9 Parts.** When parts or components are replaced they shall be identical in specification and function to the original aerial device parts or components.

**8.10 Safety Bulletins.** Owner and user shall comply with safety related bulletins as received from the manufacturer, dealer or installer.

**8.11 Manuals.** The owner and user shall insure that the operating manual(s) is stored on the mobile unit.

**8.12 Training of Operators.** Each trainee shall be instructed in the safe and proper operation of the aerial device utilizing the manufacturer's operator's manual, the user's work instructions, and the appropriate standards referenced in Section 2.

Such training shall include "hands-on" use to successfully demonstrate the trainee's proficiency to the satisfaction of the qualified person designated to administrate the user's training program.

**8.13 Operation.**

**8.13.1 Personnel.** Only trained and authorized personnel shall be permitted to operate the aerial device.

**8.13.2 Application.** The employer and assigned operator shall insure that the aerial device is used only for intended applications as defined in the operating manual, and that recognized safety practices are observed.

**8.13.3 Mobile Operation.** Before and during driving, the driver shall:

- (1) Avoid traveling on any surface that adversely effects vehicle stability
- (2) Maintain a safe distance from obstacles
- (3) Maintain communications between the driver and the operator
- (4) Under all travel conditions, the driver shall limit travel speed in accordance with conditions of the ground surface, congestion, and slope

**8.13.4 Alterations.** Altering or disabling of safety devices, guards, or interlocks if so equipped, shall be prohibited.

**8.13.5 Bare-Hand Work.** For bare-hand work, a Category A aerial device shall be used.

**8.13.6 Lower Controls.** On aerial devices having both upper and lower controls, the lower controls shall not be used for continuous operation of the aerial device with individual(s) in the platform.

## 9. Responsibilities of Renters or Lessors

**9.1 General Responsibilities.** Each renter or lessor shall comply with the requirements of this section.

**9.2 Ownership Duties.** The renter or lessor shall carry out the duties of ownership specified in this standard which are not assumed by the renting entity or lessee as the user.

**9.3 Obligations.** Each renter or lessor of an aerial device shall provide a copy of user responsibilities within this standard.

**9.4 Training.** The renter or lessor shall offer operator training initially to the renting entity or lessee.

**9.5 Communications.** In the event the manufacturer or installer provides the renter or lessor manuals, bulletins, or other materials for the information of the user of an aerial device, the renter or lessor shall pass them on to the user without any undue delay.

## 10. Responsibilities of Operators

**10.1 General Responsibilities.** Each operator shall comply with the requirements of this section.

**10.2 Operation.** During operation of the aerial device the operator shall wear a body belt or harness and be connected to the aerial device with a lanyard at the platform position.

**10.3 Work Platform.** The operator shall not use railings, planks, ladders or any other device in or on the work platform for achieving additional working height or reach.

**10.4 Brakes.** The vehicle parking brake(s) shall be set at all times that the boom is elevated except when the aerial device is being used in accordance with 8.13.3.

**10.5 Loading.** Any loading which includes a horizontal load shall be avoided unless the mobile unit is designed for that application.

**10.6 Observations.** Observations during operation for any defects shall be conducted on an ongoing basis.

**10.7 Worksite.** Before the aerial device is used, the worksite shall be surveyed for hazards such as:

- (1) Untamped earth fills
- (2) Ditches
- (3) Dropoffs and floor obstructions

- (4) Debris
- (5) Overhead obstructions and electrical conductors
- (6) Weather conditions
- (7) Presence of unauthorized persons

**10.8 Precautions.** Before and during each use the operator shall:

- (1) Check for overhead obstructions and electrical conductors
- (2) Insure that the load on the platform and/or load lifting devices are in accordance with the manufacturer's rated capacity
- (3) Insure that outriggers and stabilizers are used if the manufacturer's instructions require their use
- (4) Insure that guardrails are properly installed, and the gates are closed
- (5) Use outrigger pads when necessary to provide firm footing

**10.9 Mobile Operation.** Before engaging in mobile operation the operator shall determine that the aerial device is specifically designed for mobile operation.

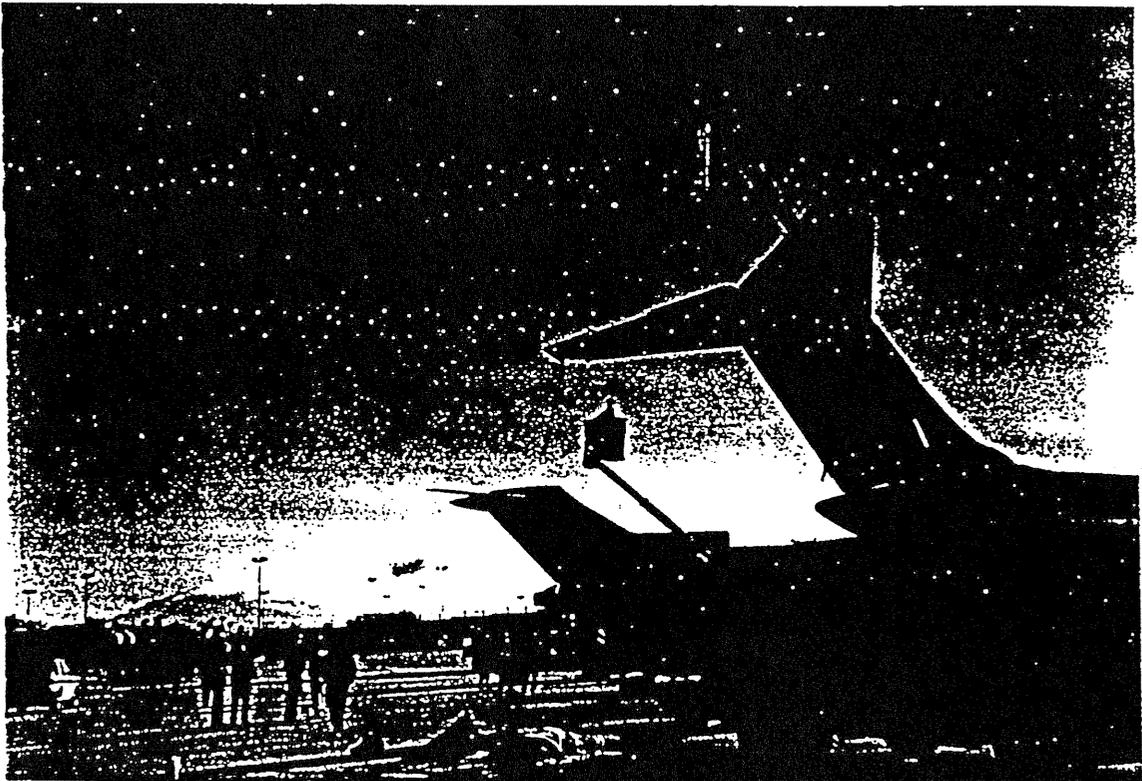
Elsinore Aerospace Services

R204-0074/126999606

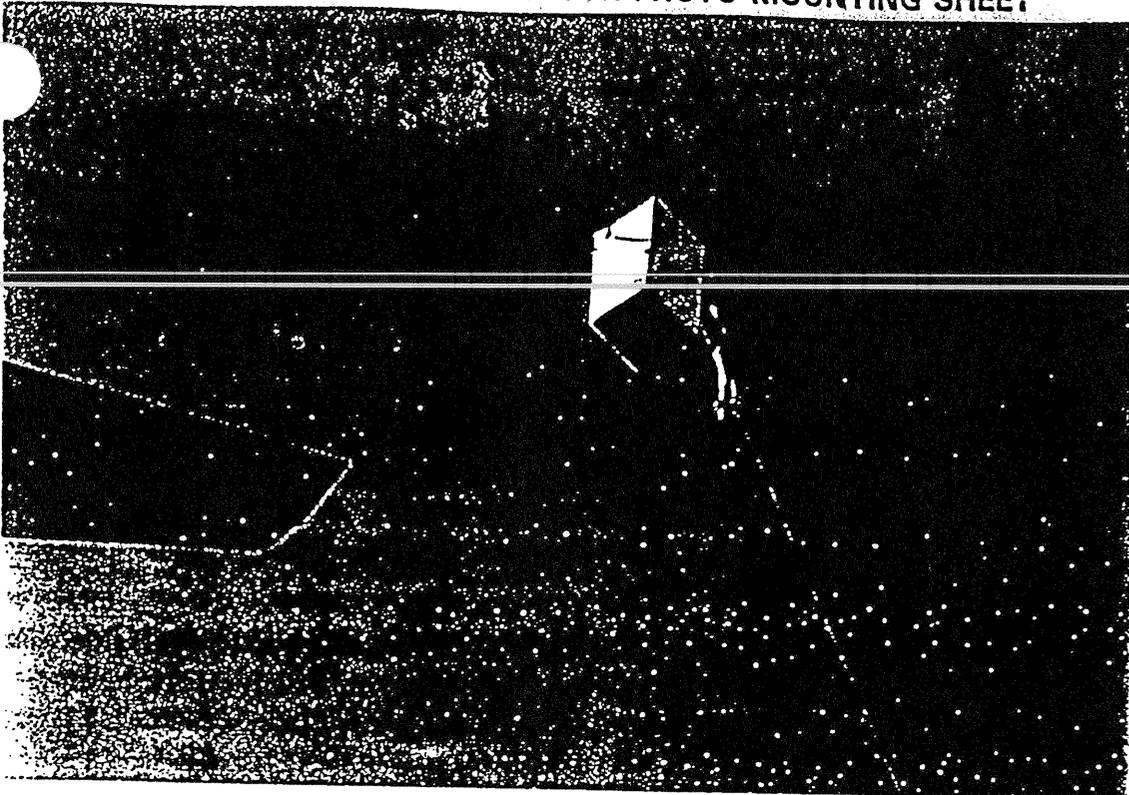


Elsinore Aerospace Services

R204-0074 / 126999606

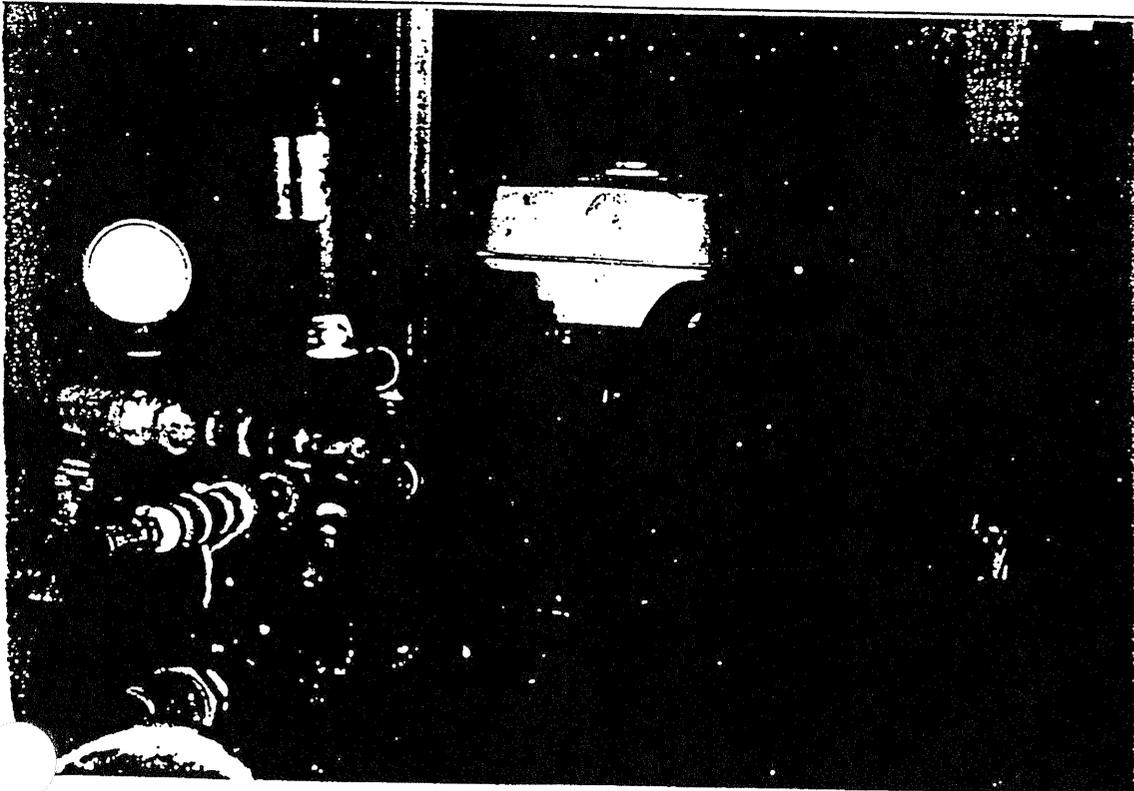


ADOSH PHOTO MOUNTING SHEET



col/report # 126949606  
 Date: 12-28-97  
 Photo ID#: 7  
 Citation #: 1  
 Item #: 4  
 Instance: a  
 Location: Tucson Ariz  
Northeast Park  
 Taken By: SP20

DESCRIPTION: Carroll can be seen running from the 1st floor of the building on  
with a speed was 30 feet per second. Employee not observed in any of pictures.

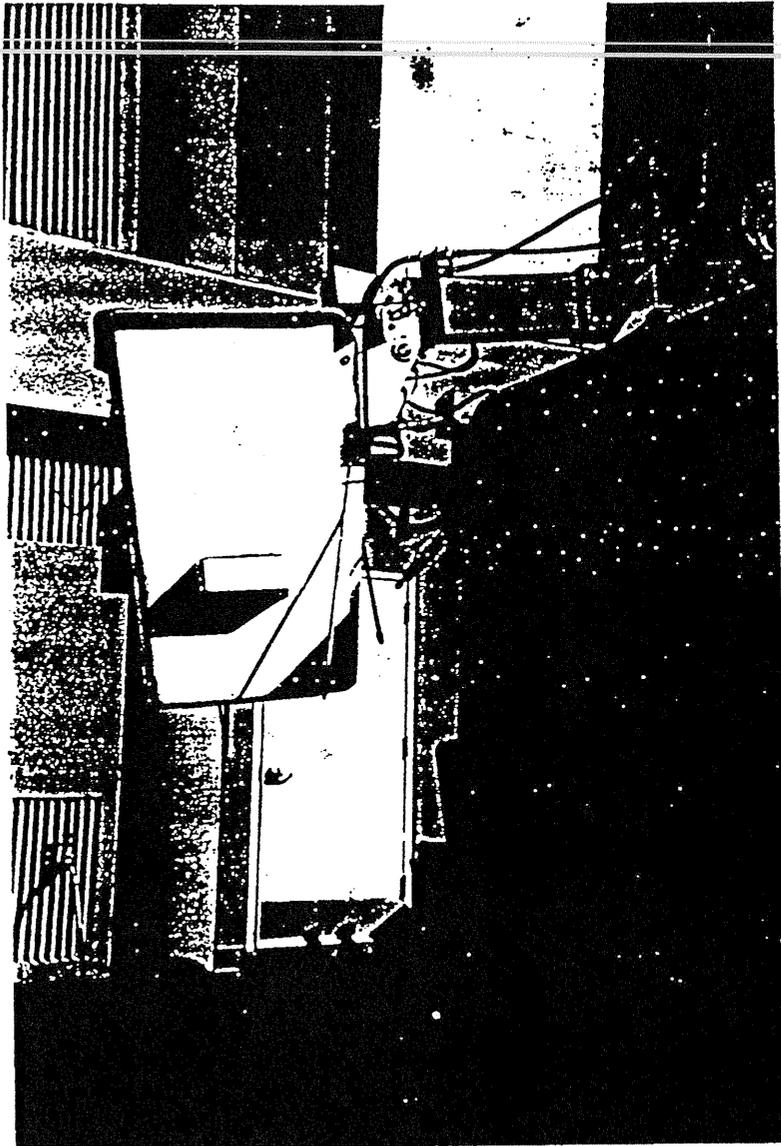


col/report # 126949606  
 Date: 12-28-97  
 Photo ID#: 7  
 Citation #: 1  
 Item #: 4  
 Instance: a  
 Location: Tucson Ariz  
Northeast Park  
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with a speed was 30 feet per second. Employee not observed in any of pictures.

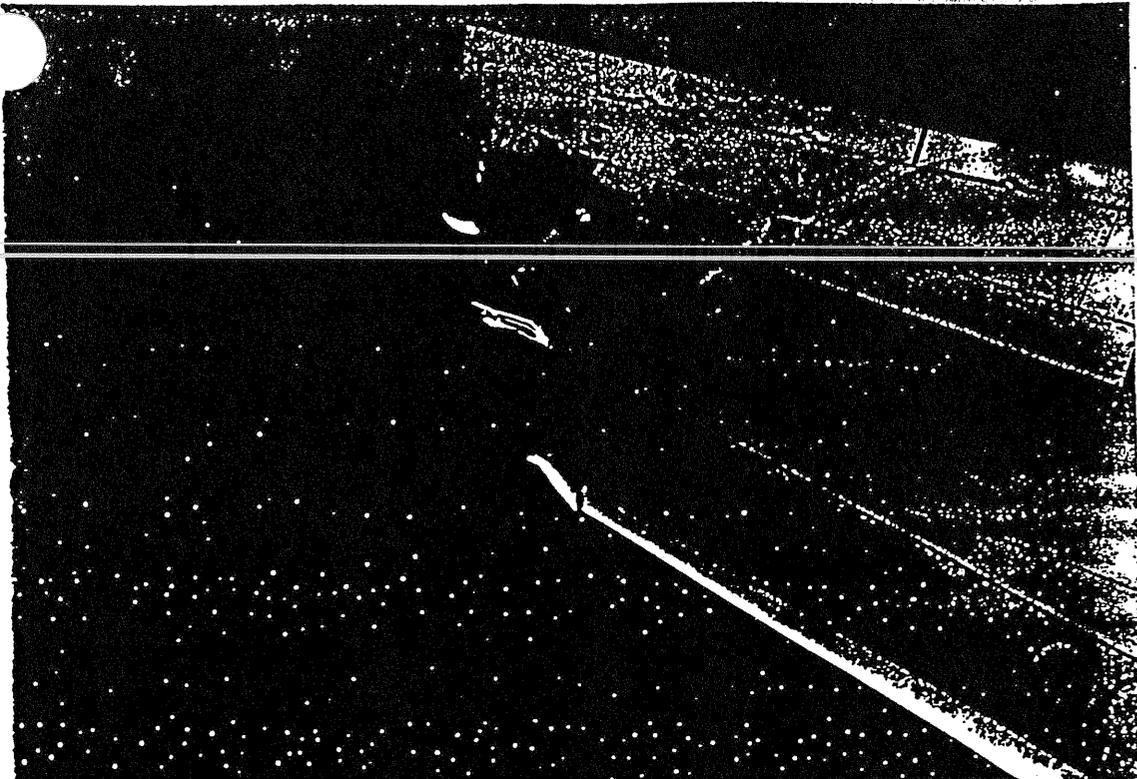
OSHA PHOTO MOUNTING SHEET

col/report # 12699606  
Date: 12-23-97  
Photo ID#: 9  
Citation #: 2  
Item #: 1  
Instance: a  
Location: Cereal Plant  
Truck, Truck Repair  
Taken By: Kozak



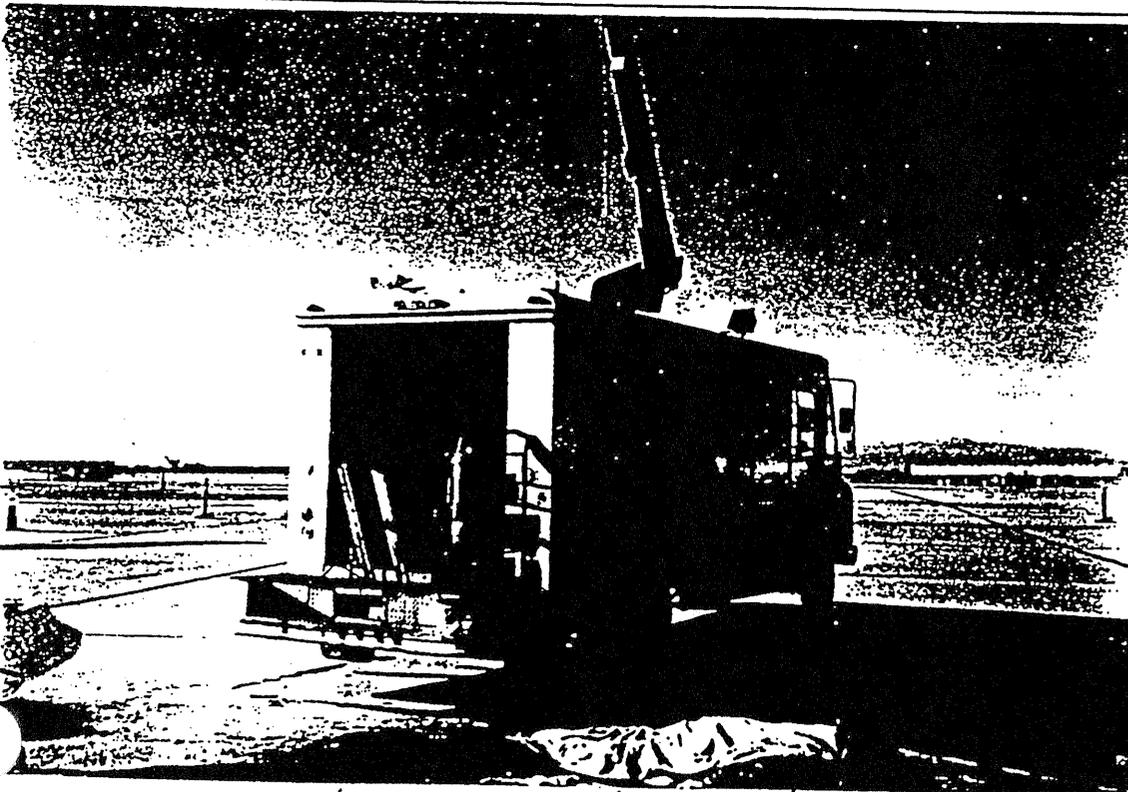
Description: Employee had to climb into bucket by using fixed 2-step ladder  
with 16" frame separation and a 27" step across to the bucket and 26"  
step over into bucket.

