Attachment E:

Consideration of Cargo Issues As a Causal Factor in the Accident of Flight EB017, June 16, 2000

EMERY WORLDWIDE AIRLINES
A CNF COMPANY

June 16, 2000

Mr. Greg Feith
National Transportation Safety Board
490 L'Enfant Plaza, S.W.
Washington, D.C. 20594-2000

Dear Mr. Feith:

This letter is a follow-up to my May 31, 2000 letter regarding item 2 (see attachment) and our telephone conversation on June 5, 2000.

On behalf of Emery Worldwide Airlines (EWA) Senior Management, I would like to present to you the technical publication, "Consideration of Cargo Issues as a Causal Factor in the Accident of EB017, submitted to The National Transportation Safety Board by Emery Worldwide Airlines, dated June 16, 2000".

As per our June 5, 2000 telephone conversation, we agreed to the week of July 10, 2000 as a tentative date for yourself and appropriate NTSB personnel to be present here at Dayton, at which time EWA will formally present this document to you. EWA has tentatively set July 11, 2000 as this date.

Thank you for your support in this matter.

attachment

Sincerely,

[redacted]

Thomas M. Wood
Senior Director Quality Control

cc: David Aaron

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CONSIDERATION OF CARGO ISSUES AS A CAUSAL FACTOR IN THE ACCIDENT OF FLIGHT EB017

Submitted to
The National Transportation Safety Board

by
Emery Worldwide Airlines

June 16, 2000

EXECUTIVE SUMMARY

EWA has concluded that the February 16, 2000 accident involving EB017 could not have been caused either by improper cargo loading aboard the DC-8 or by any shift in the cargo.

All available evidence, including the testimony of both Emery and MAS employees, indicates that the accident aircraft was loaded as per the Load Planning Sheet prepared for the accident flight. The Load Planning Sheet indicates that the Center of Gravity of the DC-8 was well within the DC-8's CG limits. Firsthand witnesses testified that all aircraft operations were normal up until the time the aircraft rotated for takeoff. These witnesses noted the routine nature of the aircraft loading, including the methods used to ensure that pallets and ULD's were loaded in the proper sequence. Other witnesses testified that the nose strut, the tailstand, the air start receptacle, and the crew stairs all indicated that the accident aircraft had been normally loaded.

Further, even significant loading errors had been present, the testing clearly indicates they would not have led to the aircraft control difficulties that preceded the crash. Emery tested the limits of the aircraft controllability by reconfiguring a DC-8-71 simulator allowing it to be flown with its CG out of limits. Testing confirmed that the aircraft could be flown under control with the aircraft CG as far aft as 38%. Armed with this information, Emery next determined what the CG of the aircraft would have been under a number of hypothetical conditions that involved improper aircraft loading or shifting cargo. In none of these hypothetical conditions (including some conditions that would not be possible to achieve in the actual aircraft due to physical limitations) did the CG exceed the controllability limits of the aircraft as determined in the simulator, including some conditions that would not be possible to achieve in the actual aircraft due to physical limitations.

Evidence also indicates that it would have been almost impossible for the cargo to have shifted significantly enough to cause the controllability problems experienced by the flightcrew. The Cargo Techs responsible for loading the cargo aboard the accident aircraft uniformly testified that the bear clamps holding the pallets and ULD's in place were locked, and that the netting holding the cargo on the pallets was secure. Further, even if the bear clamps and netting did not hold the topside cargo in place, there was no place for the cargo to move because all eighteen positions aboard the DC-8 were filled with cargo, and because the narrowing of the fuselage in the aft of the aircraft would have limited the ability of the pallets and ULD's to shift aft.

Further, even a significant shift in the cargo would not likely have resulted in the control difficulties encountered by the flightcrew on the accident aircraft because even the worst case condition evaluated by Emery did not lead to a CG that would exceed the aircraft's controllability limits demonstrated in the simulator.

CONSIDERATION OF CARGO ISSUES AS A CAUSAL FACTOR IN THE ACCIDENT OF EB017

On February 16, 2000, a DC-8-71F, operating as Emery Worldwide Airlines ("EWA") flight EB017, crashed shortly after taking off from Mather Field near Sacramento, California. Immediately following the accident, the National Transportation Safety Board ("NTSB") initiated its investigation. Using its normal procedure, the NTSB divided the task of investigating the accident among several working groups. Much of the work gathering evidence was undertaken shortly after the accident by the Operational Factors/Human Performance Group ("the Group"). The NTSB availed itself of the expertise of parties to the investigation by using representatives of those parties as members of the NTSB investigation working groups. The NTSB staff and the party representatives on the various working groups together formed a team of experts dedicated to determining the cause of the accident.