ADOSH PHOTO MOUNTING SHEET



coll/report # 126999606  
Date: 12-23-97  
Photo ID#: 3  
Citation #: 1  
Item #: 1  
Instance: 2  
Location: Tucson Airport  
Northwest Building  
Taken By: ROZOU

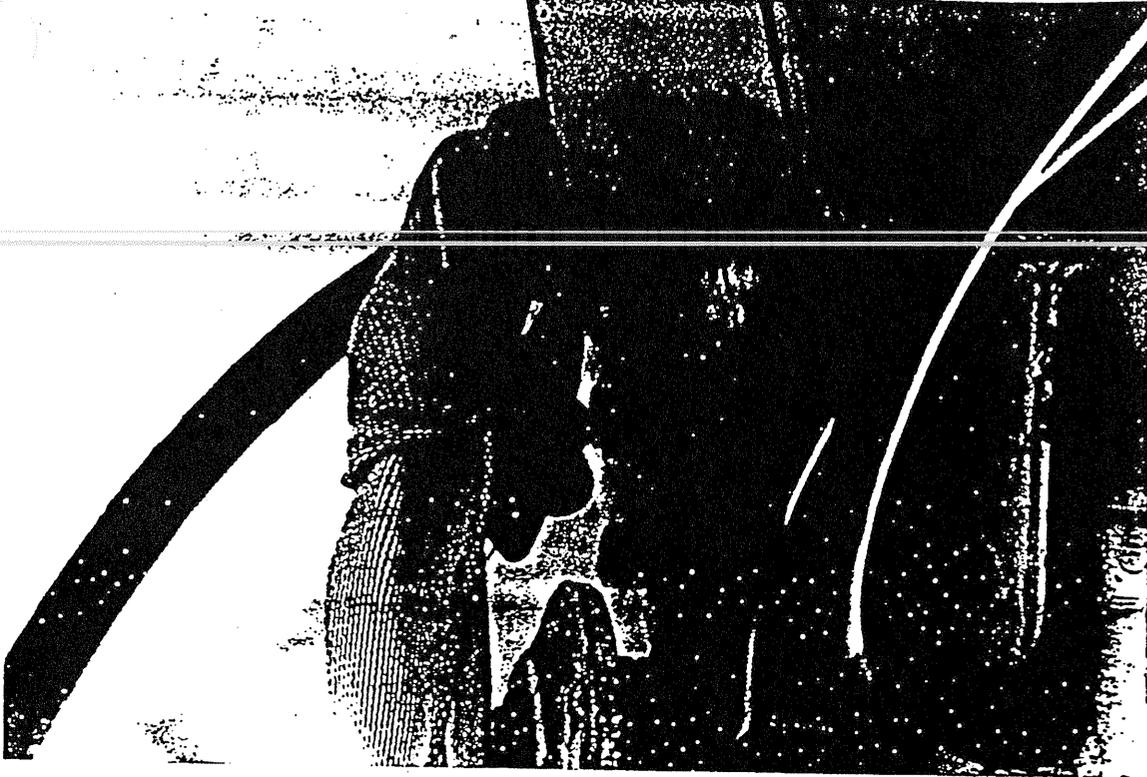
Description: Area where an aerial lift truck drove under and struck the tail section  
with the boom. Employee struck by wing and fell 30 ft



coll/report # 126999606  
Date: 12-23-97  
Photo ID#: 4  
Citation #: 1  
Item #: 1  
Instance:  
Location:  
Taken By: ROZOU

Description: Truck with boom extended when driving underneath aircraft. Employee  
not trained on how to travel with employee in bucket of aerial lift

DOSH PHOTO MOUNTING SHEET



col/report # 126999606  
Date: 12-23-97  
Photo ID#: 5  
Citation #: 1  
Item #: 2  
Instance: a  
Location: Tulsa Report  
Northwest Park  
Taken By: 10204

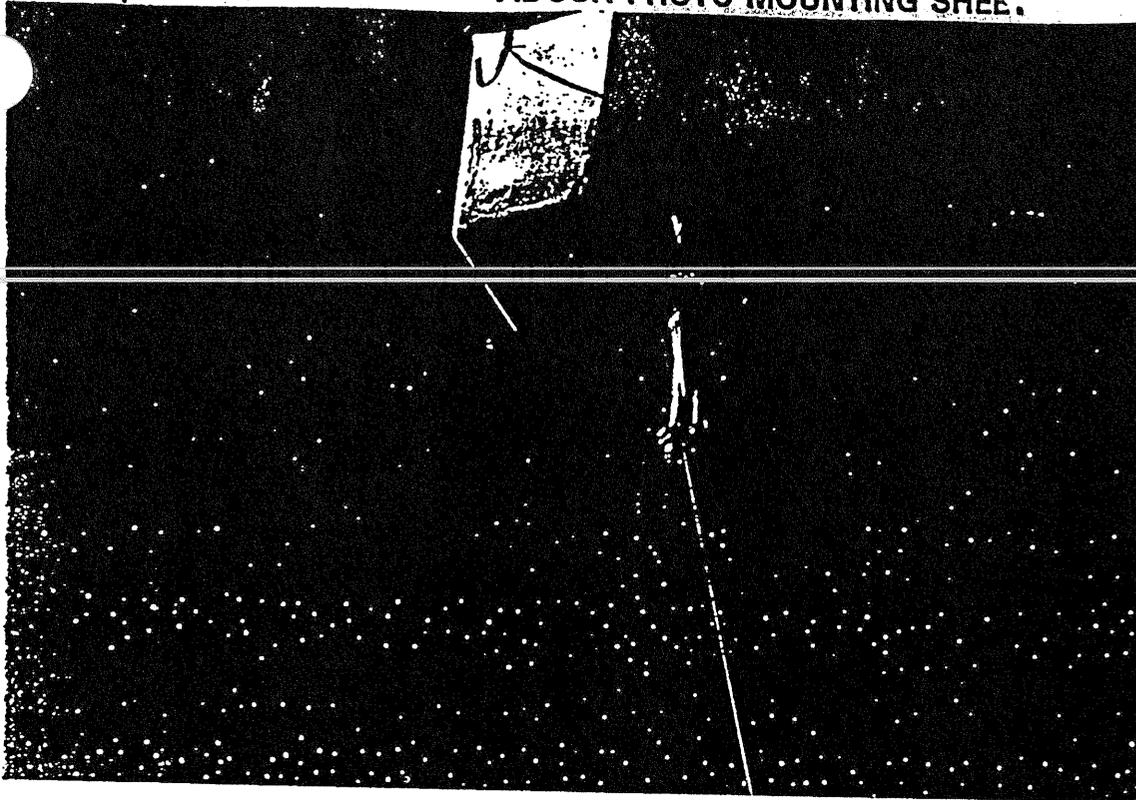
Description: Harness tied in a knotted fashion to the boom D-Ring.



col/report # 126999606  
Date: 12-23-97  
Photo ID#: 6  
Citation #: 1  
Item #: 2  
Instance: a  
Location: Tulsa Report  
Northwest Park  
Taken By: 10204

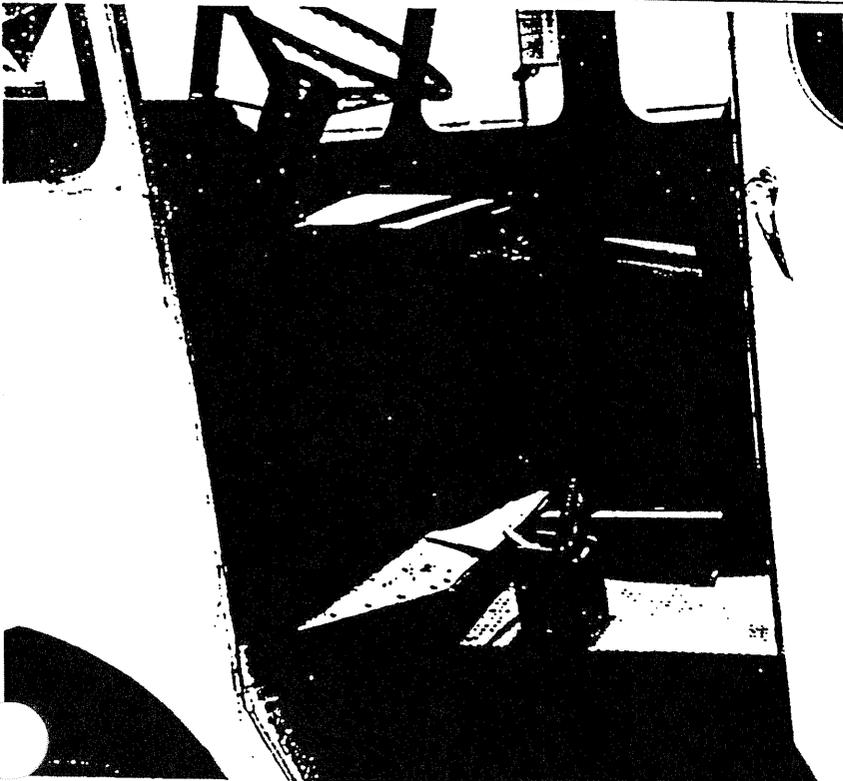
Description: Condition of the harness that was tied to the boom D-Ring. No canyon  
was available.

ADOSH PHOTO MOUNTING SHEET



col/report # 12699606  
Date: 12-23-97  
Photo ID#: 1  
Citation #: 1  
Item #: 1  
Instance: a  
Location: Tucson Airport Northwest Parking  
Taken By: ROZOU

Description: Bucket on aerial lift which employee decided on aircraft from communications device to talk to driver of truck



col/report # 12699606  
Date: 12-23-97  
Photo ID#: 2  
Citation #: 1  
Item #: 1  
Instance: a  
Location: Tucson Airport Northwest Parking  
Taken By: ROZOU

Description: Area where vehicle driver of aerial lift would initiate moving truck shown aircraft to communications device with driver to talk to bucket operator via radio. Lower controls were not set to override cockpit controls

ADOSH PHOTO MOUNTING SHEET



col/report # 12699606  
Date: 12-23-97  
Photo ID#: 10  
Citation #: 2  
Item #: 3  
Instance: 4  
Location: aerial lift  
Truck  
Taken By: ROZOV

Description: Four way junction box attached to flexible cord in a pendant application not authorized per its listing.

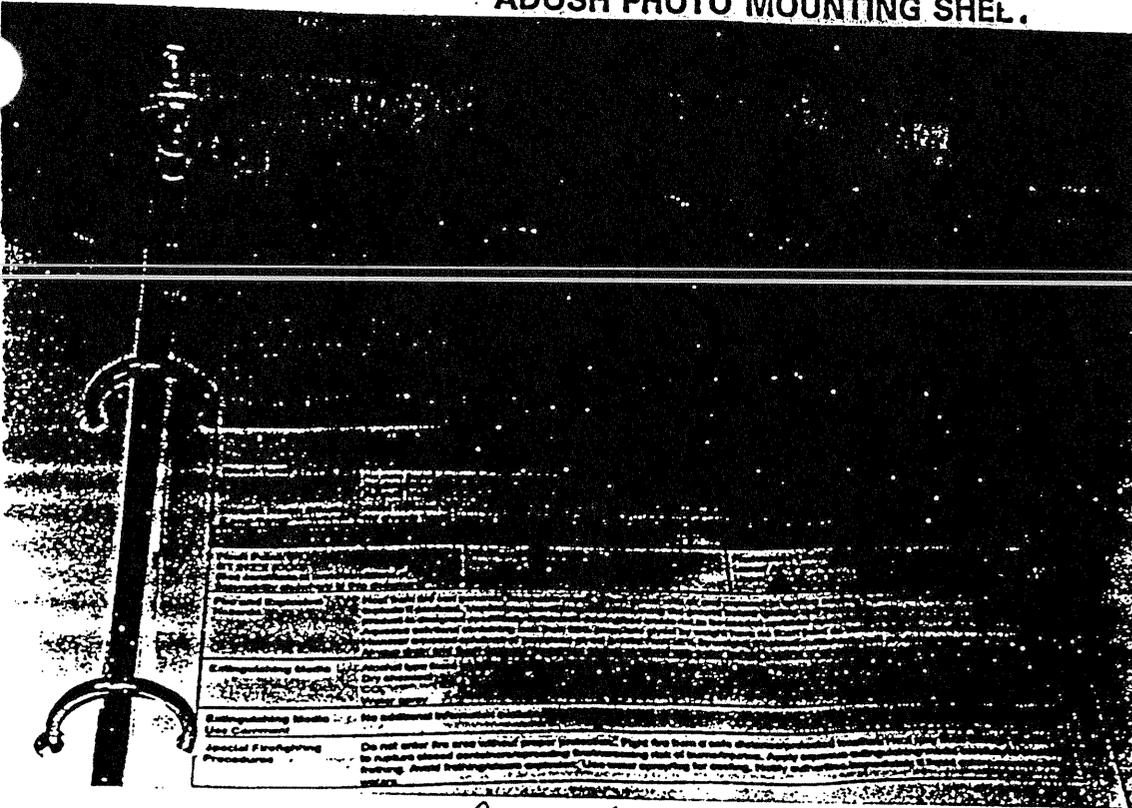


col/report # 12699606  
Date: 12-23-97  
Photo ID#: 11  
Citation #: 2  
Item #: 4  
Instance: 4  
Location: Flight Line  
entry wall office  
Taken By: ROZOV

Description: Flexible cord shows sign of strain relief problem. Insulated wires can be seen since outer insulation has pulled away from plug.

ADOSH PHOTO MOUNTING SHEET

col/report # 126999606  
Date: 12-23-97  
Photo ID#: 12  
Citation #: 2  
Item #: 5  
Instance: 9  
Location: Main office  
area  
Taken By: R0304



Description: Material Safety Data Sheet for De-icing Fluid that employees were not trained on how to use.

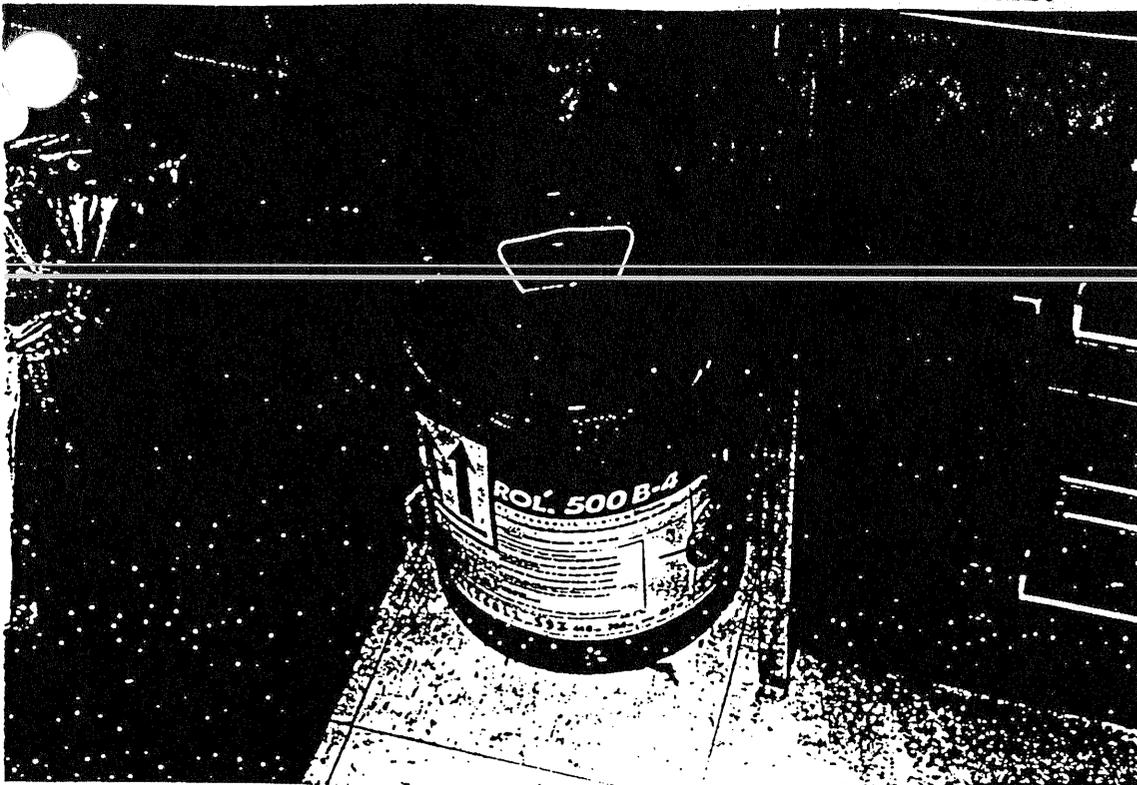


col/report # 126999606  
Date: 12-23-97  
Photo ID#: 13  
Citation #: 2  
Item #: 5  
Instance: 9  
Location: Main office  
area  
Taken By: R0304

Description: Janitorial supplies that employees had received MayCom training on

ADOSH PHOTO MOUNTING SHEET

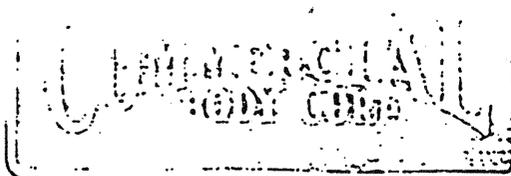
col/report # 12699606  
Date: 12-23-97  
Photo ID#: 14  
Citation #: 2  
Item #: 5  
Instance: 1  
Location: Man Office  
Taken By: PC204



Description: Chemical ROL 500 B-4 which employees had not received  
has been training on

col/report # \_\_\_\_\_  
Date: \_\_\_\_\_  
Photo ID#: \_\_\_\_\_  
Citation #: \_\_\_\_\_  
Item #: \_\_\_\_\_  
Instance: \_\_\_\_\_  
Location: \_\_\_\_\_  
Taken By: \_\_\_\_\_

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# COMMERCIAL BODY CORPORATION & UTILITY EQUIPMENT

P. O. BOX 1119 • SAN ANTONIO, TEXAS 78294 • A. C. 512-224-1931

DAVE SATLER

## COMMERCIAL BODY CORPORATION

## EQUIPMENT REGISTRATION FORM

### CHASSIS

Make CHEVROLET  
Model No. CP1442  
Serial No. 1GBJ32M5F3342816  
Year 1985

### ENGINE

Model No. 5.7 L 350 CID.  
Cylinder No. V-8  
Carburetor Type Q-JET 4-V

### TRANSMISSION

Make GENERAL MOTORS CORP.  
Model No. TURBO-HYDRAMATIC 400  
Transfer Case N/A

### GOVERNOR

Make N/A  
Type /  
Model No. /

### HYDRAULIC PUMP MOTOR

Make PRESTOLITE  
Model No. ML4368-DC  
Serial No. N/A

### BODY

Make GRUMAN  
Model No. /  
Specification No. /  
Serial No. 12126KMC3514T

### AERIAL TOWER

Model No. TIME MFG.  
Specification No. VT. 29. E. DCI  
Serial No. G18502

### WINCH MOTOR

Make N/A  
Model No. /  
Serial No. /

### WINCH GEAR BOX

Make N/A  
Model /  
Serial No. /

CUSTOMER EL. SINORE AEROSPACE  
DOWNNEY, CALIFORNIA

Delivered: /  
SO# 28492  
Job No. /

Basket Cap. 300 LBS.  
Max. Basket Cap. 300 LBS.  
Max. Tipping Cap. 300 LBS.

### HYDRAULIC PUMP

Make WEBSTER  
Model No. 11BELA5-20  
Serial No. 49901-4-L855

### AUXILIARY WINCH

Make N/A  
Model No. /  
Serial No. /

### AUXILIARY WINCH MOTOR

Make N/A  
Model No. /  
Serial No. /

### WINCH TRANSMISSION

Make N/A  
Model No. /  
Serial No. /

### SPECIAL EQUIPMENT

( 2 EA. ) Make F. E. MEYERS WATER PU  
Model No. BX6-12-22828DL  
Serial No. 885-59 & 885-56

Make HONDA POWER UNIT  
Model No. G-400  
Serial No. G-4001381079

Make HONDA POWER UNIT  
Model No. G-400  
Serial No. G-4001381082

( 2 EA. ) Make CROFT HOSE REEL  
Model No. 39146  
S/N. 11-84

( 2 EA. ) Make HANAWAY  
Model No. 1514-17-18  
S/N. 461346



DEICING/ANTI-ICING AUDIT

It is NWA's policy that all service suppliers under contract to perform deicing/anti-icing for NWA undergo a formal quality and performance review by the local NWA station manager. This formal quality and performance review is to be completed based on the monitoring of the service supplier throughout the deicing season. Please complete the following questionnaire for each supplier at your airport by July 01. Send the completed questionnaire to: Steve Collard, Dept. A5110, MSP.

Airport Code: \_\_\_\_\_

Service Supplier: \_\_\_\_\_

Please answer the following questions:

1. Did this supplier provide deicing services to NWA during the 1997/98 winter?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, please answer questions 2 - 8.

If no, please sign and date this form on back and comail to Steve Collard, Dept. A5110, MSP.

2. Are the service supplier's records in compliance with NWA policy?  
(Refer to 1997/98 System De/Anti-icing Handbook)

Yes \_\_\_\_\_ No \_\_\_\_\_

If no, please explain. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. Are the service supplier's deicing/anti-icing procedures in compliance with NWA policy?  
(Refer to 1997/98 System De/Anti-icing Handbook)

Yes \_\_\_\_\_ No \_\_\_\_\_

If no, please explain. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Has the service supplier damaged any NWA Ground Equipment or aircraft?

Yes \_\_\_\_\_ No \_\_\_\_\_

If no, please explain.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. How would you rate the service supplier's timeliness/dependability?

Good \_\_\_\_\_ Fair \_\_\_\_\_ Poor \_\_\_\_\_

6. Is the service supplier using certified deicer/anti-icer fluids which comply with FAR 121.626 and NWA requirements? (Refer to 1997/98 System De/Anti-icing Handbook)

Yes \_\_\_\_\_ No \_\_\_\_\_

7. Identify the fluids being used by the service supplier.

a. Type I Deicing Fluid:

Propylene or Ethylene glycol? \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_

b. Type II Anti-Icing Fluid (if applicable)

Propylene or Ethylene glycol? \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_

c. Type IV Anti-Icing Fluid (if applicable)

Propylene or Ethylene glycol? \_\_\_\_\_

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_

8. Are there any pilot write-ups ("pink sheets") related to the service provided by the supplier? If so, please attach them to this audit form.

9. Indicate total amount paid to this supplier at this station for deicing services during the 1997/1998 winter?

\_\_\_\_\_

Manager's Name: \_\_\_\_\_  
(Please Print)

Manager's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Steve Collard



DEICING/ANTI-ICING AUDIT

It is NWA's policy that all service suppliers under contract to perform deicing/anti-icing for NWA undergo a formal quality and performance review by the local NWA station manager. This formal quality and performance review is to be completed based on the monitoring of the service supplier throughout the deicing season. Please complete the following questionnaire for each supplier at your airport by June 01. Send the completed questionnaire to: Steve Collard, Dept. A5110, MSP.

Airport Code: TUS

Service Supplier: ELSINORE AEROSPACE

Please answer the following questions:

1. Did this supplier provide deicing services to NWA during the 1996/97 winter?

Yes [checked] No

If yes, please answer questions 2 - 8.

If no, please sign and date this form on back and comail to Steve Collard, Dept. A5110, MSP.

2. Are the service supplier's records in compliance with NWA policy? (Refer to 1996/97 System De/Anti-icing Handbook, pages 8 - 9; Section E, 3 - 5)

Yes [checked] No

If no, please explain. [lines]

3. Are the service supplier's deicing/anti-icing procedures in compliance with NWA policy? (Refer to 1996/97 System De/Anti-icing Handbook, pages 11 - 124, except pages 19 - 23; Sections A, B and C)

Yes [checked] No

If no, please explain. [lines]

4. Has the service supplier damaged any NWA Ground Equipment or aircraft?

Yes \_\_\_\_\_ No

If no, please explain. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. How would you rate the service supplier's timeliness/dependability?

Good  Fair \_\_\_\_\_ Poor \_\_\_\_\_

6. Is the service supplier using certified deicer/anti-icer fluids which comply with FAR 121.626 and NWA requirements? (Refer to 1996/97 System De/Anti-Icing Handbook, pages 29 - 46: Deicing/Anti-Icing Fluids, Sections A - C)

Yes  No \_\_\_\_\_

7. Identify the fluids being used by the service supplier.

a. Type I Deicing Fluid:

Propylene or Ethylene glycol? ETHYLENE GLYCOL

Manufacturer: ARCO Product Name: ARCO PLUS DEICING FLUID

b. Type II Anti-Icing Fluid (if applicable)

Propylene or Ethylene glycol? N/A

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_

c. Type IV Anti-Icing Fluid (if applicable)

Propylene or Ethylene glycol? N/A

Manufacturer: \_\_\_\_\_ Product Name: \_\_\_\_\_

8. Are there any pilot write-ups ("pink sheets") related to the service provided by the supplier? If so, please attach them to this audit form. NO

9. Indicate total amount paid to this supplier at this station for deicing services during the 1996/1997 winter?

\$5,000.00

Manager's Name: Byron Oliver

Manager's Signature: Byron Oliver Date: 4-4-97

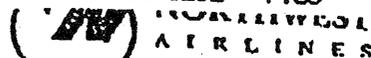
SPECIALIST \_\_\_\_\_

STATION \_\_\_\_\_

DATE \_\_\_\_\_

Audit Categories	COMPLIANCE	
	N/A	YES/NO
<b>STATION DEICING RECORDS</b>		
1: Station has a Station Deicing File		
2: Stations deicing training records (GS-38) are kept in the "Station Deicing File"		
3: Station has entered deicing training records into the "GTR" system		
4: Fluid acceptance records are kept in the "Station Deicing File" (NWA only)		
5: Vendor contract and training records are kept in the "Station Deicing File"		
6: Winter Operations Manual is accessible and current		
<b>SYSTEM DEICING LOGS</b>		
7: Station is using the most current "System Deicing Log" (FORM 8-A316 9/97)		
8: All system deicing logs are filled out according to policy and procedure		
9: System deicing logs are retained in the "Station Deicing File"		
<b>SAFETY</b>		
10: Deicing bucket person wears safety harness and has lanyard attached		
11: Deicer is wearing the required safety equipment (Safety harness, lanyard, and goggles)		
12: Deicing vehicle maintains a clearance of 10 ft. between the vehicle and aircraft		
13: Deicing is not started until all cargo doors are closed		
14: Deicing is not started until all ground personnel have cleared the area, except coordinators		
15: When vehicle movement between deicing locations is done, the boom is in the cradled position		
16: Engine running - deicing vehicles are parked in safety areas before A/C enters or leaves area		
17: Deicing vehicle driver tests brakes before entering "Circle of Safety"		
<b>DEICING COMMUNICATION</b>		
18: The deicing crew uses NWA approved verbiage before and after inspections		
19: The deicing crew uses NWA approved verbiage before and after deicing A/C		
20: Deicing crew communicates with the flight deck before deicing begins		
21: All inspection/deicing communication is in accordance with NWA procedures		
22: NWA approved hand signals are use when guiding/parking aircraft at remotes		
<b>DEICING/ANTI-ICING FLUIDS</b>		
23: NWA purchased fluid is accepted in accordance with "NWA Fluid Acceptance Procedures"		
24: NWA or Vendor employees know what type of deicing/anti-icing fluids they are using		
25: The freeze point of the Type I fluid is tested when filling or refilling the deicing vehicle		
26: Deicing does not occur below -22° F (USA) or -27° F/-33° C (Canada)		
27: Type I deicing nozzle is color coded red, Type II/IV anti-icing nozzle is color coded yellow		
28: The freeze point of the Type I fluids used is at least 18° F below the outside temperature		
29: The deicing/anti-icing fluids used by the FBO or Vendor are on NWA's approved fluid list		
30: Deicing fluids are heated to temperatures between 140° F and 180° F before application		
<b>AIRCRAFT DEICING/ANTI-ICING</b>		
31: Spray distance was under 10 ft. from aircraft surface		
32: When frost is removed from the aircraft the lowest GPM setting is used (20 - 30 GPM)		
33: The aircraft flaps and slats were configured before the start of the deicing process		
34: On 727-200 series aircraft the APU was running during the deicing process (unless inop)		
35: Was deicing fluid used to remove contaminants from behind the engine fan blades		
36: Was Type II/IV applied to the fuselage for operational use (through flight)		
37: Was the Type II/IV used as an overnight protectent removed before departure		
38: Was Type I applied directly to the windshield or passenger windows		
39: Was the Type I fluid sprayed into the pitot tubes or static ports		
40: On 757 and A320 aircraft was the spray angle used below a 45° angle		
41: Over all was the aircraft deiced/anti-iced in accordance with NWA policy and procedures		
<b>AIRCRAFT INSPECTIONS</b>		
42: Was the wings on DC9/MD-80 aircraft inspected in accordance with NWA policies		
43: Was cold soaked fuel frost checked for depth (1/8 inch allowable or less in fuel tank areas only)		
44: Were the engine inspected when the conditions warranted		
45: Over all was the aircraft inspected in accordance with NWA policy and procedures		





SPECIALIST RL Straub

STATION Tus

DATE 1-22-98

Audit Categories

Audit Categories	COMPLIANCE	
	N/A	YES/NO
<b>STATION DEICING RECORDS</b>		
1 Station has a Station Deicing File		YES
2 Stations deicing training records (GS-50) are kept in the "Station Deicing File"		YES
3 Station has entered deicing training records into the "GTR" system		YES
4 Fluid acceptance records are kept in the "Station Deicing File" (NWA only)	over-	YES
5 Vendor contract and training records are kept in the "Station Deicing File"	N/A	YES
6 Winter Operations Manual is accessible and current		YES
<b>SYSTEM DEICING LOGS</b>		
7 Station is using the most current "System Deicing Log" (FORM 8-A316 9/97)		YES
8 All system deicing logs are filed out according to policy and procedure		YES
9 System deicing logs are retained in the "Station Deicing File"		YES
<b>SAFETY</b>		
10 Deicing bucket person wears safety harness and has lanyard attached		YES
11 Deicer is wearing the required safety equipment (Safety harness, lanyard, and goggles)		YES
12 Deicing vehicle maintains a clearance of 10 ft. between the vehicle and aircraft		YES
13 Deicing is not started until all cargo doors are closed		YES
14 Deicing is not started until all ground personnel have cleared the area, except coordinators		YES
15 When vehicle movement between deicing locations is done, the boom is in the cradled position		YES
16 Engine running - deicing vehicles are parked in safety areas before A/C enters or leaves area	over-	NO
17 Deicing vehicle driver tests brakes before entering "Circle of Safety"		YES
<b>DEICING COMMUNICATION</b>		
18 The deicing crew uses NWA approved verbiage before and after inspections		YES
19 The deicing crew uses NWA approved verbiage before and after deicing A/C		YES
20 Deicing crew communicates with the flight deck before deicing begins		YES
21 All inspection/deicing communication is in accordance with NWA procedures		YES
22 NWA approved hand signals are use when guiding/parking aircraft at remotes	N/A	
<b>DEICING/ANTI-ICING FLUIDS</b>		
23 NWA purchased fluid is accepted in accordance with "NWA Fluid Acceptance Procedures"	N/A	
24 NWA or Vendor employees know what type of deicing/anti-icing fluids they are using		YES
25 The freeze point of the Type I fluid is tested when filling or refilling the deicing vehicle		YES
26 Deicing does not occur below -22° F (USA) or -27° F (-33° C (Canada))	N/A	
27 Type I deicing nozzle is color coded red, Type II/IV anti-icing nozzle is color coded yellow	over-	-
28 The freeze point of the Type I fluids used is at least 16° F below the outside temperature		YES
29 The deicing/anti-icing fluids used by the FBO or Vendor are on NWA's approved fluid list		YES
30 Deicing fluids are heated to temperatures between 140° F and 180° F before application		YES
<b>AIRCRAFT DEICING/ANTI-ICING</b>		
31 Spray distance was under 10 ft. from aircraft surface		YES
32 When frost is removed from the aircraft the lowest GPM setting is used (20 - 30 GPM)		YES
33 The aircraft flaps and slats were configured before the start of the deicing process		YES
34 On 727-200 series aircraft the APU was running during the deicing process (unless inop)	N/A	
35 Was deicing fluid used to remove contaminants from behind the engine fan blades		NO
36 Was Type II/IV applied to the fuselage for operational use (through flight)	N/A	
37 Was the Type II/IV used as an overnight protectant removed before departure	N/A	
38 Was Type I applied directly to the windshield or passenger windows		NO
39 Was the Type I fluid sprayed into the pitot tubes or static ports		NO
40 On 757 and A320 aircraft was the spray angle used below a 45° angle	N/A	
<b>AIRCRAFT INSPECTIONS</b>		
1 Over all was the aircraft deiced/anti-iced in accordance with NWA policy and procedures		YES
2 Was the wings on DC9/MD-80 aircraft inspected in accordance with NWA policies		YES
3 Was cold soaked fuel frost checked for depth (1/8 inch allowable or less - fuel tank areas only)		YES
4 Were the engine inspected when the conditions were met		YES
Over all was the aircraft inspected in accordance with NWA policy and procedures	N/A	YES





NORTHWEST AIRLINES

NOT APPROVED  
Ground Deicing and Anti-icing Operations Plan

APPENDIX A2

OCTOBER 15, 1997

System Deicing Log



SYSTEM DEICING LOG

STATION TUS DATE 1-22-98 TYPE OF ANTI-ICING FLUID USED  TYPE I  TYPE IV  
 VEHICLE DRIVER (PRINT NAME) Erudy Butler CLOCK NUMBER \_\_\_\_\_  
 DEICING OPERATOR (PRINT NAME) Frederick Slade CLOCK NUMBER \_\_\_\_\_  
 VEHICLE NUMBER \_\_\_\_\_ WAS THE DEICING VEHICLE INSPECTED  YES  NO

AIRLINE CODE	SHIP NUMBER	DEICING LOCATION	PARTS OF AIRCRAFT DEICED	GALLONS PER MINUTE SETTING	DEICING/ANTI-ICING TIMES				WEATHER INFORMATION		FREEZE POINT OF TYPE I FLUID	DC10 OR 727 #2 ENGINE INSPECTION WAS COMPLETED (GATE ONLY)	DEICING/ANTI-ICING WAS COMPLETED IN ACCORDANCE WITH NWA DEICING POLICY
					TYPE I START	TYPE I FINISH	TYPE II or IV START	TYPE II or IV FINISH	CODE	TEMP.			
NW	9305	GATE	WINGS TAIL	17.0	09:40	09:47			1	34	-37	(CLOCK NUMBER)	(SIGNATURE REQUIRED)
												(CLOCK NUMBER)	(SIGNATURE REQUIRED)
												(CLOCK NUMBER)	(SIGNATURE REQUIRED)
												(CLOCK NUMBER)	(SIGNATURE REQUIRED)
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												(CLOCK NUMBER)	(SIGNATURE REQUIRED)
												(CLOCK NUMBER)	(SIGNATURE REQUIRED)
												(CLOCK NUMBER)	(SIGNATURE REQUIRED)

WEATHER CODES: (1) FROST, (2) FREEZING FOG, (3) SNOW, (4) FREEZING DRIZZLE, (5) LIGHT FREEZING RAIN, (6) RAIN ON COLD SOAKED WING  
 IT IS MANDATORY THAT ALL INFORMATION BOXES FOR EACH FLIGHT THAT YOU DEICED AND/OR ANTI ICE BE COMPLETED. THIS FORM MUST BE TURNED IN AT THE END OF YOUR SHIFT.

CS100 AC 12-01-01 FORM 8-A316 0/97

To Del. Childress From LARRY GANSE  
 Company NTSB Company NWA  
 Location TUS Location MSP  
 Date 12/30/97 Dept. Charge

cc  
 Attached is the list of contractor de-icing locations for NWA. The reference to Byron Oliver on the cover sheet is to the TUS station manager. Please note that the "monitoring" referred to is confined to the responsibility of the de-iced aircraft — NOT to the equipment or procedures.

DEC-29-1997 18:51 NWA A/C CLEANING 612 727 6613 P.81

# FAX

Date 12/29/97

Number of pages including cover sheet 4

TO: Mr. Larry Ganse  
 Flight Safety  
 NWA

Phone 612-727-7408  
 Fax Phone 612-726-8292

FROM: Joe Fillar  
 Northwest Airlines  
 Ramp & Deicing  
 Procedures  
 Mailstop A5200

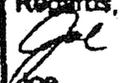
Phone (612) 727-7601  
 Fax Phone (612) 727-6613

CC:

REMARKS:  Urgent  For your review  Reply ASAP  Please Comment

Larry,  
 Please review the attached information on stations vendored out for deicing. I spoke with Byron Oliver and states they do monitor the vendor deicing approximately 2 times per year. They deice on average 7 times per year. They do not have any documentation.

Please call me with any questions.

Regards,  
  
 Joe

1997/98 Deicing Service Suppliers

Station	Primary Supplier	Secondary Supplier
ABE Allentown	NWA	Aircraft International
ABQ Albuquerque	Aircraft Services Intl	TWA
ALB Albany	NWA	Signature, Delta Air Lines
ANC Anchorage	NWA	Alaska, Dynair
ATL Atlanta	NWA	Continental Airlines
AUS Austin	Continental Airlines	American Airlines
AZO Kalamazoo	NWA	American Eagle
BDL Hartford	AMR Combs	USAirways
BHM Birmingham	NWA	
BIL Billings	NWA	Delta Air Lines
BIS Bismarck	NWA	City of Bismarck
BNA Nashville	<del>NWA</del> AMERICAN	<del>American Airlines</del>
BOI Boise	Boise Air Service	Delta Air Lines
BOS Boston	NWA	
BTR Baton Rouge	Delta Air Lines	
BUF Buffalo	Prior Aviation	
BWI Baltimore	Signature Flight Support	Ogden Aviation Services
BZN Bozeman	NWA	Delta Air Lines
CID Cedar Rapids	NWA	TWA, United Airlines
CLE Cleveland	NWA	Global Ground Services
CLT Charlotte	United Airlines	USAirways
CMH Columbus	NWA	Lane Aviation
CVG Cincinnati	NWA	TWA
DAY Dayton	NWA	United, American, AMR Services
DCA Washington, DC (National)	NWA	
DEN Denver	AMR Combs	AMR Services
DFW Dallas/FL Worth	<del>NWA</del> DELTA	<del>Signature Flight Support</del>
DLH Duluth	NWA	North Country Aviation
DSM Des Moines	Signature Flight Support	TWA, United Airlines
DTW Detroit	NWA	
EWR Newark	NWA	Continental Airlines
FAR Fargo	NWA	
FNT Flint	<del>NWA</del> NWA	FLINT AIR SERVICE
FSD Sioux Falls	NWA	UPS
FWA FL Wayne	NWA	Delta Air Lines
GEG Spokane	NWA	Southwest, United
GFK Grand Forks	NWA	FedEx
GRB Green Bay	NWA	United Feeder Service
GRR Grand Rapids	NWA	Aviation Ground
GSO Greensboro	Continental Airlines	
GSP Greenville/Spartanburg	NWA	Delta Air Lines
GTF Great Falls	Holman Aviation	
HOU Houston	Delta Air Lines	
HPN White Plains	Ground Handling, Inc.	
IAD Washington, DC (Dulles)	NWA	DynAir
ICT Wichita	Executive Aircraft	
IND Indianapolis	AMR Combs	
JAX Jacksonville	Airkaman	
JFK New York (Kennedy)	NWA	KLM

1997/98 Deicing Service Suppliers

City	Primary Supplier	Secondary Supplier
LAN	Lansing NWA	Superior Aviation
LGA	New York (LaGuardia) NWA	Delta Air Lines
LIT	Little Rock American Airlines	
LSE	LaCrosse NWA	American Airlines
MBS	Midland/Day City/Saginaw NWA	United Airlines
MCI	Kansas City NWA	TWA
MDT	Harrisburg NWA	USAirways
MDW	Chicago (Midway) NWA	Signature
MEM	Memphis NWA	
MKE	Milwaukee NWA	Signature
MOT	Minot NWA	United Express (Great Lakes Aviation)
MSN	Madison NWA	Midwest Express
MSO	Missoula NWA	Delta Air Lines
MSP	Minneapolis/St. Paul NWA	
MSY	New Orleans USAirways	
OKC	Oklahoma City American Airlines	
OMA	Omaha NWA	TWA, Midwest Express, United Airlines
ORD	Chicago (O'Hare) NWA	Signature
ORF	Norfolk United Airlines	
PDX	Portland, OR ATS	United, Delta
PHL	Philadelphia NWA	TWA
PIT	Pittsburgh (Frost → NWA / US AIR (SAC))	Continental Airlines
PVD	Providence Northstar Aviation	American Airlines
RAP	Rapid City NWA	United Express (Mesa Airlines)
ROU	Raleigh/Durham Raleigh Flying Service	United Airlines
RIC	Richmond Aero Service Intl	AMR Services, Signature
RNO	Reno Mercury Aviation	
ROC	Rochester, NY East Coast Airline Service	Corporate Wings, American Airlines
RST	Rochester, MN NWA	Aerodrome
RSW	Fl. Myers Delta Air Lines	
SAT	San Antonio Continental Airlines	
SBN	South Bend Corporate Wings	South Bend Avtn, USAirways, Air Wisc
SDF	Louisville NWA	Southwest Airlines, AMR Svcs.
SEA	Seattle NWA	
SJC	San Jose Delta Air Lines	
SLC	Salt Lake City Hudson General	
SMF	Sacramento NWA	Delta Air Lines
STL	St. Louis NWA	Delta Air Lines, TWA
SLX	Sioux City NWA	Trans State Airlines (TW Express)
SYR	Syracuse Sair Aviation	Syracuse Executive Air
TUS	Tucson Elsinore Aerospace Svcs	America West Airlines
TVC	Traverse City NWA	American Eagle
TYS	Knoxville USAirways	
VPS	Fl. Walton Beach Atlantic Southeast Airlines	
YEG	Edmonton Canadian Airlines	
YQR	Regina Air Canada	Dryden Service
YUL	Montreal NWA/Aero Mag 2000, Inc.	
YVR	Vancouver Hudson General	Canadian Airlines
YWG	Winnipeg Canadian Airlines	Air Canada

1997/98 Deicing Service Suppliers

Station	Primary Supplier	Secondary Supplier
YXE Saskatoon	Air Canada	
YYC Calgary	Hudson General	Air Canada
YYZ Toronto	Hudson General	AMR Services

PIX PHOENIX

AGS INC.

# NORTHWEST AIRLINES



**STANLEY S. SANDIFORD  
CORPORATE COUNSEL**

Phone - (612) 727-7986  
Facsimile - (612) 726-7123

**CORPORATE LAW  
Department A1180  
5101 Northwest Drive  
St. Paul, Minnesota 55111-3034**

**DATE:** March 20, 1998  
**TO:** John D. Sill  
**FIRM NAME:** Federal Aviation Administration  
**FACSIMILE NUMBER:** 602-379-6891  
**TOTAL NUMBER OF PAGES (INCLUDING THIS COVER SHEET)** 3

**TIME:** 5:04pm

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**COMMENTS:**

OPTIONAL FORM 95 (7-90)

**FAX TRANSMITTAL**

# of pages ▶ 3

To Deborah Childress	From John Sill
Dept./Agency NTSB	Phone # 602 379 4864 ext. 254
Fax # 310 380 5666	Fax # 602-379-6891

NSM 7340-01-317-7368

5099-101

GENERAL SERVICES ADMINISTRATION



**NORTHWEST  
AIRLINES**

Department Number  
A1180

Northwest Airlines, Inc.  
5101 Northwest Drive  
St. Paul MN 55111-3034

Via Facsimile and U.S. Mail  
(602) 379-6891

March 20, 1998

Mr. John D. Sill  
Aviation Safety Inspector  
Federal Aviation Administration  
AZ Flight Standards  
District Office - Phoenix  
2800 N. 44th Street, Suite 450  
Phoenix, AZ 85008-1581

Re: 98WP280060

Dear Mr. Sill:

Thank you for your letter of February 20, 1998, regarding the above-referenced matter. The Agency's letter concerns the application of Northwest's 1997-1998 System Deicing/Anti-Icing Training Handbook to deicing performed at the Tucson International Airport, Tucson, Arizona ("TUS") on December 23, 1997, by Elsinore Aerospace Services ("Elsinore"). Based on our preliminary investigation into this matter, Northwest hereby provides the following information. We believe that our findings will allow the Agency to close its file regarding this matter.

Northwest Airlines utilizes Elsinore, a fixed-based operator (commonly referred to as an "FBO"), to accomplish its deicing needs at the TUS. As we understand it, Elsinore provides deicing services to a number of air carriers serving TUS. Elsinore operates as an independent contractor. Outside of Elsinore's contractual relationship with Northwest to provide deicing services, there is no affiliation between the two companies.

At approximately 7:30 a.m. on December 23, 1997, in preparation for the 8:00 a.m. scheduled departure of Northwest's Flight 556, Elsinore commenced deicing Flight 556. Elsinore began by deicing the wing on the Captain's side of the aircraft. As we understand the sequence of events, after Elsinore had commenced deicing the Captain-side wing, the driver of the deicing truck, Douglas Kuhl, received a page. The driver immediately returned the page. Mr. Kuhl returned the page from the jet bridge servicing Flight 556. According to our investigation, the pager call was from United Airlines. Apparently, United's flight was scheduled to depart at 7:45 a.m. United requested that its 7:45 a.m. flight be deiced before Elsinore completed deicing Northwest's 8:00 a.m. flight. Mr. Kuhl discussed this matter with Northwest's employee Robert Bridges. Mr. Bridges is a Customer Service Agent and a Certified Ramp Inspector. Mr. Bridges agreed that Elsinore could deice the United flight first. The driver informed the bucket operator, Mr. Ralph



BRIDGING  
the PACIFIC



Mr. John Sill  
March 20, 1998  
Page 2

Wilkinson, by hand signals and verbally that they would complete the left wing of Northwest's aircraft and then proceed to deice United. Upon completing the left wing of Northwest's Flight 556, Elsinore stopped deicing Northwest. At this point, Elsinore was no longer acting as a vendor for Northwest. As such, clearly they were not operating under Northwest's deicing program.

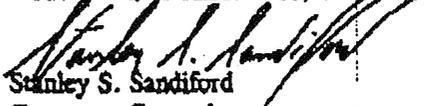
After Mr. Wilkinson lowered the bucket, the driver began to proceed to United. Again, it must be noted that at this time Elsinore was no longer involved in deicing activities for Northwest Airlines. As the driver negotiated around Northwest's Flight 556, for reason unbeknownst to Northwest, the bucket operator reportedly began to raise the bucket. Apparently, the driver was unaware that the boom was no longer in the cradle. As the driver continued toward United, Mr. Wilkinson and the raised bucket impacted the left hand horizontal stabilizer of Northwest's Flight 556. Mr. Wilkinson seemingly was hooked by the horizontal stabilizer and dragged out of the bucket. Tragically, Mr. Wilkinson was killed instantly by the impact. Further, the impact seemingly forced Mr. Wilkinson out of the bucket and his body fell onto the ramp.

As I understand it, the Agency has questioned why Mr. Wilkinson was not wearing a safety harness and lanyard ("harness"). The results of our investigation indicate that Mr. Wilkinson was most likely wearing his harness at the time of the accident. Pursuant to Northwest's deicing program, Northwest employees are required to wear a harness while deicing. Elsinore's procedures also required the use of a harness. Indeed, Byron Oliver, Northwest's Manager Customer Service, TUS, has periodically observed Elsinore's deicing procedures. In Mr. Oliver's experience, the Elsinore bucket operators have always utilized a harness. Moreover, Mr. Robert Bridges a Certified Ramp Instructor, recalls that on December 23, 1997, he observed Elsinore's deicing activities immediately prior to Elsinore commencing deicing activities on Northwest's Flight 556. Specifically, Mr. Bridges observed Mr. Wilkinson deicing Aerolitoral's morning flight. The Aerolitoral plane was parked immediately adjacent to Northwest's Flight 556. Mr. Bridges recalls that while Mr. Wilkinson was deicing the Aerolitoral aircraft, Mr. Wilkinson was wearing a harness.

Elsinore began deicing Northwest's Flight 556 as soon as Elsinore completed deicing the Aerolitoral aircraft. Accordingly, it is believed that Mr. Wilkinson continued to wear his harness during the deicing of Northwest's Flight 556. In fact, when Mr. Oliver arrived at the scene after the accident, he recalls that the harness was hanging from the basket. We believe that the force of Mr. Wilkinson's impact with the horizontal stabilizer separated Mr. Wilkinson from the harness. Similarly, we believe that if Mr. Wilkinson had not been wearing the harness it would have been inside the basket. However, we cannot explain why Mr. Wilkinson chose to raise the basket when he did. One can only speculate that he raised the bucket in preparation for deicing the United aircraft.

Very truly,

NORTHWEST AIRLINES, INC

  
Stanley S. Sandiford  
Corporate Counsel



NORTHWEST  
AIRLINES

*1997-1998 System*

*Deicing / Anti-Icing  
Training Handbook*

**GROUND  
OPERATIONS**



**BRIDGING  
the PACIFIC**



## B. Winter Operations Manual

The Winter Operations Manual (WOM) shall be referenced when questions arise pertaining to NWA deicing/anti-icing policy or procedures. The information in the Winter Operations Manual is updated to reflect the current deicing/anti-icing policies and procedures of NWA.

**NOTE:** Information contained within the 1997-1998 System Deicing/Anti-icing Training Handbook (ground) will not be updated. Do not use the handbook as a reference source when referring to the deicing/anti-icing policy and procedures of NWA.

**NOTE:** Station Directors/Managers do not have the authority to change or modify the current year's aircraft inspection requirements, deicing/anti-icing policies, or procedures contained within this handbook or the Winter Operations Manual.