Soon after the accident, the press, the public, and the NTSB focussed on cargo loading problems as a potential cause of the accident. This is not surprising in light of comments made to Air Traffic Control ("ATC") by the EB017 flightcrew shortly after takeoff. In those comments, the flightcrew, when faced with what appears to have been an aircraft controllability problem, indicated the crew's desire to return to the airport for landing. The crew went on, however, to state that they were experiencing what they perceived to be an extreme Center of Gravity ("CG") problem.

Based on an extensive review of the evidence thus far available, EWA believes that the accident could not have been caused either by improper cargo loading aboard the DC-8, or by any shifting cargo, for the reasons discussed below.

I. THE ACCIDENT WAS NOT CAUSED BY IMPROPERLY LOADED CARGO.

One possible theory of the cause of the accident is that the cargo aboard the aircraft was improperly loaded. An aircraft is technically airworthy only when its CG falls within certain prescribed limits. An aircraft whose CG falls outside these CG limits is not technically airworthy, and may actually be more difficult to control if the CG falls sufficiently outside these limits. Initial speculation regarding this accident centered around the possibility that cargo aboard the accident aircraft was improperly loaded, and that due to this, the CG of the aircraft exceeded the aircraft's aft CG limits. In other words, that the aircraft was "tail heavy," and that this led to control difficulties that caused the accident.

However, none of the testimonial evidence obtained to date supports the theory that the cargo aboard the aircraft was improperly loaded. In fact, all available evidence, including the testimony of employees of both Emery Worldwide ("EWW"), the ground-based, freight-handling affiliate of EWA, and Miami Aircraft Support ("MAS"), the contract ground handler at Mather, indicates that the aircraft was properly loaded. Further, even significant loading errors would not have led to the aircraft control difficulties that preceded the crash. Finally, the early speculation that cargo was improperly loaded is refuted by the evidence available today.

A. The aircraft was properly loaded.

According to the Load Planning Sheet ("LPS") for the accident flight, the accident aircraft had a Zero Fuel Weight ("ZFW") CG of 27.1%. 1/ Under the conditions on the accident flight, the aircraft's aft ZFW CG limit was 33.6%. Thus, if loaded according to the plan on the LPS, the aircraft was well within the aircraft CG limits.

1. The topside cargo was loaded in the same sequence as planned on the LPS.

There is no evidence that the aircraft was loaded in any manner other than as planned for in the LPS. The LPS itself was signed by MAS Load Planner Richard W. Knippschild, indicating that he had "determined that the cargo is secure in the positions described in this load planning sheet." 2/

The testimony of the experienced cargo handlers responsible for loading the aircraft confirms the routine nature of the loading in accordance with the LPS. The MAS Ramp Supervisor, Delane E. Rothchild, said that the aircraft load was normal. 3/ She testified in detail about her process to ensure that the pallets ("PN's", also called "pans") and Unit Load Devices ("ULD's", also called "containers," "cans", or "huts") are loaded in the proper order in accordance with the load planner's intention. She also testified that she follows the same procedure every night. Likewise, Debbie L. Nash, one of the MAS Cargo Techs that loaded the aircraft, indicated that there was nothing unusual about the load, other than that the load was lighter than normal. 4/

Even if there was an error in the loading sequence (in other words, if the cargo handlers loaded a pallet or ULD into a different position than specified on the LPS), it is very unlikely that the error would have resulted in an aircraft that was more tail heavy than planned, for the following reasons:

1/ The LPS is attached as Exhibit 1. Where this paper refers to a specific aircraft CG limit or aircraft CG as loaded or assumed to be loaded, it is referring to the ZFW CG, upon which the aircraft CG limits are based.

2/ Id.

3/ A summary of the testimony of Rothchild may be found in Exhibit 2, [hereinafter "Statements"], at 12-13 and 62-63.

4/ Id. at 19.

- *All eighteen positions had cargo in them.* Because all of the topside cargo positions were loaded, a single pallet or ULD could not have been misloaded by being positioned farther aft than planned without some other pallet or ULD being positioned farther forward than planned. This would minimize the effect of any shift aft in the CG.