Changes, updates or modifications to the aircraft inspection requirements, deicing/anti-icing policies, or procedures contained within this handbook or the Winter Operations Manual can only be implemented by the following authorized individuals:

- Todd Anderson  
Director, Ground Operations Support
- \* • Joe Fillar  
Manager Regulatory Support/System Deicing
- Carl W. Blumenstein  
Specialist Ground Operation Ed./System Deicing-Winter Operations

## C. Training Requirements

The Station Manager shall be responsible for ensuring that all personnel who train personnel, inspect, or deice/anti-ice NWA operated aircraft are trained as specified by NWA Ground Operations System Deicing Department 1997-1998 deicing/anti-icing training policy.

**NOTE:** **October 15 of the current year** is the completion date for the station deicer/anti-icer training program (except for DTW and MSP, see note below). After this date the station must have adequate staff trained to operate/staff all equipment and deicing/anti-icing positions during a winter weather event. Stations



may continue to train after the deadline date for the purposes of enhancing the number of qualified deicing/anti-icing personnel.

**NOTE:** DTW and MSP only will be given a one month extension until November 15 to facilitate implementation of a dedicated deicing staff on November 1. Deicing will be performed by 1996/1997 trained staff until then. Engine running deicing will not be permitted until the dedicated staff is fully trained and all training information is entered in the Ground Training Record (GTR) system.

It is NWA policy that any person who is responsible, leads, directs, performs, coordinates, facilitates, or manages any part of the deicing/anti-icing process or program shall attend the most appropriate currently approved (FAA) deicing/anti-icing program issued by NWA Ground Operations System Deicing Department:

- 1997-1998 System Deicing/Anti-icing Train the Trainer Program (includes vendors/FBO)
- 1997-1998 System Deicing/Anti-icing Managers Program
- 1997-1998 System Deicing/Anti-icing Program

Additional programs for specialized deicing/anti-icing functions:

- 1997-1998 Deicing/Anti-icing Coordinator Program
- 1997-1998 Fluids Acceptance Program
- 1997-1998 Engine Running Deicing Program
- 1997-1998 Aircraft Inspection Program (DTW, MEM and MSP ESC only)

All 1997-1998 System Deicing/Anti-icing Train the Trainer, Manager, Deicer/Anti-icer, Coordinator, and Fluids Acceptance programs shall be documented on a GS-38 and entered into the GTR for each individual trained.

**NOTE:** Employees who attend the 1997-1998 System Deicing/Anti-icing Train the Trainer, Managers, or Coordinators program will have all documentation entered into the GTR system by the persons teaching the course. Station run programs such as 1997-1998 System Deicing/Anti-icing, Fluid Acceptance and Aircraft Inspection will be entered into GTR by the station.

## Deicing Health and Safety

It is the policy of NWA to promote and provide for the safety and health of all its employees. In accordance with this policy and after reviewing the Material Safety Data Sheet (MSDS) for the Deicing fluids purchased for use by NWA (monopropylene based), the following health requirements have been established:

### A. Respiratory Protection

Currently NWA does not purchase deicing fluids for which a MSDS indicates a need for respiratory protection. Monopropylene based fluids are:

#### 1. AMS/SAE 1424 or 1424A Type I Fluids

- a. Octoflo monopropylene based Type I deicing fluid.
- b. ArcoPlus monopropylene based Type I deicing fluid.

#### 2. AMS/SAE 1428 or 1428A Type II Fluid

- a. Octagon Forty Below monopropylene based Type II anti-icing fluid.
- b. Kilfrost ABC-3 monopropylene based Type II anti-icing fluid.

#### 3. AMS/SAE 1428A Type IV Fluid

- a. Octagon Maxflight monopropylene based Type IV anti-icing fluid.
- b. Hoechst Safewing MP IV 1957 monopropylene based Type IV anti-icing fluid.
- c. Kilfrost ABC-S monopropylene based Type IV anti-icing fluid.

### B. Recommended Safety/Protective Equipment

NWA, as well as the deicing/anti-icing fluids suppliers, recommend the wearing of the following protective clothing and equipment. NWA requires that certain pieces of protective equipment be worn by all personnel involved in the use of specific deicing equipment.

#### 1. Protective Clothing

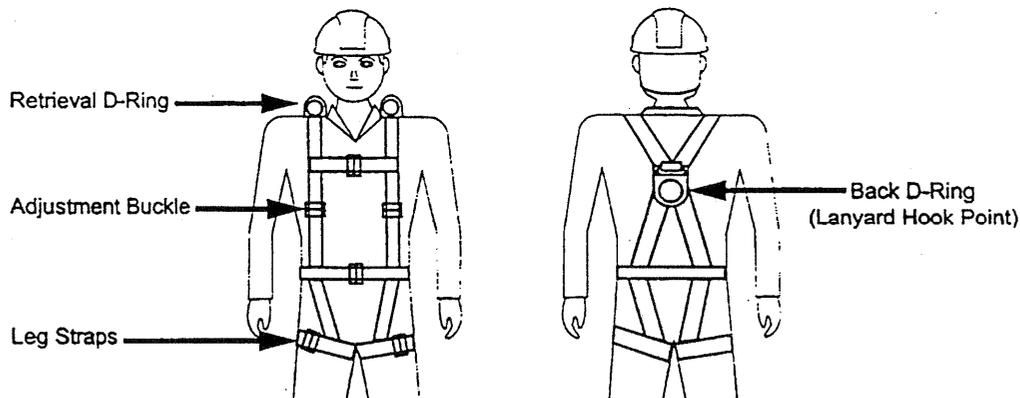
NWA recommends the wearing of rain gear, rubber boots and protective rubber insulated gloves during the deicing process. Deicing fluid is generally heated to between 140° F (60° C) and 180° F (82° C); these fluid temperatures may cause burns upon contact with unprotected body areas.



## 2. Lanyard

**WARNING:** Lanyards made of rope or without the EZ stop shock absorber are no longer acceptable for use. If your station currently has this type of lanyard in stock, they must be destroyed and correct replacements ordered.

Attached lanyards (to truck hookup points and safety harness) prevent the employee from falling to the ground if an accident should occur, i.e., falling from bucket or falling off vehicle during top fill procedures. Deicing vehicles' hookup points are located on the boom/bucket and glycol fill point (some vehicles). NWA requires the attachment of the lanyard to a hookup point and a correctly worn safety harness whenever an employee is in a deicing bucket (except deicing/anti-icing vehicles equipped with an enclosed cabin option) or when top filling any vehicle with glycol (if vehicle is equipped with glycol fill point hook-ups). Each employee involved in the deicing process is required to be fully trained in the attaching and inspection of the lanyard.



(Fig. 3-1)

### a. Inspection and Maintenance

NWA requires the inspection of safety harnesses and lanyards before use. If an inspection reveals defects, the safety harness or lanyard shall be destroyed. All safety harnesses and lanyards shall be hung up to dry after use.

#### Safety Harness

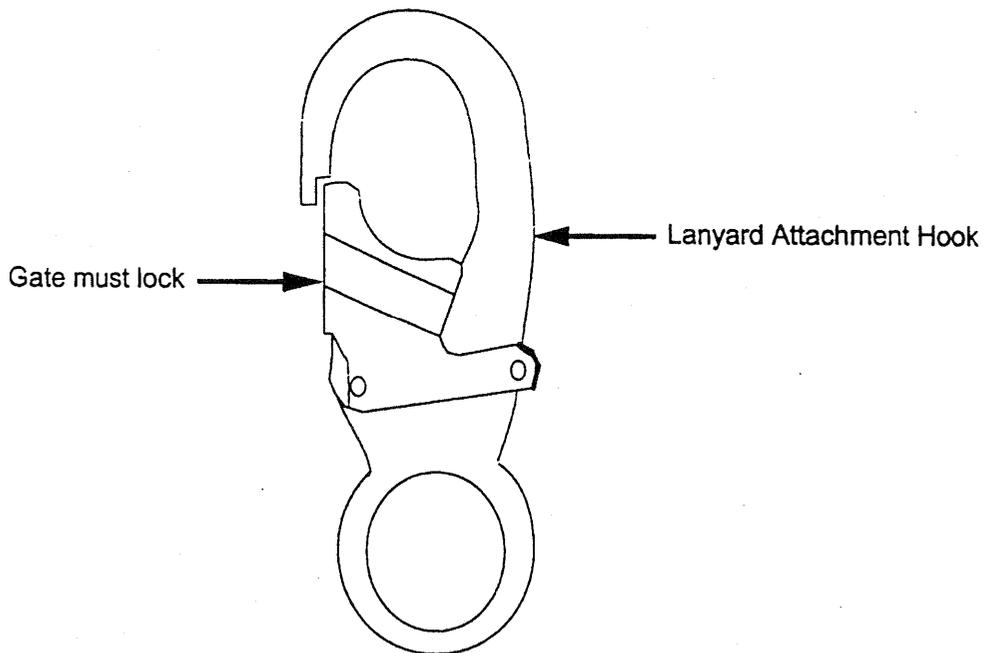
Inspect the harness (buckles, D-rings, etc.). These items cannot be damaged, broken, distorted, or have sharp edges, burrs, cracks, worn parts, or show signs of corrosion.

Inspect the webbing. The webbing material cannot be frayed, cut, separated, or have broken fibers. Check for tears, abrasions, mold, burns, discoloration, etc. Inspect stitching, check for pulled or cut stitches (broken stitches may be an indication the harness has been impact loaded and shall be removed from service and destroyed).

Inspect labels. All labels should be present and fully legible. Labels shall be replaced if illegible or missing.

### Lanyard

Inspect the lanyard (attachment hooks, hook gate, hook eyelets, etc.) These items must not be damaged, broken, distorted, or have sharp edges, burrs, cracks, worn parts, or show signs of corrosion. Hook gate must lock (see fig.3-2).



(Fig. 3-2)

Inspect the webbing. The webbing material cannot be frayed, cut, separated, or have broken fibers. Check for tears, abrasions, mold, burns, discoloration, etc. Inspect stitching, check for pulled or cut stitches (broken stitches may be an indication the lanyard has been impact loaded and shall be removed from service and destroyed).

Inspect the EZ stop shock absorber. The EZ stop shock absorber case cannot be cracked, flattened, distorted, or show signs of corrosion.



The following safety harness and lanyard items are available:

- Lanyard 6 ft. - EZ stop (single hook point) Stock Number 00-0510-3-2074
- Lanyard 5 ft. - EZ stop (Y - two hook points) Stock Number 00-0510-3-2076
- Full body safety harness Stock Number 00-0460-3-0209

## D. General Safety

Overspray or dripping of deicing/anti-icing fluid during the application creates surfaces that may decrease the stability for the employees (ability to stand-up) and reduce traction of ramp equipment. Additionally, deicing fluid is generally heated to between 140° F (60° C) and 180° F (82° C). These fluid temperatures may cause burns upon contact with unprotected body areas.

**NOTE:** It is a NWA requirement that during the application of deicing/anti-icing fluid ground personnel are not to be working on or around the aircraft (except for deicing coordinators at remote locations).

### 1. Driving

Driving around the aircraft during the application of deicing/anti-icing fluid has increased risks of aircraft damage and/or personnel injury due to contact between the deicing vehicle and the aircraft. By understanding and following general safety rules pertaining to driving during deicing/anti-icing of an aircraft, accidents can be avoided.

NWA has established a speed limit for deicing vehicles around the aircraft, it is **4 MPH (6 Km/h)**. Additionally, the deicing vehicle shall maintain a distance of **10 ft. (3.1 m)** between the aircraft and the vehicle [see fig. 3-3 (boom may be closer during the deicing/anti-icing process)]. The deicing vehicle driver is required to test the brakes before entering the **Aircraft's Circle of Safety**.

#### a. Braking and Stopping Distance

The overspray and dripping of deicing/anti-icing fluid onto the ramp substantially increases the stopping distance of the deicing vehicle.

#### b. Sliding on turns and maneuvering

The overspray and dripping of deicing/anti-icing fluid onto the ramp substantially increases the possibility of the deicing vehicle sliding during maneuvering (turns).

## **E. Truck Safety**

Deicing/anti-icing crews shall inspect the deicing vehicle and follow some general safety related procedures before and during operation of the vehicle.

### **1. Deicing Vehicle Inspections**

Before the operation of the deicing vehicle a pre-operational inspection shall be accomplished. The required pre-operational check list is as follows:

- a. Ensure that all functions of the boom are operational.
- b. Verify that the emergency shut off switches are operational.
- c. Verify that the fire extinguisher(s) are fully charged.
- d. Test the brakes, lights, defrosters, windshield/windscreen wipers and tires.
- e. Verify that the driver to deicer communication system is functioning properly.
- f. Inspect the lanyard hookup points on the boom, bucket (if equipped that way) and glycol fill point (if equipped) for wear or cracks.
- g. Check nozzles and hoses/lines for leaks, damage or wear.
- h. Check fluid levels (i.e., gas, deicing/anti-icing fluid, windshield/windscreen fluid, etc.).

If damaged or worn areas are found during the inspection, the deicing vehicle should be inspected by maintenance personnel before use. If a malfunction occurs during the inspection or during operation it shall be shut down and reported according to standard NWA procedures (yellow or red tag). If red tagged, the deicing vehicle shall be removed from service until fixed.

### **2. Deicing Vehicle Operational Safety**

During the operation of the deicing vehicle, the deicing crews shall follow some basic safety related procedures, as follows:

- a. Never move the deicing vehicle when the driver's vision is impaired by equipment or weather conditions or if the driver is unsure of the bucket (enclosed cab) position.

- b. Before driving under bridges, walkways, overhangs or through tunnels, the driver shall check the clearance or height to ensure clear passage of the deicing vehicle.
- c. When the driver leaves the deicing vehicle, he/she shall set both the parking brake and microbrake (if equipped), place the gear shift in park (neutral on NWA installed automatic shifts) and shut the truck off (except during the deicing/anti-icing inspection or communication process).
- d. When driving around the aircraft, the driver shall test the brakes before entering the **Aircraft's Circle of Safety**, adhere to the required **4 MPH (6 Km/h)** speed limit set for deicing vehicles and maintain a clearance of **10 ft. (3.1 m)** between the aircraft and the deicing vehicle [see fig. 3-3 (the boom may be closer during the deicing/anti-process)].

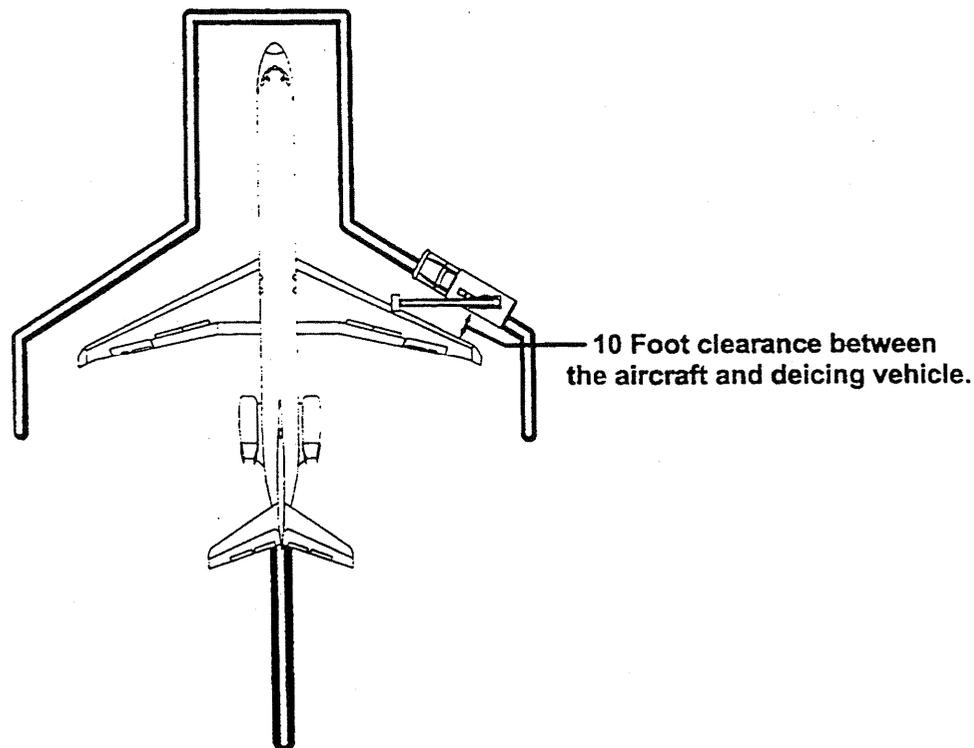
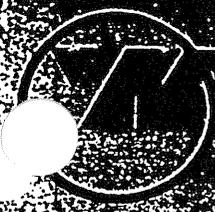


FIG. 3-3

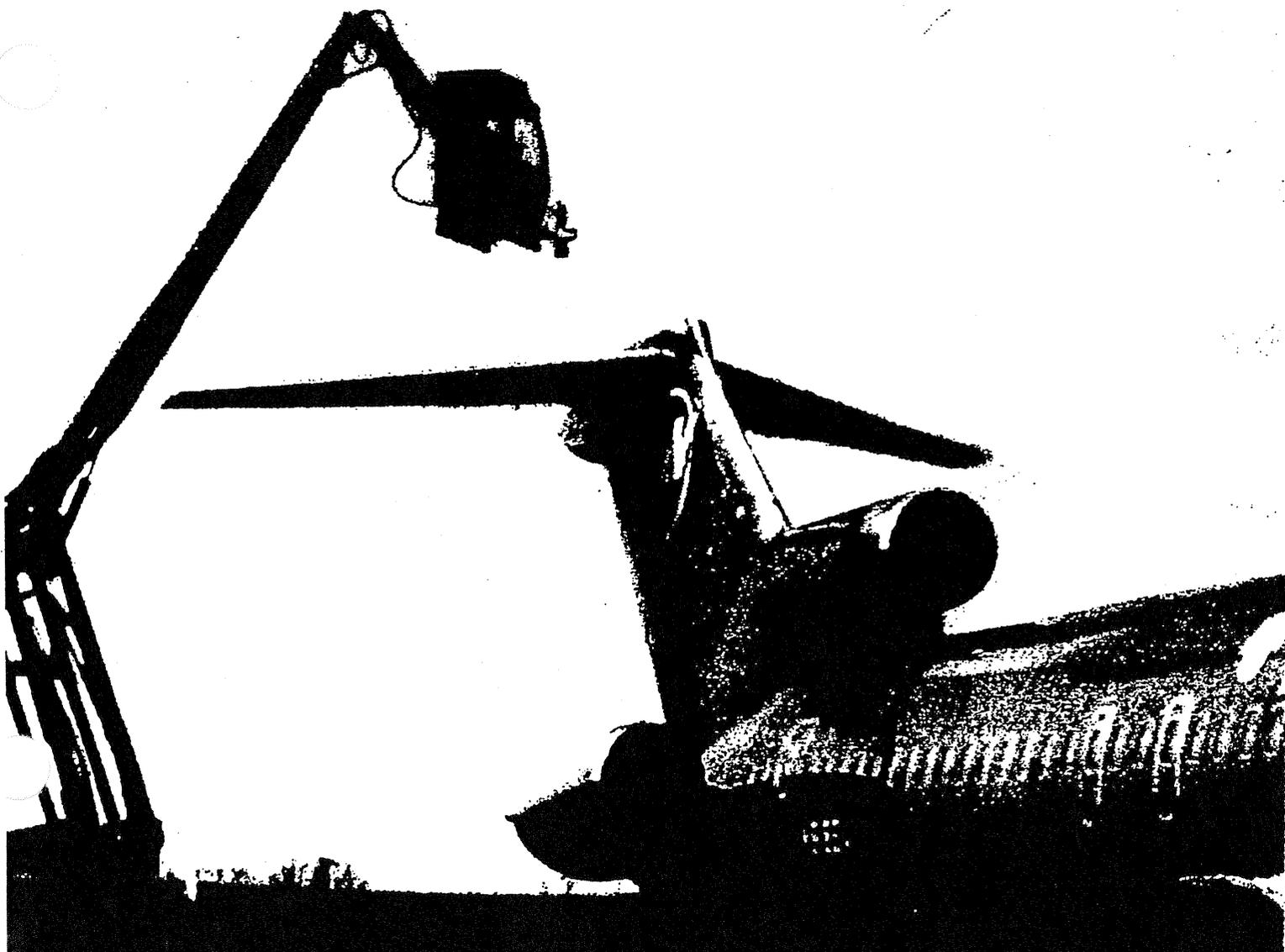
- e. When driving with a person in the bucket the speed limit is **4 MPH (6 Km/h)**, the driver shall avoid driving over curbs, chocks, or into pot holes and when driving from aircraft to aircraft the bucket shall be in the cradle.



NORTHWEST  
AIRLINES

1997-1998

# Deicing and Anti-icing Operations Plan





OCTOBER 15, 1997

## NWA GROUND DEICING/ANTI-ICING OPERATIONS PLAN

### I. Operational Responsibilities

#### A. Overall Deicing/Anti-Icing Plan Management:

Executive Vice President, Ground Operations

This position has overall corporate responsibility to ensure that all elements of the operational plan have been developed, properly integrated and coordinated with all necessary personnel at Northwest Airlines. This position is also responsible for ensuring that the plan and program has been disseminated to all personnel who have duties, responsibilities and functions to perform in accordance with the plan. This position is also responsible to ensure that adequate management oversight, including program quality assurance and periodic evaluation and program modification, as required, is accomplished.

#### B. Airport Operations:

Station Manager (or Qualified Designee)

This person is responsible for determining that conditions exist which require the station implement its deicing/anti-icing operation. This decision will be coordinated with NWA Systems Operation Control (SOC), NWA Dispatch, local airport manager and FAA ATC tower management. The decision to implement the station deicing/anti-icing operation will be based on the following information:

1. Current local conditions
2. Local NWS terminal forecasts
3. NWA meteorology forecasts
4. Pilot reports
5. Past experiences with local weather phenomena
6. Coordination with NWA SOC and Dispatch regarding systems operations requirements

The intent of the program is to determine with as much advance notice as possible the requirement for the implementation of the station's deicing/anti-icing operation at each airport. This will allow ground personnel responsible for actual deicing/anti-icing of aircraft, airport personnel and ATC tower personnel time to prepare prior to arrival of a weather event that would require deicing/anti-icing of any NWA operated aircraft.

**The Pilot in Command has the authority to require deicing/anti-icing or additional deicing/anti-icing of the aircraft, but the Station Manager (or Qualified Designee) must ensure the clean aircraft concept criteria is met before the aircraft is dispatched or released by the station.**



**NORTHWEST**  
A I R L I N E S

## FAA Approved Ground Deicing and Anti-icing Operations Plan

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The Station Manager (or Qualified Designee) has the responsibility and authority to enter into agreements with the ATCT Manager at each airport regarding gate hold procedures during icing conditions. Any agreement must be coordinated with Manager, ATC Operations and with the Director of Dispatch.

The Station Manager (or Qualified Designee) also has the responsibility and authority to enter into agreements with the local airport manager regarding primary and secondary deicing/anti-icing locations and procedures and aircraft pre-takeoff checking location. Any agreement must be coordinated with Manager, Airport Operations and Director of Dispatch.

The Station Manager (or Qualified Designee) will be responsible for coordinating the applicable portions of the NWA operations plan and the deicing and anti-icing program with the managers of the ATCT and airport operations.

### II. Ground Operations Responsibilities

#### A. Overall Ground Operations Responsibilities:

Managing Director - Customer Services, Ground Operations and Cargo

This position is responsible for ensuring that sufficient competent personnel and adequate facilities and equipment are available at each airport where operations are expected to be conducted under conditions conducive to icing, for the proper deicing and anti-icing of NWA aircraft. This position is responsible for ensuring that all requirements outlined in Advisory Circular 120-60 (Ground Deicing and Anti-Icing Program) Sections 7,b (1),(2) and (3) have been accomplished.

### III. Aircraft Deicing/Anti-Icing Procedures and Responsibilities, Pre-takeoff Check Procedures and Responsibilities, and Pre-takeoff Contamination Check Procedures and Responsibilities. (Reference AC 120-60, Sections 9).

#### A. Icing Conditions Communications and Procedures

1. Station Manager (or Qualified Designee) will coordinate with SOC and Dispatch regarding the necessity for implementing the station's deicing/anti-icing operation. Dispatch will provide weather forecasts and system operations information to assist the Station Manager (or Qualified Designee) in making this decision.
2. Once the station deicing/anti-icing operation has been implemented, the Station Manager (or Qualified Designee) will coordinate with Local Airport Manager and Manager of ATCT regarding the progress and effectiveness of on-going deicing/anti-icing operation.
3. Station operations, under guidance from Station Manager will maintain the primary communication link with SOC, Dispatch, ground deicing/anti-icing personnel and flight crews.
4. Flight crews will communicate directly with ground deicing/anti-icing personnel regarding the deicing/anti-icing process.



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3) Two-Step Deice/Anti-Ice

This procedure will be used to first deice the aircraft and then provide a second application of anti-ice fluid.

The first application will consist of a diluted mixture of appropriately heated fluid/water solution. Immediately following the first application (within three minutes), an anti-ice application will be applied.

4) Communications

The ground personnel will provide the following information to flight crews upon the completion of the deicing/anti-icing process.

- Final applied fluid type,
- Fluid/water mix ratio,
- The amount of time (in minutes) since initiation of the final application of deicing/anti-icing fluid.
- Post-application inspection accomplished.

This will be accomplished through direct communication on the aircraft interphone, two way radio, or signboard.

Flight crews will use the above information in determining the applicable holdover time guideline.

When deicing/anti-icing is accomplished prior to flight crew arrival at the aircraft the crew will be provided the pertinent information using the "Deicing/Anti-Icing Fluid Application" form, Appendix A1. This form will be completed by Ground Services personnel and left in the flight deck in a prominent place.

When the deicing/anti-icing process is completed, the pertinent information shall be recorded using the "System Deicing Log" form, Appendix A2. This form will be completed by Ground Services personnel and placed in the station deicing file.

When independent contractors are used, the "System Deicing Log" or an equivalent form/method may be used as long as the same pertinent information is recorded. This equivalent information will be placed in the station deicing file.

When deicing/anti-icing is accomplished after the crew and passengers have boarded, regardless of the fluid type, normal flight crew procedures apply. The individual aircraft AOM/COM will contain specific information regarding aircraft limitations and procedures for deicing/anti-icing.



## FAA Approved Ground Deicing and Anti-icing Operations Plan

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- Return to the gate for deicing/anti-icing
- Proceed to a remote site for deicing

(DC-9-10 AIRCRAFT without the ground airfoil (hot wing) ice protection system operating) Should the holdover time expire prior to takeoff, the upper surface of the wing and the leading edge of the wing must under-go a tactile (hands-on) inspection by qualified personnel.

The aircraft must return to the gate or to a remote site for deicing/anti-icing if any of the following conditions exist.

- The wing leading edge cannot be inspected by qualified ground deicing personnel.
- Upon inspection by qualified ground deicing personnel, wing leading edge contaminant are present.
- The upper wing visual inspection is not satisfactory.

#### 4. Contractor deicing

At locations where deicing/anti-icing is performed by outside contractors rather than Northwest Airlines personnel, it is Ground Operations' responsibility to ensure the contractors have been trained to meet Northwest standards. It is the pilot in command's responsibility to insure that the deicing/anti-icing of the aircraft meets all Northwest requirements.

#### 5. Quality Assurance

Flight deck crews are the approving authority and will make the final determination of the acceptance of the deicing/anti-icing.

This information will be included in all initial and recurrent training programs.

### E. Training

#### 1. Flight Crew

All flight crews shall be trained in accordance with the Ground Deicing and Anti-icing Training Supplement. General information regarding ground deicing and anti-icing is incorporated into FOM Section 9. Specific aircraft deicing information is included in the appropriate COM. Flight crew training on ground deicing and anti-icing is incorporated into the Single Visit Training or AQP curriculum. Newly hired flight crew members receive deicing/anti-icing training in initial indoctrination training classes. Flight crew training information is maintained at the Office of the Managing Director of Flight Procedures and Training and Pilot Standards in the NATCO Building. The FAA will be advised of any significant change in the flight crew training program from this office.



## FAA Approved Ground Deicing and Anti-icing Operations Plan

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### 2. Dispatch

All Dispatch personnel shall be trained during the Flight Dispatch General Recurrent Training Program Ground Deicing and Anti-Icing Training curriculum. Newly hired dispatchers receive deicing/anti-icing training during initial training. The training program is available for review at the office of the Manager, Dispatch Training in Northwest Airlines Building F. Any significant change in the Dispatcher training will be provided to the FAA by this office.

### 3. Ground Personnel

All ground personnel responsible for conducting aircraft deicing and anti-icing shall be trained in accordance with Ground Deicing and Anti-icing Training Program for Ground Personnel. All material regarding ground deicing is also included in Chapter 2 of the Winter Operations Manual. The Ground Servicing training programs are available for FAA review at the office of the Manager, Ground Operations Deicing and Ramp Procedures in Northwest Building A. Any significant change in the Ground training will be provided to the FAA by this office.

### 4. Independent Contractors

In the event deicing /anti-icing is performed for the company by third parties, the approved training program for NWA ground personnel conducting deicing and anti-icing shall be provided to contract personnel. The training will be accomplished by NWA qualified deicing/anti-icing training personnel or person(s) trained by NWA in the current year System Deicing/Anti-icing Train the Trainer program. Any contractor deicing/anti-icing accomplished on NWA operated aircraft will be held to the NWA standards.



# Flight Operations Ground Deicing and Anti-icing Operations Plan

APPENDIX B

OCTOBER 15, 1997

## Holdover Time Guidelines

“Holdover Time” is the term used to describe the estimated time anti-icing fluid will prevent frost, ice, or snow from forming or accumulating on the protected surfaces of an aircraft, under the weather conditions mentioned in the guideline to holdover times.

The Holdover Time Guidelines table below includes information for both Type I, Type II, and Type IV fluids under various weather conditions.

For Type II and Type IV fluid ratios other than 100%, 75%, and 50%, use the holdover time associated with the lesser fluid/water ratio, e.g., snow, 25°F Type II 80%, holdover time for 75% would be used (0:15/0:30).

Takeoff is prohibited in heavy snow, heavy freezing rain or heavy freezing drizzle.

### 1997 - 1998 NWA HOLDOVER TIME GUIDELINE

Ambient mperature		Weather Conditions (See Notes 1 & 2)	Type I Fluid (See Note 3)  (Moderate/Light)	Type II Fluid (Moderate/Light)			Type IV Fluid (Moderate/Light)		
F	°C			100%	75%	50%	100%	75%	50%
above 32°	above 0°	Frost	0:45	12:00	5:00	4:00	18:00	5:00	4:00
		Freezing Fog	0:12/0:30	1:15/3:00	0:50/2:00	0:20/0:45	2:20/3:00	1:05/2:00	0:20/0:45
		Snow	0:06/0:15	0:20/1:00	0:15/0:40	0:05/0:15	0:45/1:25	0:20/0:40	0:05/0:20
		Freezing Drizzle	0:05/0:08	0:30/1:00	0:20/0:45	0:10/0:20	0:40/1:00	0:30/1:00	0:10/0:20
		Light Freezing Rain	0:02/0:05	0:15/0:30	0:10/0:25	0:05/0:10	0:35/0:55	0:35/0:50	0:05/0:10
		Rain on Cold Soaked Wing	0:02/0:05	0:05/0:40	0:05/0:25	See Note 4	0:05/0:50	0:05/0:35	See Note 4
32° to 27°	0° to -3°	Frost	0:45	8:00	5:00	4:00	12:00	5:00	4:00
		Freezing Fog	0:06/0:15	0:35/1:30	0:25/1:00	0:15/0:45	2:20/3:00	1:05/2:00	0:20/0:45
		Snow	0:06/0:15	0:20/0:45	0:15/0:30	0:05/0:15	0:35/1:00	0:20/0:35	0:05/0:15
		Freezing Drizzle	0:05/0:08	0:30/1:00	0:20/0:45	0:10/0:20	0:40/1:00	0:30/0:50	0:10/0:20
26° to 14°	-4° to -10°	Frost	0:45	8:00	5:00		12:00	5:00	
		Freezing Fog	0:06/0:15	0:35/1:30	0:25/1:00		0:40/3:00	0:35/2:00	
		Snow	0:06/0:15	0:15/0:40	0:15/0:30		0:20/0:40	0:15/0:30	
		Freezing Drizzle	0:05/0:08	0:30/1:00	0:20/0:45		0:30/1:00	0:30/1:00	
13° to 7°	-11° to -14°	Light Freezing Rain	0:02/0:05	0:10/0:30	0:10/0:25	0:05/0:10	0:30/0:40	0:15/0:30	
		Frost	0:45	8:00	5:00		12:00	5:00	
		Freezing Fog	0:06/0:15	0:35/1:30	0:25/1:00		0:40/3:00	0:35/2:00	
		Snow	0:06/0:15	0:15/0:40	0:15/0:30		0:20/0:40	0:15/0:30	
6° to -13°	-15° to -25°	Frost	0:45	8:00	See Note 4	See Note 4	12:00	See Note 4	
		Freezing Fog	0:06/0:15	0:20/1:30			0:20/2:00		
		Snow	0:06/0:15	0:15/0:30			0:15/0:30		
below -13°	below -25°	Frost	0:45	See Notes 4 & 5					
		Freezing Fog	0:06/0:15						
		Snow	0:06/0:15						



# Flight Operations Ground Deicing and Anti-icing Operations Plan

## APPENDIX B

OCTOBER 15, 1997

Again, the ONLY aircraft subject to this requirement are the DC-9-10s without the ground airfoil (hot wing) ice protection system operating.

The aircraft must return to the gate for deicing/anti-icing or a remote site for deicing if any of the following conditions exist:

- The wing leading edge cannot be inspected by qualified ground personnel
- Upon inspection by qualified ground personnel wing leading edge contaminants are present
- The upper wing visual inspection is not satisfactory

### Report Exceeding Holdover Time

Once airborne, report to Dispatch via ACARS (or Minneapolis radio) whenever holdover times are exceeded. Include flight number, time deicing commenced, out and off times, and the reason for the delay (ATC, airport conditions, flow control, etc.). This will help fine tune airport deicing plans, minimize delay between deicing and takeoff, help Dispatch plan for increased taxi fuel allowances, and streamline the deicing operation.

### Report Exceeding Holdover Time

Once airborne, report to Dispatch via ACARS (or Minneapolis radio) whenever holdover times are exceeded. Include flight number, time deicing commenced, out and off times, and the reason for the delay (ATC, airport conditions, flow control, etc.). This will help fine tune airport deicing plans, minimize delay between deicing and takeoff, help Dispatch plan for increased taxi fuel allowances, and streamline the deicing operation.

### Contractor Deicing

At locations where deicing/anti-icing is performed by outside contractors rather than Northwest Airlines personnel, it is Ground Operations responsibility to ensure the contractors have been trained to meet Northwest standards. It is the captain's responsibility to ensure that the deicing/anti-icing of the aircraft meets all Northwest requirements. If standards are not met, please call 1-800-NWA-SAFE.

### Quality Assurance

The captain is the approving authority and will make the determination of whether or not the aircraft has been properly deiced/anti-iced.

### Training/Testing Requirements

The FAA requires that each pilot receive annual training on deicing/anti-icing procedures. As a part of this training, each pilot must also be tested.

Training will be accomplished in two phases. Each pilot will receive formal deicing/anti-icing during the







# Winter Operations Manual

## 100.1

Revision: Original  
Effective Date: 11/15/97

### WINTER OPERATIONS, PREPARATION FOR (OPERATION GLACIER)

#### A. Purpose and Description

The purpose of this Standard Practice (SP) is to define the provisions of "Operation Glacier." Operation Glacier is a program of planned preparedness for winter operations. It consists of a step-by-step program that begins in August and continues through the winter operation. Operation Glacier is an integral part of Northwest's operation and only through this planned preparedness can the airline hope to maintain a high caliber of performance. Operation Glacier procedures must be followed each year. All employees are to be completely trained and qualified to carry out their required duties under the program.

Operation Glacier is divided into four major steps as follows:

1. Planning meeting with local Airport Manager (section C below),
2. Winterizing the ramp equipment (section D below),
3. Preparing personnel to understand and anticipate winter weather trends (section E below),
4. Arranging backup and alternative provision (section E below).

#### B. Advance Preparation Completion Date

The advance preparation phase of Operation Glacier must be completed by no later than October 15 of each year. After completion of Operation Cold Front, the responsible Station Manager must send a message to OV 'RAMP' stating that the station has completed all four phases of Operation Glacier.

#### C. Planning Meeting with Local Airport Manager

Prior to the end of August of each year, each Station Manager is to meet with the local Airport Manager and carefully go over the ground rules that will permit a successful Northwest operation during the winter weather conditions. The Station Manager is responsible for making certain that the Company's field condition requirements are recognized and honored by the Airport Manager. It is necessary in this meeting to arrive at a complete agreement of cooperation and commitment from the Airport Manager to the effect that Northwest's requests will be complied with. While the importance of successfully concluding this meeting cannot be over emphasized, it must nevertheless be handled with all the tact and diplomacy at the Station Manager's command. Standard Practice SP 100.2, 100.3, and 100.4 should be used as checklists of items to be covered at the meeting.

#### D. Winterizing the Ramp Equipment

During the time limitations stressed in this phase, it will be necessary for the Station Manager to make certain that each piece of ramp equipment has been thoroughly winterized. It must be emphasized that these functions in no way replace regular maintenance checks.



# Winter Operations Manual

## 100.1

Revision: Original  
Effective Date: 11/15/97

### 1. Deicing Equipment

- a. Visually check deicing unit for obvious repairs. Check condition of all hoses, fittings and nozzles. Inspect entire boom (lift) and basket assembly for weld cracks, rust and damage. Check body hardware, and handrail. Inspect fluid tank cover seals, hinge and latch for condition. Check engine oil, hydraulic fluid, water and glycol levels on truck and auxiliary engines. Change oil and filters as necessary. Lubricate entire vehicle with special emphasis on the aerial device.
- b. Inspect wiring for deterioration and loose connections. Check condition of battery leads and terminals. Check all drive belts for deterioration alignment and proper deflection. Check condition of auxiliary drive components and related accessories. Check drive train, PTO, flexible drive couplings and air blower for condition.
- c. Check fire extinguisher. Be certain that the unit is fully-charged and sealed and that the report card has a current inspection date.
- d. Remove, clean and re-install all fluid filter screens.
- e. Remove heater nozzle igniter assembly. Remove and replace all fuel filters. Check igniter porcelain for cracks. Adjust electrode gap to manufacturer's specifications. Clean UV sensors with a soft cloth. Re-install igniter assembly.
- f. Start auxiliary engine. Be certain that engine oil pressure and ammeter gauge readings are within specifications. Check cooling system, exhaust system and all control panel instruments. Check that engine hour meter is operating.
- g. Operate boom through all its functions. Check basket/cab leveling system for proper operation. Check pins and attaching fasteners for security. Perform functional check on all Emergency Stop switches.
- h. Operate fluid heater (if equipped).

**NOTE:** Be certain that there is an adequate level of fluid in glycol and water tanks before operating heater. Check glycol for indications of over heating or burning. This can be determined by color. Glycol coloring turns slightly brown or opaque brown when the fluid has been heated to excess or burned. Contact Safety Health & Environmental Management Division (SHEMD) for disposal information.

- i. Check operation of basket and ground nozzles. Be certain of adequate flow and pressure. Check for nozzle leakage in off position. Check operation of proportioning valve and mix-monitor if so equipped. Check temperature of fluid; temperature should be between 140° F and 180° F.



# Winter Operations Manual

## 100.1

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Effective Date: 11/15/97

- j. Check operation of truck by driving. Check brakes and tires. Check all lights, heater, defroster, windshield wiper and intercom/radio for proper operation.
  - k. Refer to manufacturer's maintenance manual for specific specifications and procedures.
- 2. Motorized equipment shall undergo a complete winterization, safety check, and tune-up. This includes:**
- a. Radiators - check for leaks (repair as necessary)
  - b. Thermostat, hoses and connections - check for leaks (repair as necessary)
  - c. Flush radiators and service with ethylene glycol-type anti-freeze
  - d. Oil and oil filter change (winter grade oil)
  - e. Check hold-down cables, water level and general condition
  - f. Plugs and points (replace or adjust as needed)
  - g. Complete grease job
  - h. Check brake system (repair or adjust as needed)
  - i. Miscellaneous repairs considered necessary for performance
  - j. There will be some variations as follows:
    - Briggs and Stratton engines need a non-detergent oil. If engine will be inside at all times a 30 weight oil can be used. Should engine remain outside, use a 10 weight non-detergent oil.
    - Refueling trucks - inspect pumps, meters, ground cables, reels, and filters. Check fittings for leaks. Check fire bottles and overall vehicle conditions.
    - AV - Gas should never be used in the ground equipment deicer units.
    - Tire chains - check for general condition and repair as necessary. Because of size problems encountered at outlying stations, it is recommended that chains be purchased and repaired locally as needed.
- 3. Non-Motorized Mobile Equipment:**
- Carts are to be checked and repaired as necessary.
- 4. Electrical Equipment and Wiring:**
- This type of equipment includes electric motors, electric cords and fittings, ramp wiring and fittings,



fuel pits (electrical), and extension cords. These items are to be checked for frayed wires, bad connections, damaged receptacles and plugs. If in doubt about any of the electrical equipment, have it checked by a reliable local electrician for amperage draw, correct voltage and proper operation. Spare fuses of all sizes must be available through airport personnel or carried at the Northwest station.

### 5. Miscellaneous Equipment:

This type of equipment includes pumps, chocks, pins, and fuel pits (mechanical).

- a. Chocks and pins are to be checked for general condition and proper fittings.
- b. Hand pumps, barrel faucets and barrel stands are to be checked for general condition and operation.
- c. Fuel pits should be checked for mechanical operation. Check: pump, piping, valves and filter system for operation, needed adjustments and leaks.
- d. Mops, buckets and miscellaneous items peculiar to the station will need to be checked for cleanliness and general condition and readiness for emergency use.

- Greasing and Oil Changes:

For motorized equipment, grease and oil changes should be done every 200 hours, not to exceed 60 days. It is the responsibility of the Station Manager to be sure this service is accomplished at regular intervals.

Each outlying station should be acquainted with the local service vendors that can assist you in maintaining the equipment. Welding for your equipment should be taken care of through a local agency.

Your ground support equipment should now have been winterized and prepared for cold season operation. It is now necessary to properly monitor this equipment through a conscientious program of daily inspections and preventive maintenance. Inspect and operate all equipment as if it were your own. Run equipment at least twice daily and start well in advance of actual use requirement to ensure operability and availability.

### E. Miscellaneous Items

The following is a generalized list of items that need to be emphasized and/or accomplished to ensure the smooth operation of the station:

1. Remind employees to close aircraft doors when not loading to prevent freeze-ups.
2. Check ramp markings and paint if necessary.



# Winter Operations Manual

## 200.2

Revision: Original  
Effective Date: 11/15/97

### A. AIRCRAFT DEICING/ANTI-ICING TRAINING REQUIREMENTS

NWA requires that all NWA, Vendor, or FBO employees receive deicing/anti-icing training that is approved by the System Deicing Department before any deicing/anti-icing or deicing inspections occur on NWA operated aircraft. The following is a list of approved deicing/anti-icing training with additional requirements if applicable:

- NWA Employees - 97/98 NWA Deicing/Anti-icing Training
- American Airlines Employees - 97/98 AA aircraft deicing training plus NWA differences.
- Delta Airlines Employees - 97/98 DL aircraft deicing training plus NWA differences.
- US Airways Employees - 97/98 US aircraft deicing training plus NWA differences.
- United Airlines Employees - 97/98 UA aircraft deicing training plus NWA differences.
- Continental Airlines Employees - 97/98 CO aircraft deicing training plus NWA differences.

European and Asian based airlines that comply to ISO 11076 (aircraft de-icing/anti-icing methods with fluids) are required to complete their specific airline deicing/anti-icing course and NWA differences.

The required difference training shall include 97/98:

- NWA Deicing Policy
- NWA General Deicing/Anti-icing Procedures
- NWA Communication Requirements and Verbiage
- NWA Fleet Type Differences
- NWA Documentation Requirements

If the vendor or FBO are not specified as having approved deicing/anti-icing training then NWA shall require vendors or FBO's to supply an instructor to be qualified by a NWA primary instructor through the corporate 1997-1998 System Deicing/Anti-icing Train the Trainer Program.

OR

The vendor or FBO may enroll all employees who will be involved in the inspection or deicing/anti-icing of NWA operated aircraft in the station's 1997-1998 System Deicing/Anti-icing Training Program.

**NOTE:** NWA reserves the right to review a vendor's or FBO's current training (including training provided by other airlines) and if viewed as acceptable, may only require NWA difference training in addition to the current training. This determination shall be made by the NWA System Deicing Department.



# Winter Operations Manual

## 200.2

Revision: Original  
Effective Date: 11/15/97

### B. NWA TRAINING POLICY

The Station Manager shall be responsible for ensuring that all personnel who train personnel, inspect, or deice/anti-ice NWA operated aircraft are trained as specified by NWA Ground Operations System Deicing Department 1997-1998 deicing/anti-icing training policy.

**NOTE:** October 15 of the current year is the completion date for the station deicer/anti-icer training program (except for DTW and MSP, see note below). After this date, the station must have adequate staff trained to operate/staff all equipment and deicing/anti-icing positions during a winter weather event. Stations may continue to train after the deadline date for the purposes of enhancing the number of qualified deicing/anti-icing personnel.

**NOTE:** DTW and MSP only will be given a one month extension until November 15 to facilitate implementation of a dedicated deicing staff on November 1. Deicing will be performed by 1996/1997 trained staff until then. Engine running deicing will not be permitted until the dedicated staff is fully trained and all training information is entered in the Ground Training Record (GTR) system.

It is NWA policy that any person who is responsible, leads, directs, performs, coordinates, facilitates, or manages any part of the deicing/anti-icing process or program shall attend the most appropriate currently approved (FAA) deicing/anti-icing program issued by NWA Ground Operations System Deicing Department:

- 1997-1998 System Deicing/Anti-icing Train the Trainer Program (includes vendors/FBO)
- 1997-1998 System Deicing/Anti-icing Managers Program
- 1997-1998 System Deicing/Anti-icing Program

Additional programs for specialized deicing/anti-icing functions:

- 1997-1998 Deicing/Anti-icing Coordinator Program
- 1997-1998 Fluids Acceptance Program
- 1997-1998 Engine Running Deicing Program
- 1997-1998 Aircraft Inspection Program (DTW, MEM and MSP ESC only)



# Winter Operations Manual

## 200.2

Revision: Original

Effective Date: 11/15/97

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### 1. Qualified Aircraft Deicing/Anti-icing Trainers Requirements

Employees who are selected as deicing/anti-icing instructors (or help in the instruction of) are required to have at least 3 years of actual (hands-on) deicing/anti-icing experience (documentation required through GTR) plus attend and complete the following program:

- 1997-1998 System Deicing/Anti-icing Train the Trainer Program.

**NOTE:** Stations that cannot meet the 3 years experience criteria are required to contact (for an exception):

- Carl W. Blumenstein (CWBLUME)  
Specialist, System Deicing Procedures  
MSP, A5310  
612-727-7386  
612-726-0988 FAX

**NOTE:** A qualified deicing/anti-icing instructor cannot train in or qualify any employee or vendor as a NWA qualified deicing/anti-icing instructor within or outside their station. All NWA qualified deicing/anti-icing instructors shall be qualified by:

- Carl W. Blumenstein (CWBLUME)  
Specialist, System Deicing Procedures
- Brian Anderson (BJANDER)  
Instr. Ground Ops Ed.

**NOTE:** Additional personnel may be qualified by the System Deicing Department as primary instructors who are authorization to qualify deicing/anti-icing instructors and managers.

Qualified 1997-1998 Deicing/Anti-icing Instructors must demonstrate a working knowledge of current NWA and FAA deicing/anti-icing policy and procedures after attending the current year's corporate deicing/anti-icing train the trainer program. NWA considers an employee as qualified for the position of 1997-1998 Deicing/Anti-icing Instructor when he/she displays a working knowledge of NWA's current deicing/anti-icing policy and procedures by attending the above noted program and passing a written test with an overall score of 95% or better.

### 2. Qualified Aircraft Deicer/Anti-icers Requirements

NWA Station personnel (ramp or fleet service) who carry out the job function of inspecting and the



deicing/anti-icing of any aircraft are required to attend the following program:

- 1997-1998 System Deicing/Anti-icing Program

The 1997/1998 System Deicing/Anti-icing training course must include the general sections (Introduction, Reasons for Deicing, Deicing Health and Safety, Deicing Communication Requirements, Deicing/Anti-icing Fluids, Deicing Responsibilities and Deicing Fluid Application Patterns, Methods of Removal, Deicing Inspection Requirements, Documentation Requirements), and hands-on training.

Qualified 1997-1998 Deicing/Anti-icing personnel must demonstrate a working knowledge of current NWA and FAA deicing/anti-icing policy and procedures after attending the current year's station deicing/anti-icing program. NWA considers an employee as qualified for the position of 1997-1998 Deicer/Anti-icer when he/she displays a working knowledge of NWA's current deicing/anti-icing policy and procedures by attending the above noted program and passing a written test with an overall score of 90% or better.

### 3. Qualified Engine Running Deicer/Anti-icers Requirements

Stations that are identified as NWA engine running deicing stations are required to attend the Engine Running Training Program in addition to 1997-1998 System Deicing/Anti-icing Program. As additional types of aircraft are approved for engine running deicing subsequent training will be required.

**Vendor/FBO:** Locations where engine running deicing is performed by Vendor/FBO personnel will be required to:

- a. Review NWA procedures and train their personnel on the differences or use NWA's Engine Running Deicing Training Program when training their personnel.
- b. When difference training occurs, a copy of their engine running deicing procedures and a outline of the difference training shall be forwarded to:
  - Carl W. Blumenstein (CWBLUME)  
Specialist, System Deicing Procedures  
MSP, A5310  
612-727-7386  
612-726-0988 FAX



# Winter Operations Manual

## 200.2

Revision: 1/98

Effective Date: 02/05/98

#### 4. Qualified Non-NWA (vendor/FBO) Deicer Requirements

If the vendor or FBO are not specified as having approved deicing/anti-icing training, then NWA shall require a vendor or FBO to supply an instructor to be qualified by a NWA primary instructor through the corporate 1997-1998 System Deicing/Anti-icing Train the Trainer Program. This instructor(s) will be considered qualified by demonstrating a working knowledge of current NWA and FAA deicing/anti-icing policies and procedures after attending the current year's corporate deicing/anti-icing train the trainer program. NWA will consider a vendor's or FBO's employee as qualified for the position of 1997-1998 Deicing/Anti-icing Instructor when he/she displays a working knowledge of NWA's current deicing/anti-icing policy and procedures by attending the above noted program and passing a written test with an overall score of 95% or better.

OR

The vendor or FBO may enroll all employees who will be involved in the inspection or deicing/anti-icing of NWA operated aircraft in the station's 1997-1998 System Deicing/Anti-icing Training Program.

**NOTE:** NWA reserves the right to review a vendor's or FBO's current training (including training provided by other airlines) and if viewed as acceptable, may only require NWA difference training in addition to the current training. This determination shall be made by the NWA System Deicing Department.

- a. If the event a Vendor or FBO cannot deice/anti-ice NWA aircraft due to a malfunction of equipment or conditions beyond their control, said vendor or FBO may conduct "On the Job" (OJT) training of another available vendor or FBO to fulfill the contract with permission of:
  - Todd Anderson  
Director, Ground Operations Support
  - Joe Fillar  
Manager, System Deicing and Ramp Procedures
  - Carl W. Blumenstein  
Specialist, System Deicing Procedures

OJT under these circumstances will consist of the contracted vendor or FBO riding in the deicing vehicle while verbally instructing the new deicing crew on the application areas applicable to the aircraft type. The original vendor or FBO will perform all required communication with the captain and inspect the aircraft after deicing/anti-icing is completed to ensure that the aircraft meets the clean aircraft concept criteria.



# Winter Operations Manual

## 200.2

Revision: 1/98  
Effective Date: 02/05/98

### 5. Qualified Aircraft Deicing/Anti-icing Inspector Requirements (DTW, MEM, and MSP ESC's only)

DTW, MEM, and MSP ESC's who carry out the job function of inspecting any aircraft for contaminants are required to attend the following program:

- 1997-1998 System Deicing/Anti- Program

Qualified 1997-1998 DTW, MEM, and MSP ESC's must demonstrate a working knowledge of current NWA and FAA deicing/anti-icing policy and aircraft inspection requirements after attending the current year's station deicing/anti-icing program. NWA considers a DTW, MEM, or MSP ESC as qualified for the inspection of aircraft for contaminants during the 1997-1998 season when he/she displays a working knowledge of NWA's current deicing/anti-icing policy and procedures by attending the above noted program and passing a written test with an overall score of 90% or better.

### 7. Training Methods

The 1997-1998 System Deicing/Anti-icing Train the Trainer, Manager, Deicer/Anti-icer, Coordinator, and Fluid Acceptance Programs include classroom lecture, videos (if applicable), review of printed material, hands-on training (on the job training), equipment and/or testing instrument demonstrations, and a written test as prescribed by the Ground Operations System Deicing Department.

**NOTE:** The Aircraft Inspection Program includes everything above, except hands-on truck and aircraft spraying training. This program is approved for DTW, MEM, MSP ESC's only.

### D. Fluid Acceptance

Northwest Airlines (NWA) requires personnel who are involved in the acceptance of deicing/anti-icing fluids have a general knowledge specific testing equipment, methods for the testing of deicing/anti-icing fluids, and characteristics and capabilities of the deicing/anti-icing fluids used within their station.

#### A. Training Requirements

The manager of the station/department shall be responsible for ensuring that all personnel who acceptance shipments of deicing/anti-icing fluids are trained as specified by NWA System Deicing Departments: System Deicing/Anti-icing Fluids Acceptance training policy.

**NOTE:** November 30 of the current year is the completion date for the system deicing/anti-icing fluid acceptance program.

#### 1. Deicing/Anti-icing Fluids Acceptance Qualifications

A NWA qualified deicing/anti-icing fluid acceptance employee must demonstrate a working



# Winter Operations Manual

## 200.4

Revision: Original  
Effective Date: 11/15/97

**NOTE:** After the post deicing/anti-icing verbiage is completed, the pilot in command will not move the aircraft until the clear to taxi hand signal is given.

### C. Deicing Vehicle Communication

The deicing vehicle driver and the deicer (bucket person) shall be in communication at all times either through the use of an intercom or two way radios.

#### 1. Communication and Procedure

- a. All communication between deicing vehicle driver and the deicer shall be clear and concise. Communication shall be easily understood by both the deicing truck driver and the deicer.

**NOTE:** Misunderstood communication can lead to personnel injury and/or equipment and aircraft damage.

- b. All communication equipment shall be tested before the deicing vehicle can be moved. If the communication system fails or becomes inoperative during the deicing process, use the loss of communication emergency procedures.

#### 2. Loss of Communication Emergency Procedures

In the event of a communication system failure, blasts of deicing fluid sprayed against the hood of the vehicle can be used to communicate with the driver as follows:

- One blast - Stop
- Two blasts - Forward
- Three blasts - Reverse

This means of communication is to be used to remove the deicing vehicle from the aircraft for repair. Use of the deicing vehicle for deicing/anti-icing is prohibited until repaired.



**NORTHWEST  
AIRLINES**

# Winter Operations Manual

## 200.4

Revision: Original  
Effective Date: 11/15/97

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# Winter Operations Manual

## 201.1

Revision: Original  
Effective Date: 11/15/97

### Deicing Health and Safety

It is the policy of NWA to promote and provide for the safety and health of all its employees. In accordance with this policy and after reviewing the Material Safety Data Sheet (MSDS) for the Deicing fluids purchased for use by NWA (monopropylene based), the following health requirements have been established:

#### A. Respiratory Protection

Currently NWA does not purchase deicing fluids for which a MSDS indicates a need for respiratory protection. Monopropylene based fluids are:

##### 1. AMS/SAE 1424 or 1424A Type I Fluids

- a. Octoflo monopropylene based Type I deicing fluid.
- b. ArcoPlus monopropylene based Type I deicing fluid.

##### 2. AMS/SAE 1428 or 1428A Type II Fluid

- a. Octagon Forty Below monopropylene based Type II anti-icing fluid.
- b. Kilfrost ABC-3 monopropylene based Type II anti-icing fluid.

##### 3. AMS/SAE 1428A Type IV Fluid

- a. Octagon Maxflight monopropylene based Type IV anti-icing fluid.
- b. Hoechst Safewing MP IV 1957 monopropylene based Type IV anti-icing fluid.
- c. Kilfrost ABC-S monopropylene based Type IV anti-icing fluid.

#### B. Recommended Safety/Protective Equipment

NWA, as well as the deicing/anti-icing fluids suppliers, recommend the wearing of the following protective clothing and equipment. NWA requires that certain pieces of protective equipment be worn by all personnel involved in the use of specific deicing equipment.

##### 1. Protective Clothing

NWA recommends the wearing of rain gear, rubber boots and protective rubber insulated gloves during the deicing process. Deicing fluid is generally heated to between 140° F (60° C) and 180° F (82° C); these fluid temperatures may cause burns upon contact with unprotected body areas.





# Winter Operations Manual

## 201.2

Revision: Original  
Effective Date: 11/15/97

### General Safety

#### A. General

Overspray or dripping of deicing/anti-icing fluid during the application creates surfaces that may decrease the stability for the employees (ability to stand-up) and reduce traction of ramp equipment. Additionally, deicing fluid is generally heated to between 140° F (60° C) and 180° F (82° C). These fluid temperatures may cause burns upon contact with unprotected body areas.

**NOTE:** It is a NWA requirement that during the application of deicing/anti-icing fluid ground personnel are not to be working on or around the aircraft (except for deicing coordinators at remote locations).

#### 1. Driving

Driving around the aircraft during the application of deicing/anti-icing fluid has increased risks of aircraft damage and/or personnel injury due to contact between the deicing vehicle and the aircraft. By understanding and following general safety rules pertaining to driving during deicing/anti-icing of an aircraft, accidents can be avoided.

NWA has established a speed limit for deicing vehicles around the aircraft, it is **4 MPH (6 Km/h)**. Additionally, the deicing vehicle shall maintain a distance of **10 ft.(3.1 m)** between the aircraft and the vehicle [see fig. 3-3 (boom may be closer during the deicing/anti-icing process)]. The deicing vehicle driver is required to test the brakes before entering the **Aircraft's Circle of Safety**.

##### a. Braking and Stopping Distance

The overspray and dripping of deicing/anti-icing fluid onto the ramp substantially increases the stopping distance of the deicing vehicle.

##### b. Sliding on turns and maneuvering

The overspray and dripping of deicing/anti-icing fluid onto the ramp substantially increases the possibility of the deicing vehicle sliding during maneuvering (turns).

#### 2. Heated Deicing Fluid Risks

Deicing fluids may cause skin irritation and are heated before application to temperatures that may cause burns to unprotected body areas, for these reasons the following requirements shall be met before the deicing of an aircraft begins:



# Winter Operations Manual

## 201.2

Revision: Original  
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**a. Jetway**

The jetway/jet bridge shall be pulled back from the aircraft. Deicing an aircraft while passenger loading is in progress is not permitted.

**b. Aircraft Cabin Doors**

Aircraft cabin doors shall be in the closed position. Deicing an aircraft while passenger loading is in progress is not permitted.

**c. Aircraft Cargo Doors**

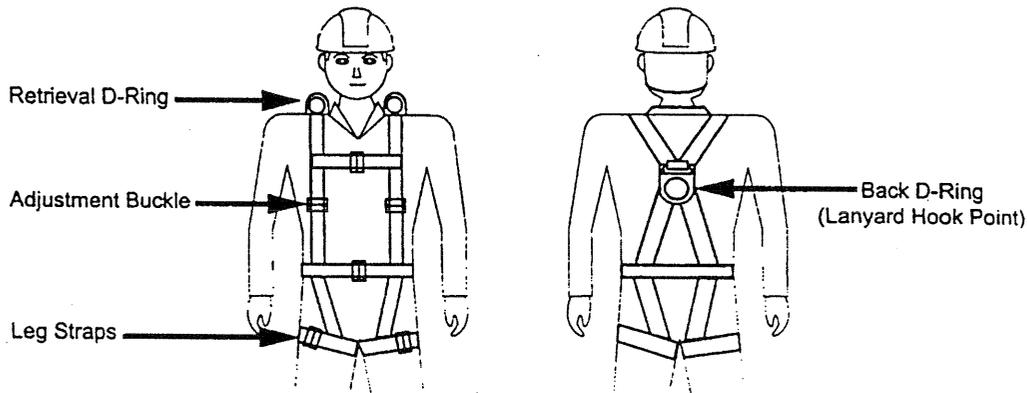
Aircraft cargo door shall be in the closed position. Deicing an aircraft while cargo loading/unloading is in progress is not permitted.

**d. Ground Personnel**

Deicing of an aircraft is not permitted when ground personnel are present (except for deicing coordinators at remote locations).



Attached lanyards (to truck hookup points and safety harness) prevent the employee from falling to the ground if an accident should occur, i.e., falling from bucket or falling off vehicle during top fill procedures. Deicing vehicles' hookup points are located on the boom/bucket and glycol fill point (some vehicles). NWA requires the attachment of the lanyard to a hookup point and a correctly worn safety harness whenever an employee is in a deicing bucket (except deicing/anti-icing vehicles equipped with an enclosed cabin option) or when top filling any vehicle with glycol (if vehicle is equipped with glycol fill point hook-ups). Each employee involved in the deicing process is required to be fully trained in the attaching and inspection of the lanyard.



(Fig. 201.1-1)

a. Inspection and Maintenance

NWA requires the inspection of safety harnesses and lanyards before use. If an inspection reveals defects, the safety harness or lanyard shall be destroyed. All safety harnesses and lanyards shall be hung up to dry after use.

- Safety Harness

Inspect the harness (buckles, D-rings, etc.). These items cannot be damaged, broken, distorted, or have sharp edges, burrs, cracks, worn parts, or show signs of corrosion.

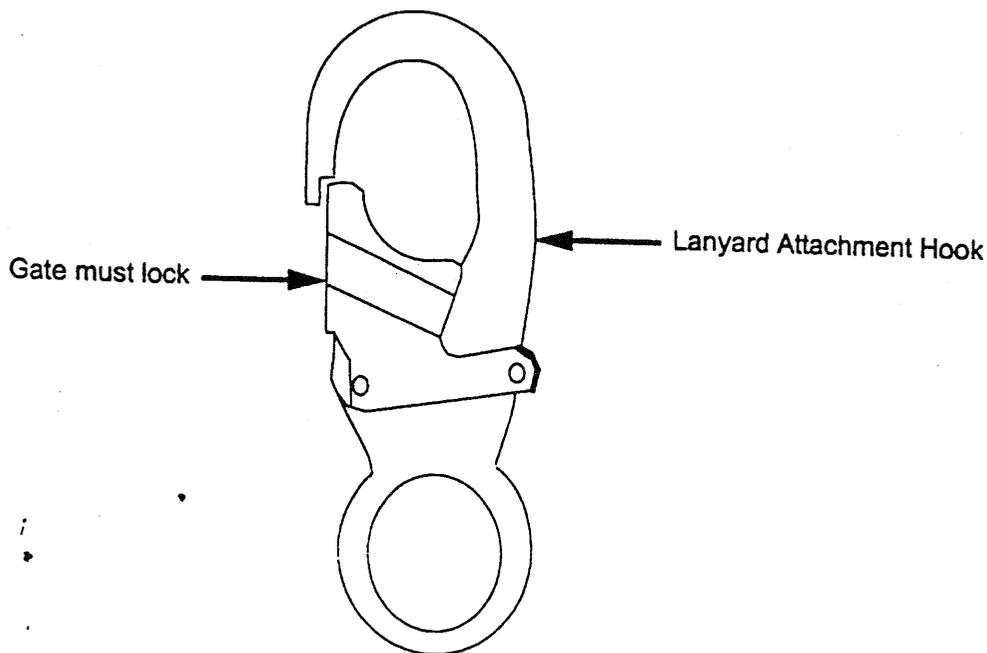
Inspect the webbing. The webbing material cannot be frayed, cut, separated, or have broken fibers. Check for tears, abrasions, mold, burns, discoloration, etc. Inspect stitching, check for pulled or cut stitches (broken stitches may be an indication the harness has been impact loaded and shall be removed from service and destroyed).

Inspect labels. All labels should be present and fully legible. Labels shall be replaced if illegible or missing.



- Lanyard

Inspect the lanyard (attachment hooks, hook gate, hook eyelets, etc.) These items must not be damaged, broken, distorted, or have sharp edges, burrs, cracks, worn parts, or show signs of corrosion. Hook gate must lock (see fig.201.1-2).



(Fig. 201.1-2)

Inspect the webbing. The webbing material cannot be frayed, cut, separated, or have broken fibers. Check for tears, abrasions, mold, burns, discoloration, etc. Inspect stitching, check for pulled or cut stitches (broken stitches may be an indication the lanyard has been impact loaded and shall be removed from service and destroyed).

Inspect the EZ stop shock absorber. The EZ stop shock absorber case cannot be cracked, flattened, distorted, or show signs of corrosion.

The following safety harness and lanyard items are available:

- |   |              |                |
|---|--------------|----------------|
| • Lanyard 6 ft. - EZ stop (single hook point)   | Stock Number | 00-0510-3-2074 |
| • Lanyard 5 ft. - EZ stop (Y - two hook points) | Stock Number | 00-0510-3-2076 |
| • Full body safety harness                      | Stock Number | 00-0460-3-0209 |



# Winter Operations Manual

## 201.3

Revision: Original  
Effective Date: 11/15/97

### Deicing Vehicle Safety

#### A. Inspections

Deicing/anti-icing crews shall inspect the deicing vehicle and follow some general safety related procedures before and during operation of the vehicle.

##### 1. Deicing Vehicle Inspections

Before the operation of the deicing vehicle a pre-operational inspection shall be accomplished. The required pre-operational check list is as follows:

- a. Ensure that all functions of the boom are operational.
- b. Verify that the emergency shut off switches are operational.
- c. Verify that the fire extinguisher(s) are fully charged.
- d. Test the brakes, lights, defrosters, windshield/windscreen wipers and tires.
- e. Verify that the driver to deicer communication system is functioning properly.
- f. Inspect the lanyard hookup points on the boom, bucket (if equipped that way) and glycol fill point (if equipped) for wear or cracks.
- g. Check nozzles and hoses/lines for leaks, damage or wear.
- h. Check fluid levels (i.e., gas, deicing/anti-icing fluid, windshield/windscreen fluid, etc.).

If damaged or worn areas are found during the inspection, the deicing vehicle should be inspected by maintenance personnel before use. If a malfunction occurs during the inspection or during operation it shall be shut down and reported according to standard NWA procedures (yellow or red tag). If red tagged, the deicing vehicle shall be removed from service until fixed.

#### B. Deicing Vehicle Operational Safety

During the operation of the deicing vehicle, the deicing crews shall follow some basic safety related procedures, as follows:

1. Never move the deicing vehicle when the driver's vision is impaired by equipment or weather conditions or if the driver is unsure of the bucket (enclosed cab) position.

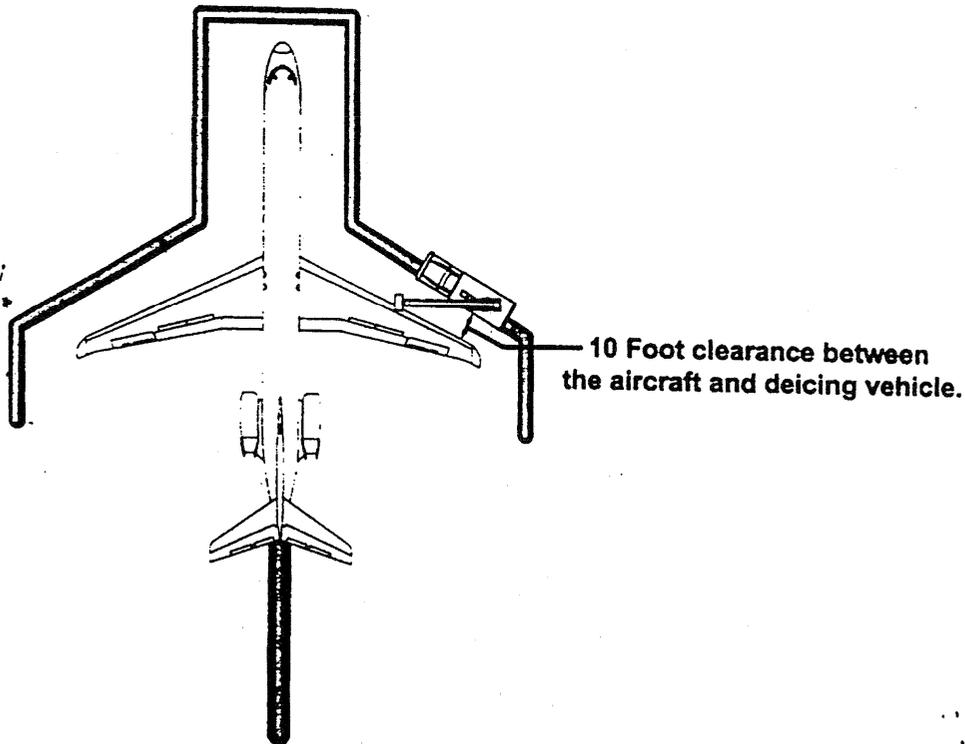


# Winter Operations Manual

## 201.3

Revision: Original  
Effective Date: 11/15/97

2. Before driving under bridges, walkways, overhangs or through tunnels, the driver shall check the clearance or height to ensure clear passage of the deicing vehicle.
3. When the driver leaves the deicing vehicle, he/she shall set both the parking brake and mircobrake (if equipped), place the gear shift in park (neutral on NWA installed automatic shifts) and shut the truck off (except during the deicing/anti-icing inspection or communication process).
4. When driving around the aircraft, the driver shall test the brakes before entering the Aircraft's Circle of Safety, adhere to the required 4 MPH (6 Km/h) speed limit set for deicing vehicles and maintain a clearance of 10 ft. (3.1 m). between the aircraft and the deicing vehicle [see fig. 201.3-1 (the boom may be closer during the deicing/anti-process)].



**FIG. 201.3-1**

5. When driving with a person in the bucket the speed limit is 4 MPH (6 Km/h), the driver shall avoid driving over curbs, chocks, or into pot holes and when driving from aircraft to aircraft the bucket shall be in the cradle.
6. When the deicing vehicle is parked, the driver shall use a guide person when backing up. Never park deicing vehicles side by side with the fluid heaters on.



**NORTHWEST**  
A I R L I N E S

# Winter Operations Manual

## 201.3

Revision: Original

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7. Always have the boom resting in the cradle when driving to the next aircraft.

### C. Deicing Vehicle Glycol Filling Safety

When filling the truck with deicing/anti-icing fluid, the fluid heater shall be turned off. If the deicing vehicle glycol fill point is located on top of the vehicle, attaching of the lanyard to the hookup point is mandatory (if equipped).



# Winter Operations Manual

## 201.3

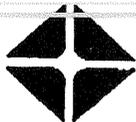
Revision: Original  
Effective Date: 11/15/97

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# MATERIAL SAFETY DATA SHEET

**ARCOPLUS® AIRCRAFT DEICING FLUID**

 MSDS No P000721-001-OSHA-AE  
 Ver. No 1  
 Ver. Date NOV 3 93

 ARCO Chemical Company  
 3801 West Chester Pike  
 Newtown Square, PA 19073-3287

**IMPORTANT:** Read this MSDS before handling and disposing of this product and pass this information on to the employees, customers, and users of this product. This product is covered by the OSHA Hazard Communication Rule and this document has been prepared in accord with the MSDS requirements of this rule.

IDENTIFICATION			
Trade Name	ARCOPLUS® AIRCRAFT DEICING FLUID		<b>Telephone Numbers:</b> <b>EMERGENCY</b> (800) 424-9300      CHEMTREC (610) 353-8300      ARCO CHEM <b>CUSTOMER SERVICE</b> (800) 321-7000      INFO ONLY
Other Company Names	None		
Synonyms	None		
Other Industry Names	Deicer, Type I fluid		
Chemical Family	Aqueous solution of glycol		
Generic Name	Aqueous Solution of Propylene Glycol		
DOT Hazardous Material Proper Shipping Name Not regulated			
DOT Hazard Class Not regulated	DOT Packing Group Not regulated	DOT Reportable Quantity (Based on Material) Not applicable	UN/NA ID No. Not applicable
CAS No. (See Section 9 - Components)	Company Material ID BE1616		MSDS Class P
HAZARD IDENTIFICATION			
Signal Word	CAUTION		
Physical Hazards	Aqueous solutions may produce flammable vapors		
Acute Health Effects (Short-Term)	No data found; no expected inhalation hazard No data found; suspect eye irritant No data found; no expected ingestion hazard No data found; no expected skin irritation hazard No data found; no expected skin absorption hazard		
Chronic Health Effects (Long-Term)	Avoid repeated or prolonged inhalation of vapors or mists from this material No chronic health hazards are expected to occur from anticipated conditions of normal use of this material		
PHYSICAL AND CHEMICAL PROPERTIES			
Flash Point GT 212°F (COC) (See conditions to avoid/conditions of flammability elsewhere in this document)	Autoignition Temperature No Data Available		Flammable Limits Lower: AP 2 (% vol in air) Upper: AP 13 (% vol in air)
Fire and Explosion Hazards	Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may travel long distances along the ground before igniting and flashing back to vapor source. This product is designed specifically for aircraft deicing use and is not to be used in sprinkler systems or other fire fighting equipment. Aqueous solutions containing less than 95% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapors. Always drain and flush systems containing propylene glycol with water before welding or other maintenance.		
Extinguishing Media	Alcohol type foam Dry chemical CO <sub>2</sub> Water spray		
Extinguishing Media Use Comment	No additional information available		



## ARCOPLUS® AIRCRAFT DEICING FLUID

MSDS No. PRC0072-001-OSHA-AE  
Ver. No 1  
Ver. Date NOV 3 85

## 3. Fire and Explosion (Cont'd)

<b>Special Firefighting Procedures</b>	Do not enter fire area without proper protection. Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Apply aqueous extinguishing media carefully to avoid frothing. Avoid frothing/steam explosion. Use water spray/fog for cooling. Notify authorities immediately if liquid enters sewer/public waters.		
<b>4. Health Hazards</b>			
<b>Summary of Acute Hazards</b>	Slight health hazard		
<b>ROUTE OF EXPOSURE</b>	<b>SIGNS AND SYMPTOMS</b>	<b>PRIMARY ROUTE(S)</b>	
Inhalation	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be an inhalation hazard.	No	
Eye Contact	Although no appropriate human or animal health effects data are known to exist, this material is expected to cause eye irritation.	Yes	
Skin Absorption	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a health hazard by skin absorption.	No	
Skin Irritation	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be a skin irritant.	No	
Ingestion	Although no appropriate human or animal health effects data are known to exist, this material is not expected to be an ingestion hazard.	No	
<b>Summary of Chronic Hazards</b>	No adverse chronic health effects are expected from anticipated conditions of normal use of this material.		
<b>Special Health Effects</b>	No additional medical information found.		
<b>5. Protective Equipment and Work Control Practices</b>			
<b>Respiratory</b>	No special respiratory protection equipment is recommended under anticipated conditions of normal use. If nuisance mists cause discomfort, U.S. National Institute for Occupational Safety and Health (NIOSH)/U.S. Mine Safety and Health Administration (MSHA) approved respiratory protection is suggested.		
<b>Eye</b>	Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses must not be worn.		
<b>Skin</b>	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene. Wash hands and other exposed areas with mild soap and water before eating, drinking, smoking, and when leaving work.		
<b>Engineering Controls</b>	No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.		
<b>Other Hygienic Practices</b>	Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.		
<b>Other Work Practices</b>	No special work practices are needed beyond the above recommendations under anticipated conditions of normal use.		
<b>6. Occupational Exposure Limits</b>			
<b>Substance</b>	<b>Source</b>	<b>Date</b>	<b>Type Value/Units Time Skin</b>
There may be U.S. Occupational Safety and Health Administration (OSHA) Personal Exposure Limits (PELs) and/or American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) for one or more components which are trade secrets. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement.			
<b>Exposure Limit Comments</b>	No additional Occupational Exposure Limit information available		
<b>7. First Aid</b>			
<b>Inhalation</b>	Not expected to present a significant inhalation hazard under anticipated conditions of normal use.		



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**7. Emergency and First Aid (Cont'd)**

**Physician's Emergency Medical Treatment Procedures** Treat symptomatically.

**Physician's Detoxification Procedures** If swallowed, DO NOT INDUCE VOMITING. Administer an aqueous slurry of activated charcoal followed by a cathartic such as magnesium citrate or sorbitol.

**8. Spill and Disposal**

**Precautions if Material is Spilled or Released**  
In case of accidental spill, may contaminate water supplies/pollute public waters. Evacuate/limit access. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Slippery walking. May be diluted with water to reduce slipperiness. Impound/recover large land spill. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

**Waste Disposal Methods**  
Product is biodegradable. Notify sewage treatment authorities to avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.

**9. Components**

(This may not be a complete list of components.) (Compositions given are typical values, not specifications.)

Component Name	CAS No.	Composition Amount (Wt.)	Carcinogen ###
Propylene Glycol	57-55-5	AP 88 %	N/P
Water	7732-18-5	AP 9 %	N/P
Trade Secret-ACC P000721-01 #		LT 1 %	
Trade Secret-ACC P000721-02 #		LT 1 %	
Trade Secret-ACC P000721-03 #		LT 1 %	
Trade Secret-ACC P000721-04 #		LT 1 %	
Trade Secret-ACC P000721-05 #		LT 1 %	
Trade Secret-ACC P000721-06 #		LT 1 %	

# The specific chemical identity of this component is a trade secret. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement

###1=U.S. National Toxicological Program 2=International Agency for Research on Cancer 3=U.S. Occupational Health and Safety Administration 4=American Conference of Governmental Industrial Hygienists 9=Other

**10. Occupational Health Hazards**

Component	Component Health Hazards
Propylene Glycol	Slight eye irritant
Trade Secret-ACC P000721-01 #	Allergic sensitizer
Trade Secret-ACC P000721-02 #	Slight skin irritant
	No data available

# The specific chemical identity of this component is a trade secret. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement

**11. Additional Information on Hazards**

**Component Name/Comments**  
Propylene Glycol  
High concentrations of Propylene Glycol in water when held in contact with human skin under closed conditions have been reported to cause skin irritation (Cosmetics and Toiletries 99:83-91,1984). The authors attribute the observations to a sweat retention reaction by skin. No reactions were observed in open patch tests with human subjects. One literature report indicates rare eczematous skin reactions and even more rarely an allergic skin reaction from exposure to Propylene Glycol (Anderson and Starr, Hautarzt 33 (1) 1982).

Additional toxicology information is available for this material.



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12. Physical and Chemical Data		
<b>Bolling Point</b> AP 268°F (at 760 mm Hg)	<b>Viscosity</b> (Brookfield) AP 121 CPS (at 32°F)	<b>Dry Point</b> No Data Available
<b>Freezing Point</b> AP -70°F	<b>Vapor Pressure</b> LT .1 psia (at 77°F)	<b>Volatile Characteristics</b> Not available
<b>Specific Gravity</b> AP 1.042 at 77°F (H <sub>2</sub> O = 1.0 at 39.2°F)	<b>Vapor Specific Gravity</b> No Data Available	<b>Solubility in Water</b> Complete (In All Proportions)
<b>pH</b> AP 7.3 to 8.3	<b>Hazardous Polymerization</b> Not expected to occur	<b>Stability</b> Stable
<b>Other Chemical Reactivity</b>	No additional information available	
<b>Other Physical and Chemical Properties</b>	No additional information available	
<b>Appearance and Odor</b>	Orange Liquid; Little or no odor	
<b>Conditions to Avoid</b>	High temperatures, oxidizing conditions. Aqueous solutions containing less than 85% propylene glycol by weight have no flash point as obtained by standard test methods. However aqueous solutions of propylene glycol greater than 22% by weight, if heated sufficiently, will produce flammable vapors.	
<b>Materials to Avoid</b>	Strong oxidizing agents	
<b>Hazardous Decomposition Products</b>	Incomplete combustion may produce carbon monoxide and other toxic gases	
13. Hazardous Rating Information		
<b>National Fire Protection Association</b> Health = 0 Flammability = 1 Reactivity = 0 Special Hazard - None Ratings have been based on available component information from the National Fire Protection Association.		
<b>National Paint and Coatings Association</b> Hazardous Material Information System (HMIS) Health = 0 Flammability = 1 Reactivity = 0 Personal Protection = 0 Ratings have been generated according to criteria specified in the National Paint and Coatings Association Implementation Manual based on component information available.		
14. Additional Information		
<b>Handling and Storage Procedures</b> Caution should be exercised in the use of glycol-water deicing/anti-icing solutions in and around aircraft having silver or silver-coated electrical/electronic circuitry. Dehydrolysis reactions which result in fire have been reported when such glycol-water solutions contact silver or silver-coated circuits, such as defectively insulated wiring, switches, and circuit breakers, which are conducting direct current. Use with extreme care when applying around heaters or engine exhaust.		
<b>Decontamination Procedures</b> Clean equipment with water.		



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**Federal**

**Toxic Substance Control Act (TSCA)**

The following is the Toxic Substances Control Act (TSCA) Chemical Substance Inventory Status of the components of this material with CAS numbers listed in Section 9 - Components:

**CHEMICAL**

CHEMICAL	CAS NO.	STATUS
Propylene Glycol	57-55-6	Listed - Non Confidential
Water	7732-18-6	Listed - Non Confidential
Trade Secret-ACC P000721-01 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-02 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-03 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-04 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-05 #		Listed - ACC Trade Secret
Trade Secret-ACC P000721-06 #		Listed - ACC Trade Secret

# The specific chemical identity of this component is a trade secret. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement.

**Superfund Amendments and Reauthorization of 1988 (SARA), Title III  
 Section 302/304**

Requires emergency planning based on 'Threshold Planning Quantities' (TPQs), and release reporting based on Reportable Quantities (RQs) of 'Extremely Hazardous Substances' (EHS) listed in Appendix A of 40 CFR 355. There are no components of this material with known CAS numbers which are on the EHS list.

**-Section 311 & 312**

Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

**-Section 313**

The material does not contain any chemical components with known CAS numbers that exceed the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)**

No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.

**OSHA Regulations**

'Chemical-specific' U.S. Occupational Safety and Health Administration (OSHA) regulations (1910.1002 to 1910.1050) presented under 29 U.S. Code of Federal Regulations (CFR) 1910 do not apply to this material or its components.

**Other EPA Regulations**

No additional information available

**Department of Transportation (DOT)**

Other than the normal shipping instructions and information given in this MSDS, there are no other specific U.S. Department of Transportation (DOT) regulations governing the shipment of this material.

**State Regulations:**

**California Safe Drinking Water and Toxic Enforcement Act of 1988 - Proposition 65**

This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.

**California South Coast Air Quality Management District (SCAQMD) Rule 443.1 (VOC's)**

A Volatile Organic Compound (VOC) is any volatile compound of carbon excluding methane, carbon monoxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, (FC-23), (CFC-113), (CFC-12), (CFC-11), (CFC-22), (CFC-114), and (CFC-115). By this definition, this is a VOC material.



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## 15. Regulatory information (Cont'd)

**Massachusetts Right to Know Substance List (MSL) [106 CMR 670.000]**

Extraordinarily Hazardous Substances (MSL-EHS) must be identified when present in materials at levels greater than state specified criterion. The criterion is  $\geq 0.0001\%$ . Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is  $\geq 1\%$ . Components with CAS numbers present in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

**New Jersey Registration**

None of the trade secrets listed in Section 9 - Components have been registered with the State of New Jersey.

**Pennsylvania Right to Know Hazardous Substance List**

Hazardous Substances (PA-HS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is  $\geq 1\%$ . Components with CAS numbers in this material at a level which could require reporting under the statute are:

**CHEMICAL****CAS NO.**

Propylene Glycol

57-55-6

Special Hazardous Substances (PA-SHS) must be identified when present in materials at levels greater than the state specified criterion. The criterion is  $\geq 0.01\%$ . Environmental Hazards (PA-EH) must be identified when present in materials at levels greater than the state specified criterion. The criterion is  $\geq 0.01\%$ . Components with CAS numbers in this material, at levels specified in Section 9 - Components, do not require reporting under the statute.

**Regulatory Advisory**

If you reformulate or further process this material, you should consider re-evaluation of the regulatory status of the components listed in this sheet.

One or more of the trade secret components of this material, listed in the components section, may be on states' regulatory lists. Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement.



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**Manufacturer** ARCO Chemical Company  
3801 West Chester Pike  
Newtown Square, PA 19073-3287

**Telephone Numbers:**  
**EMERGENCY**  
(800) 424-8300 CHEMTREC  
(810) 353-8300 ARCO CHEM  
**CUSTOMER SERVICE**  
(800) 321-7000 INFO ONLY

**Other Company Names** None  
**Use Statement** For industrial use only  
Keep out of reach of children

**Signal Word** CAUTION

**Physical Hazards**

Aqueous solutions may produce flammable vapors

**Health Hazards**  
Suspect eye irritant

**Precautionary Measures**

Aircraft should be inspected by qualified personnel during periods of precipitation to assure critical surfaces are free from all signs of deposits immediately prior to initiating the take off roll  
Aircraft should be completely deiced again at any sign of re-freezing  
Consideration should be given to Type II deicing/anti-icing procedures when precipitation is expected  
Avoid contact with eyes  
Use with adequate ventilation  
Wash thoroughly with soap and water  
Remove spillage immediately from any hard, smooth walking areas

**DOT Information:** UN/NA ID No. Not applicable  
DOT Hazard Class Not regulated

**DOT Packing Group**  
Not regulated

**DOT RQ (Based on Material)**  
Not applicable

**DOT Hazardous Material Proper Shipping Name** Not regulated

**Component Name**

Component Name	CAS No.	Composition Amount (Wt.)	RQ
Propylene Glycol	57-85-6	AP 88 %	Not applicable
Water	7732-18-5	AP 9 %	Not applicable
Trade Secret-ACC P000721-01 #		LT 1 %	
Trade Secret-ACC P000721-02 #		LT 1 %	
Trade Secret-ACC P000721-03 #		LT 1 %	
Trade Secret-ACC P000721-04 #		LT 1 %	
Trade Secret-ACC P000721-05 #		LT 1 %	

# Chemical identities will be revealed to treating physicians in an emergency, or to purchasers after execution of a secrecy agreement

**Instructions:** In case of fire, use: . Alcohol type foam, Dry chemical, CO<sub>2</sub>, Water spray

**First Aid:**  
**Inhalation** Not expected to present a significant inhalation hazard under anticipated conditions of normal use.  
**Eye Contact** In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.  
**Skin Contact** Not expected to present a significant skin hazard under anticipated conditions of normal use.

**Ingestion** Ingestion unlikely. However, if ingested. Do not induce vomiting. Obtain emergency medical attention.

**In case of spill:** In case of accidental spill, may contaminate water supplies/pollute public waters. Evacuate/limit access. Equip responders with proper protection. Prevent flow to sewer/public waters. Stop release. Notify fire and environmental authorities. Slippery walking. May be diluted with water to reduce slipperiness. Impound/recover large land spill. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

**Protective Equipment**

**Respiratory** Use only U.S. National Institute for Occupational Safety and Health (NIOSH)/U.S. Mine Safety and Health Administration (MSHA) approved supplied air device to enter a closed area where material has been released.  
**Eye** Chemical splash goggles and/or face shield should be worn.  
**Skin** No special clothing normally required. Where use can result in skin contact, wash thoroughly before eating, drinking, smoking, or leaving work.

Label No.: LP000721

Version No.: 1

Date: 1 September 1993

**OSHA**Occupational Safety & Health Administration  
U.S. Department of Labor

OSHA Act of 1970

[OSHA Act - Table of Contents](#)

- **Section Title: State Jurisdiction and State Plans**
- **Section Number: 18**

(a) Nothing in this Act shall prevent any State agency or court from asserting jurisdiction under State law over any occupational safety or health issue with respect to which no standard is in effect under section 6.

(b) Any State which, at any time, desires to assume responsibility for development and enforcement therein of occupational safety and health standards relating to any occupational safety or health issue with respect to which a Federal standard has been promulgated under section 6 shall submit a State plan for the development of such standards and their enforcement.

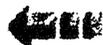
(c) The Secretary shall approve the plan submitted by a State under subsection (b), or any modification thereof, if such plan in his judgement -

- (1) designates a State agency or agencies as the agency or agencies responsible for administering the plan throughout the State,
- (2) provides for the development and enforcement of safety and health standards relating to one or more safety or health issues, which standards (and the enforcement of which standards) are or will be at least as effective in providing safe and healthful employment and places of employment as the standards promulgated under section 6 which relate to the same issues, and which standards, when applicable to products which are distributed or used in interstate commerce, are required by compelling local conditions and do not unduly burden interstate commerce,
- (3) provides for a right of entry and inspection of all workplaces subject to the Act which is at least as effective as that provided in section 8, and includes a prohibition on advance notice of inspections,
- (4) contains satisfactory assurances that such agency or agencies have or will have the legal authority and qualified personnel necessary for the enforcement of such standards,
- (5) gives satisfactory assurances that such State will devote adequate funds to the administration and enforcement of such standards,
- (6) contains satisfactory assurances that such State will, to the extent permitted by its law, establish and maintain an effective and comprehensive occupational safety and health program applicable to all employees of public agencies of the State and its political subdivisions, which program is as effective as the standards contained in an approved plan,

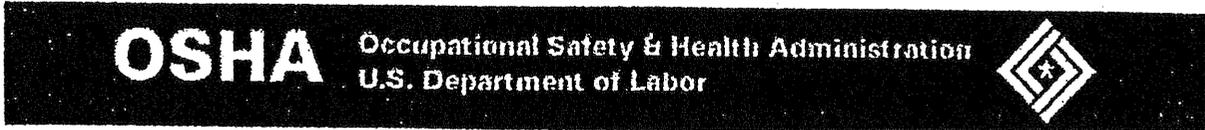
- (7) requires employers in the State to make reports to the Secretary in the same manner and to the same extent as if the plan were not in effect, and
- (8) provides that the State agency will make such reports to the Secretary in such form and containing such information, as the Secretary shall from time to time require.
- (d) If the Secretary rejects a plan submitted under subsection (b), he shall afford the State submitting the plan due notice and opportunity for a hearing before so doing.
- (e) After the Secretary approves a State plan submitted under subsection (b), he may, but shall not be required to, exercise his authority under sections 8, 9, 10, 13, and 17 with respect to comparable standards promulgated under section 6, for the period specified in the next sentence. The Secretary may exercise the authority referred to above until he determines, on the basis of actual operations under the State plan, that the criteria set forth in subsection (c) are being applied, but he shall not make such determination for at least three years after the plan's approval under subsection (c). Upon making the determination referred to in the preceding sentence, the provisions of sections 5(a)(2), 8 (except for the purpose of carrying out subsection (f) of this section), 9, 10, 13, and 17, and standards promulgated under section 6 of this Act, shall not apply with respect to any occupational safety or health issues covered under the plan, but the Secretary may retain jurisdiction under the above provisions in any proceeding commenced under section 9 or 10 before the date of determination.
- (f) The Secretary shall, on the basis of reports submitted by the State agency and his own inspections make a continuing evaluation of the manner in which each State having a plan approved under this section is carrying out such plan. Whenever the Secretary finds, after affording due notice and opportunity for a hearing, that in the administration of the State plan there is a failure to comply substantially with any provision of the State plan (or any assurance contained therein), he shall notify the State agency of his withdrawal of approval of such plan and upon receipt of such notice such plan shall cease to be in effect, but the State may retain jurisdiction in any case commenced before the withdrawal of the plan in order to enforce standards under the plan whenever the issues involved do not relate to the reasons for the withdrawal of the plan.
- (g) The State may obtain a review of a decision of the Secretary withdrawing approval of or rejecting its plan by the United States court of appeals for the circuit in which the State is located by filing in such court within thirty days following receipt of notice of such decision a petition to modify or set aside in whole or in part the action of the Secretary. A copy of such petition shall forthwith be served upon the Secretary, and thereupon the Secretary shall certify and file in the court the record upon which the decision complained of was issued as provided in section 2112 of title 28, United States Code. Unless the court finds that the Secretary's decision in rejecting a proposed State plan or withdrawing his approval of such a plan is not supported by substantial evidence the court shall affirm the Secretary's decision. The judgment of the court shall be subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28, United States Code.
- (h) The Secretary may enter into an agreement with a State under which the State will be permitted to continue to enforce one or more occupational health and safety standards in effect in such State until final action is taken by the Secretary with respect to a plan submitted

by a State under subsection (b) of this section, or two years from the date of enactment of this Act, whichever is earlier.

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## State Plans

[Jump to the Outreach Page](#)

### Directory of States with OSHA Approved Plans - Final Approval

### Directory of States with Safety & Health Programs

Section 18 of the Occupational Safety and Health Act of 1970 (the Act) encourages States to develop and operate their own job safety and health programs. The Occupational Safety and Health Administration (OSHA) approves and monitors State plans and provides up to 50 percent of an approved plan's operating costs.

States must set job safety and health standards that are "at least as effective as" comparable federal standards. (Most States adopt standards identical to federal ones.) States have the option to promulgate standards covering hazards not addressed by federal standards.

A State must conduct inspections to enforce its standards, cover public (State and local government) employees, and operate occupational safety and health training and education programs. In addition, most States provide free on-site consultation to help employers identify and correct workplace hazards. Such consultation may be provided either under the plan or through a special agreement under section 7 (c)(1) of the Act.

To gain OSHA approval for a "developmental plan," the first step in the State plan process, a State must assure OSHA that within three years it will have in place all the structural elements necessary for an effective occupational safety and health program. These elements include: appropriate legislation; regulations and procedures for standards setting, enforcement, appeal of citations and penalties; a sufficient number of qualified enforcement personnel.

There are currently 23 States and jurisdictions operating complete State plans (covering both the private sector and State and local government employees) and two, Connecticut and New York, which cover public employees only. Eight other States were approved at one time but subsequently withdrew their programs.

### ***States with occupational safety and health programs***

<u>Alaska</u>	<u>Michigan</u>	<u>Tennessee</u>
<u>Arizona</u>	<u>Minnesota</u>	<u>Utah</u>
<u>California</u>	<u>Nevada</u>	<u>Vermont</u>
<u>Connecticut</u>	<u>New Mexico</u>	<u>Virgin Islands</u>
<u>Hawaii</u>	<u>New York</u>	<u>Virginia</u>
<u>Indiana</u>	<u>North Carolina</u>	<u>Washington</u>
<u>Iowa</u>	<u>Oregon</u>	

<u>Kentucky</u> <u>Maryland</u>	<u>Puerto Rico</u>	<u>Wyoming</u>
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(Connecticut and New York plans cover public sector only)

Once a State has completed and documented all its developmental steps, it is eligible for certification. Certification renders no judgment as to actual State performance, but merely attests to the structural completeness of the plan. Twenty-four States have received certification.

At any time after initial plan approval, when it appears that the State is capable of independently enforcing standards, OSHA may enter into an "operational status agreement" with the State. This commits OSHA to suspend the exercise of discretionary federal enforcement in all or certain activities covered by the State plan.

The ultimate accreditation of a State's plan is called "final approval." When OSHA grants final approval to a State under section 18 (e) of the Act, it relinquishes its authority to cover occupational safety and health matters covered by the State. After at least one year following certification, the State becomes eligible for final approval if OSHA determines that it is providing, in actual operation, worker protection "at least as effective" as the protection provided by the federal program. The State also must meet 100 percent of the established compliance staffing levels (benchmarks) and participate in OSHA's computerized inspection data system before OSHA can grant final approval.

***States with final approval***

<u>Alaska</u> <u>Arizona</u> <u>Hawaii</u> <u>Indiana</u> <u>Iowa</u> <u>Kentucky</u> <u>Maryland</u> <u>Minnesota</u>	<u>North Carolina</u> <u>South Carolina</u> <u>Tennessee</u> <u>Utah</u> <u>Virgin Islands</u> <u>Virginia</u> <u>Wyoming</u>
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Employees finding workplace safety and health hazards may file a formal complaint with the appropriate plan State or with the appropriate OSHA regional administrator. Complaints will be investigated and should include the name of the workplace, type(s) of hazard(s) observed and any other pertinent information.

Anyone finding inadequacies or other problems in the administration of a State's program, may file a Complaint About State Program Administration (CASPA) with the appropriate OSHA regional administrator as well. The complainant's name is kept confidential. OSHA investigates all such complaints, and where complaints are found to be valid, requires appropriate corrective action on the part of the State.

**OSHA**Occupational Safety & Health Administration  
U.S. Department of Labor

## Success Stories

### OSHA Saves Lives

Since 1970, when the Congress created the agency and fatality rates began dropping, the overall workplace death rate has been cut in half. That's more than 100,000 workers who might have died on the job, but didn't because of improved safety and health.

For example, OSHA's cotton dust standard virtually eliminated brown lung disease in the textile industry; deaths from trench cave-ins declined by 35 percent; OSHA's lead standard reduced blood poisoning in battery plant and smelter workers by two-thirds. Experience has also shown that OSHA inspections can have real, positive results: according to a recent study, in the 3 years following an OSHA inspection that results in penalties, injuries and illnesses drop on average by 22 percent. Overall injury and illness rates have declined in the industries where OSHA has concentrated its attention—yet have remained unchanged or have actually increased in the industries where OSHA has had less presence.

Companies, large and small, in a variety of industries have shown over the years that safety and health pays. A reduction in lost-workdays and workers' compensation costs translates into big savings for employers; not to mention the obvious benefits for employees—safer and more healthful workplaces. The following are just a few of OSHA's many success stories.

#### Partnerships

OSHA's Atlanta East Area Office is one of the first area offices redesigned to improve customer service under OSHA's GRIP program—Getting Results and Improving Performance. Atlanta East recently joined forces with Argonaut Insurance Company to provide a safety seminar and onsite risk assessments. One of these risk assessments—conducted jointly with the Georgia Tech 7(c)(1) consultation program and Argonaut—led Horizon Steel Erectors, Inc., to establish a 100-percent fall protection program to protect their steel erectors from falls in all phases of construction and to implement a supervisory safety accountability program. These efforts resulted in a 96-percent reduction in accident costs per man hour, from \$4.25 to \$.18.

#### Enforcement

The other redesigned area office—Parsippany—recently used one of OSHA's newest policies, the "quick-fix" approach, to call attention to GPRC's lack of fire prevention training. Under "quick fix," which allows employers a 10-percent reduction for each violation immediately abated in the presence of the compliance officer, the paper recycling company promptly conducted the training. Only a week later, a fire occurred, but GPRC employees were ready and extinguished it swiftly. In a note of appreciation to OSHA, the company's representative wrote, "Who knows what could have happened if it weren't for your recommendations on fire prevention training?"

When OSHA inspected Adam Wuest, Inc., a bedding manufacturer in Cincinnati, Ohio, the agency issued 12 serious citations, including the lack of a program to prevent back injuries and musculoskeletal disorders in the facility's shipping department. At settlement the company subsequently agreed to tackle the challenge of implementing a plantwide ergonomics program. As a result, since the inspection, the number of total recordable injuries and illnesses dropped from 56 in 1991 to between 16 and 22 during each of the succeeding 3 years. The total number of lost-workdays due to injury decreased from 320 in 1992 to 142 in 1993, and to just 62 in 1994. The total number of sprains, strains, and cumulative trauma disorders declined from 26 in 1991 to 12 or 13 in each of the

succeeding 3 years.

As a result of a detailed complaint filed by the United Paperworkers International Union, OSHA inspected the Boise Cascade Paper Company, Rumford, Maine. The inspection identified approximately 2,972 instances of willful, serious, and other-than-serious violations, and OSHA issued citations with penalties of nearly \$2.9 million. Following the inspection, Boise Corporation committed that this mill would never again exist in the state OSHA found it, and it would become the corporation's flagship workplace in safety and health.

Since then, in the spring of 1993, the company joined the Maine 200 program--which identifies employers with high injury and illness rates and interacts with them to develop comprehensive safety and health programs at their workplaces--and to date has achieved: 4 million manhours without a lost-time accident in 1992; another 2.5 million hours without a lost-time accident in 1993; and after 1 lost-time injury in 1994, the company twice exceeded 1 million hours without a lost-time injury during 1994-1995. Boise Cascade reached its lowest recordable incident rate ever (5.10), dropping 22 percent from 1993 to 1994 and from about \$120,000 to \$86,000 in workers' compensation costs, or a 28-percent decline for that period.

Boise also formed an ergonomics team as part of an injury education effort and began conducting safety and health seminars for the Maine safety conference.

New Balance Athletic Shoe, Inc., also a participant in OSHA's Maine 200 program, has seen significant reductions in lost-workday cases and workers' compensation claims at its Skowhegan and Norridgewock, Maine, facilities since working with OSHA. The lost-workday injury and illness cases dropped from 55 cases with 11,190 lost workdays in 1990 to 2 cases with 549 lost workdays in 1994. Workers' compensation claims declined from \$1,213,176 in 1990 to \$89,154 in 1994. As a result, the company is now saving more than \$1 million per year on worker's compensation costs by implementing an effective safety program.

Other participants in the Maine 200 program have shown dramatic reductions in lost-workday injury rates and workers' compensation claims as well. For example, Georgia Pacific's Pulp & Paper workers' compensation claims plummeted from 203 in 1991 to 27 in 1994, with incidence rates dropping from 10.20 to 3.80 for the same period. Dexter Shoe Corporation's workers' compensation claims went from 110 in 1991 to 58 in 1994, with incidence rates down from 6.02 to 3.92 for the same period.

## Consultation

OSHA provides consultation assistance at no cost to employers who request help in establishing and maintaining a safe and healthful workplace. Comprehensive assistance includes an appraisal of all mechanical physical work practices and environmental hazards of the workplace and all aspects of the employer's present job safety and health program.

In hundreds of cases around the country, the numbers show the results. For example, after requesting a comprehensive safety survey, Colt Plastics, Inc., of Dayville, Connecticut, reduced its lost-workday injury rate from 14.2 to 5.0. In addition, compliance officers found only four hazards on the revisit compared with 138 identified at the initial visit.

A New Jersey company that manufactures small wooden products from logs steadily reduced its lost-workday injury rate from 24.4 in 1990, before consultation, to 12.4 in 1993 and 6.9 in 1994, after consultation.

Alabama's Carter Manufacturing Company, a metal fabrication business that manufactures peanut processing equipment, reduced the total number of injuries from 21 in 1991 to 15 in 1994--a 29-percent improvement. The injuries involving lost workdays declined from 7 in 1991 to just 3 in 1994, a 57-percent reduction. And the total lost-workdays dropped from 26 to 6 for the same period--a 77-percent reduction!

KLN Steel Products in San Antonio, Texas, which manufactures fabricated structural steel items, has been an active participant in OSHA's consultation program for 3 years. To date, the company estimates to have saved more than \$50,000 in workers' compensation insurance premiums. And the

lost-workday injury rate has dropped dramatically, from 14.0 to just 1.0.

A Tennessee company experienced a lost-workday injury rate of 14.2 prior to a consultation visit. One year later, the injury rate was 3.5. After a second consultation visit, the lost-workday injury rate dropped again to 2.7. Since July 1994, there have been no reportable incidents.

## Voluntary Protection Programs

OSHA's Voluntary Protection Programs (VPP) recognize outstanding achievements by companies that successfully integrate a comprehensive safety and health program into their total management system. Overall, participants in VPP have substantially lower worker injury rates and incur lower workers' compensation costs than similar firms that do not participate in the programs.

In fact, in 1994, of the 178 companies in the program, 9 sites had no injuries at all. Overall, the sites' injury incidence rates were 55 percent below the expected average for similar industries. In addition, 31 of the 178 VPP sites had no lost-workday injuries. Overall, the sites were 51 percent below the expected average for lost-workdays in similar industries— saving these sites \$94,500,000 for the 3,500 lost-workdays avoided.

A few examples include ABB Air Pre-heater, the longest standing Star site—the highest level of achievement in the program. ABB has, over its 13-year participation in VPP, had 448 fewer lost-workday injuries than the average for its industry. This has saved the company, in today's dollars, \$12,096,000, or an average of \$930,000 per year.

The lost-workday case rate at the Thrall Car Manufacturing Company in Winder, Georgia, decreased from 17.9 in 1989 when the facility began implementing VPP to 4.6 in 1992 when the plant qualified for the Star Program. And continued participation has dropped their rates even farther—from 3.5 in 1993 to 0.6 in 1994—93 percent below the industry average! Workers' compensation costs also have declined by a whopping 85 percent since preparing for the VPP—from \$1,376,000 in 1989 to \$204,000 in 1992. For 1994, results indicate a 1-year savings of \$1,107,000 by avoiding 41 lost-workdays.

Mobil Chemical Company reduced its workers' compensation costs by 70 percent, or more than \$1.6 million from 1983 to 1986 during the years it was qualifying its facilities (plastics production and chemical plants) for VPP. During this same period, Mobil's recordable injuries dropped by 32 percent, and lost-workday cases declined by 39 percent. This reduction has lasted through 1994, when Mobil saved \$3,780,000 in lost-workday injury costs.

## Progress and Challenges

Today, fewer workers are injured and die on the job thanks to OSHA standards, enforcement, and cooperative efforts with employers. At the same time, there are still more than 6,000 workers who die each year on the job, more than 6 million who are injured, and almost 500,000 who experience occupational illnesses. That's the challenge that remains: To find effective ways to leverage OSHA's scarce resources to help workers and their employers reduce the toll of suffering and death.

As OSHA approaches its twenty-fifth anniversary, the agency is celebrating its successes, but also exploring new and innovative ways to meet the challenge of the next quarter-century. As part of reinvention, OSHA will continue to change the way it does business and take a more common sense approach to worker safety and health. You can be a part of OSHA's success by making safety and health a priority.

(H) Awareness and knowledge of the competencies for the Hazardous Materials Technician covered in the National Fire Protection Association's Standard No. 472, *Professional Competence of Responders to Hazardous Materials Incidents*.

(4) *Hazardous materials specialist*.

(A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).

(B) Hands-on experience with retrieval and use of written and electronic information relative to response decision making including but not limited to the U.S. Department of Transportation's *Emergency Response Guidebook* (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.

(C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, and the likely behavior of the hazardous substance and its container, vessel, or vehicle.

(D) Review of the principles and practices for identification of the types of hazardous substance transportation containers, vessels and vehicles involved in the release; selecting and using the various types of equipment available for plugging or patching transportation containers, vessels or vehicles; organizing and directing the use of multiple teams of hazardous material technicians and selecting the appropriate strategy for approaching release sites and containing or stopping the release.

(E) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, including knowledge of the available public and private response resources, establishment of an incident command post, direction of hazardous material technician teams, and extended emergency notification procedures and follow-up communications.

(F) Review of the principles and practice for proper selection and use of personal protective equipment.

(G) Review of the principles and practices of establishing exposure zones and proper decontamination, monitoring and medical surveillance stations and procedures.

(H) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

(I) Awareness and knowledge of the competencies for the Off-site Specialist Employee covered in the National Fire Protection Association's Standard No. 472, *Professional*

*Competence of Responders to Hazardous Materials Incidents*.

(5) *Incident commander*.

The incident commander is the individual who, at any one time, is responsible for and in control of the response effort. This individual is the person responsible for the direction and coordination of the response effort. An incident commander's position should be occupied by the most senior, appropriately trained individual present at the response site. Yet, as necessary and appropriate to the level of response provided, the position may be occupied by many individuals during a particular response as the need for great authority, responsibility, or training increases. It is possible for the first responder at the awareness level to assume the duties of incident commander until a more senior and appropriately trained individual arrives at the response site.

Therefore, any emergency responder expected to perform as an incident commander should be trained to fulfill the obligations of the position at the level of response they will be providing including the following:

(A) Ability to analyze a hazardous substance incident to determine the magnitude of the response problem.

(B) Ability to plan and implement an appropriate response plan within the capabilities of available personnel and equipment.

(C) Ability to implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.

(D) Ability to evaluate the progress of an emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.

(E) Ability to adjust the response plan to the conditions of the response and to request higher levels of response when required, and the changes to the response plan.

[54 FR 9317, Mar. 6, 1989, as amended at 55 FR 14073, Apr. 13, 1990; 56 FR 15832, Apr. 18, 1991; 59 FR 43270, Aug. 22, 1994; 61 FR 9238, Mar. 19, 1996]

## Subpart I—Personal Protective Equipment

AUTHORITY: Sections 4, 6 and 8, Occupational Safety and Health Act of 1970 (U.S.C. 653, 655, 657); Secretary of Labor Order No. 12-71 (36 FR 8754), 8-76 (40 FR 25059), 9-83 (48 FR 35736), or 1-90 (55 FR 10000), as applicable.

Sections 1910.132, and 1910.138 also issued under 29 CFR part 1911.

Sections 1910.133, 1910.135, and 1910.136 issued under 29 CFR part 1911 and 59 FR 553.

132 General requirements.

**(a) Application.** Protective equipment, including personal protective equipment for eyes, face, head, and extremities; protective clothing; respiratory protection and protective shields and barriers shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or equipment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

**(b) Employee-owned equipment.** Where employees provide their own protective equipment, the employer shall be responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

**(c) Design.** All personal protective equipment shall be of safe design and construction for the work to be performed.

**(d) Hazard assessment and equipment selection.** (1) The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

- (i) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;
- (ii) Communicate selection decisions to each affected employee; and,
- (iii) Select PPE that properly fits each affected employee.

NOTE: Non-mandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.

(2) The employer shall verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

**(e) Defective and damaged equipment.** Defective or damaged personal protective equipment shall not be used.

**(f) Training.** (1) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:

- (i) When PPE is necessary;
- (ii) What PPE is necessary;
- (iii) How to properly don, doff, adjust, and wear PPE;
- (iv) The limitations of the PPE; and,
- (v) The proper care, maintenance, useful life and disposal of the PPE.

(2) Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

- (i) Changes in the workplace render previous training obsolete; or
- (ii) Changes in the types of PPE to be used render previous training obsolete; or
- (iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

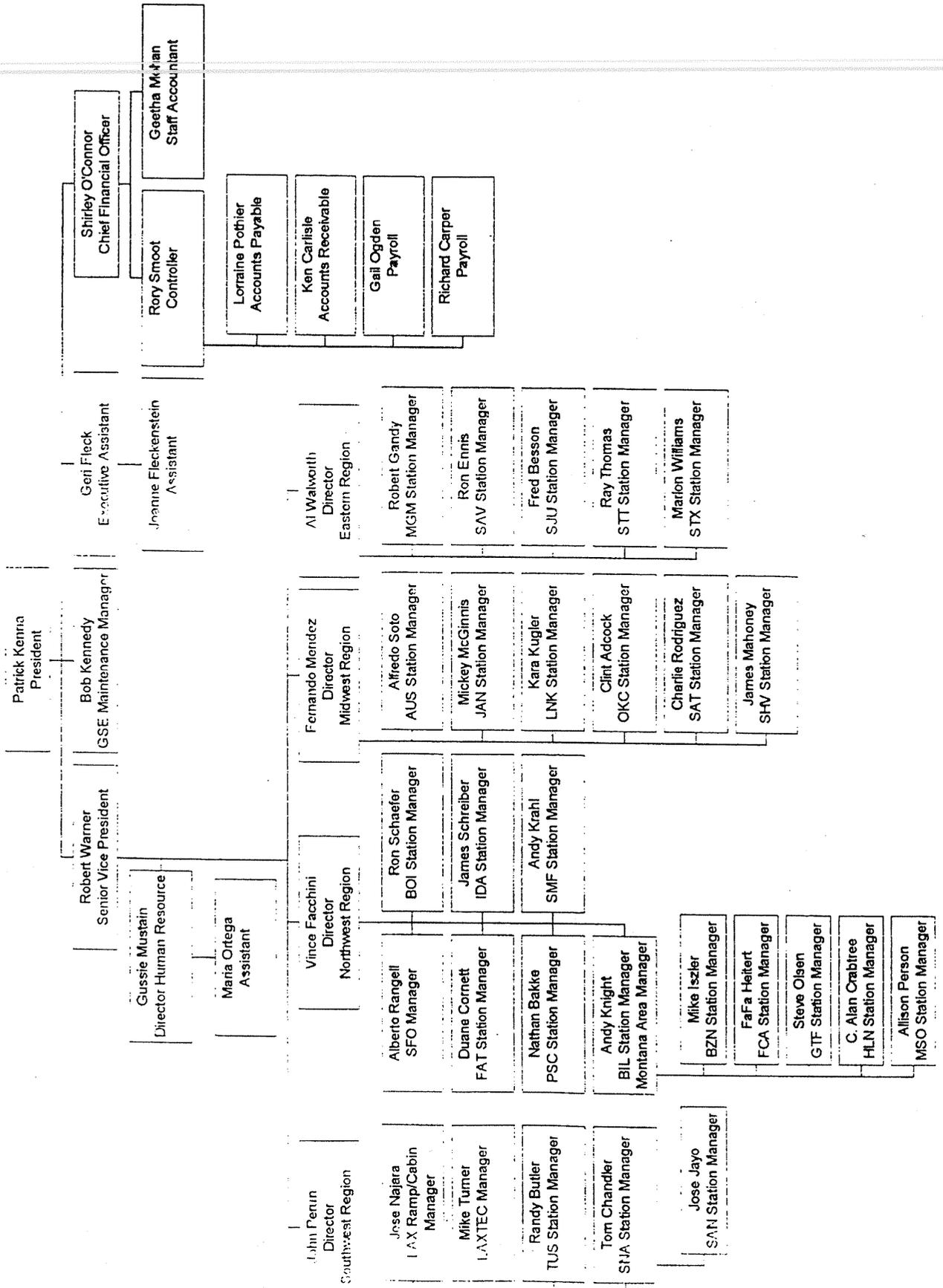
(4) The employer shall verify that each affected employee has received and understood the required training through a written certification that contains the name of each employee trained, the date(s) of training, and that identifies the subject of the certification.

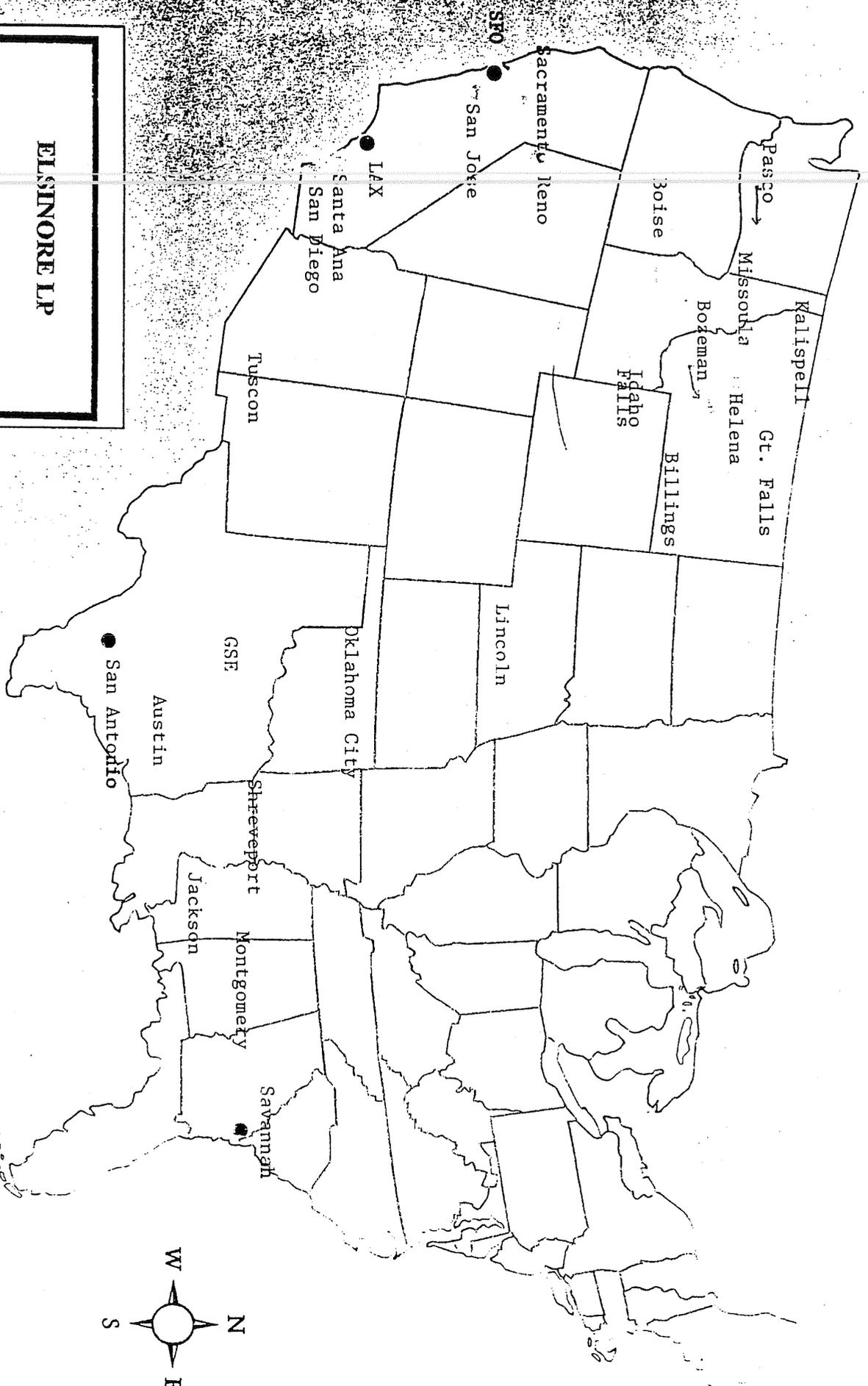
(g) Paragraphs (d) and (f) of this section apply only to §§1910.133, 1910.135, 1919.136, and 1910.138. Paragraphs (d) and (f) of this section do not apply to §§1910.134 and 1910.137.

[39 FR 23502, June 27, 1974, as amended at 59 FR 16334, Apr. 6, 1994; 59 FR 33910, July 1, 1994]

CONF SPACES

# Elsinore Organization





**EL SINORE LP**

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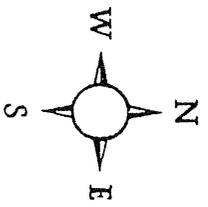
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Puerto Rico

0 360 720 kilometers





## National Transportation Safety Board

490 L'Enfant Plaza East, S.W.  
Washington, D.C. 20594-2001

202/314-6000  
FAX 202/314-6090

August 12, 2002

Catherine McMullen  
Senior Attorney  
U.S. Office of Special Counsel  
1730 M Street, NW, Suite 300  
Washington, D.C. 20036-4505

Re: OSC File No. DI-01-1889

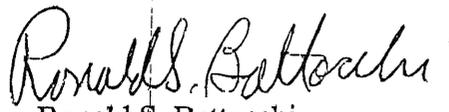
Dear Ms. McMullen:

This follows up on your telephone call of July 8, 2002, wherein you requested that we interview Henry Hughes with regard to the above-referenced matter. I promised to supplement my letter of March 18, 2002, if circumstances warranted after our interview of Mr. Hughes.

We interviewed Mr. Hughes on July 9, and, afterwards, he also provided us with a copy of his April 25, 2002 letter to the Special Counsel (including attachments). We discern nothing (based upon the factual information provided by Mr. Hughes and our own understanding of the matter) that would warrant a reversal of our original conclusion that there was no violation by NTSB personnel of the type encompassed by section 1213(a), Title 5, of the United States Code. Our investigation refuted Mr. Hughes' inferences and conclusions about this matter. I would also note that Mr. Hughes' letter now emphasizes security, which is nowhere mentioned in our enabling legislation and, more importantly, these matters were referred to the Federal Aviation Administration, the agency responsible for regulating aviation matters, including, at the time, security issues.

If you would like to discuss this further, or require additional information, please do not hesitate to contact me on 202-314-6080.

Sincerely,

  
Ronald S. Battocchi  
General Counsel