- *It would have been virtually impossible to misload the pallets so that the CG would be farther aft.* The LPS called for the heaviest of the four pallets to be loaded in position 18. Any misloading that involved this pallet would have resulted in the CG being farther forward than planned, rather than farther aft. In fact, if we assume that the pallet planned for position 1 was actually loaded in that position (since it contained hazmat, it would have been extremely unlikely that this pallet could have been loaded improperly without being detected), then the remaining pallets, in positions 17 and 2, were loaded with the heaviest pallet being placed the farthest aft, in position 17. Again, any misload would result in the CG being farther forward, rather than farther aft.

- *It would be virtually impossible for any pallets to have been interchanged with any ULD's.* Standard procedures call for positions 1, 2, and 18 to contain only pallets. Given this standard loading practice, it would be inconceivable that these positions were misloaded so that they contained ULD's. In fact, the physical dimensions of the fuselage as it narrows toward the rear of the aircraft, would make it impossible to load a ULD in position 18. The Group confirmed through testing that it would be impossible to load a ULD in position 18, regardless of the orientation of the ULD as it was loaded. Similarly, given the specific testimonial evidence of the EWW Operations Manager in Reno, it is extremely unlikely that ULD's could have been interchanged with the pallet planned to be loaded at position 17. 5/

- *The chance of the CG being further aft than planned due to a misloading of the ULD's is remote.* The LPS indicates that several of the heavier ULD's were planned to be loaded aft. 6/ In fact, of

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5/ Statements, at 53; see also Memorandum from David Tavener to Ken Egge, Chair, NTSB Operations Group (Feb. 21, 2000), attached as Exhibit 3.

6/ See LPS, attached as Exhibit A; see also Statements, at 21 (providing statement of Richard W. Knippschild, MAS Load Planner, indicating that the accident aircraft had more cargo aft than normal).

the fourteen ULD's aboard the aircraft, the heaviest was planned to be located in position 16, the furthest aft available position. Four of the five heaviest ULD's were planned to be loaded in positions 12, 13, 15, and 16, the furthest aft available positions other than position 14. Any misloading involving these ULD's would have shifted the CG further forward than planned.

- *The remaining ULD's involved relatively light loads, such that if misloaded, the difference in the CG would have been relatively minor.* The heaviest of the remaining ULD's in positions 3 through 11 weighed only 3,600 pounds. While there is no reason to believe that any of these pallets were misloaded, even if they were, their lower weight would have resulted in a minimal change in the CG.

2. **Eyewitness observations confirm that the CG was not further aft than it normally would be.**

If the aircraft had been tail heavy, there would have been many telltale signs. However, firsthand accounts of the accident aircraft prior to takeoff indicate clearly that these telltale signs did not exist. All eyewitness accounts indicate that the aircraft was *not* tail heavy prior to departure:

- *The tailstand was never lower to the ground than it would be with normal aircraft loading.* During ground operations, a tailstand is always placed under the tail of the aircraft to prevent damage to the aircraft from its striking the ramp in case the tail becomes too heavy. In the case of the accident aircraft, four witnesses confirm that the height of the tail of the aircraft was normal at all times during aircraft loading, including when the tailstand was installed and removed. 7/

- *The air start receptacle was not hard to reach.* The air start receptacle of a tail heavy DC-8 would be noticeably difficult to reach. However, Jeffrey B. Woppert, MAS Cargo Tech, testified

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7/ MAS Cargo Tech Jeff D. Battise testified that the height of the tail of the aircraft was normal at the time he inserted the tailstand. Statements, at 25. MAS Cargo Tech Edgart Laciste indicated that the aircraft tail height was normal. Id. at 17. Rick Knippschild testified that he would have noticed if the tailstand was close to the ground, but that it was not. Id. at 22. Woppert said that the tailstand was not near to touching the ground, and that he had been trained to observe the tailstand's position. Id. at 29.

that he only had to reach up to a normal height to disconnect the air start hose. 8/

- *The nose strut was normally compressed.* If an aircraft were tail heavy, the nose strut would be extended more than normal. However, Drexel K. Wesleder, EWA mechanic, testified that the nose strut was extended only six to eight inches. 9/ He also said that he would normally notify the captain only if the nose strut were extended more than ten or twelve inches.

- *The crew stairs were normally aligned.* The crew stairs aboard a tail heavy DC-8 would not have been aligned properly with the passenger door. However, Rothchild, the MAS supervisor, testified that there was no problem with the alignment of the crew stairs and the passenger door. 10/ Additionally, the crew did not report a problem with the alignment.

- *The aircraft appeared normal during taxi.* There are no indications that the aircraft did not taxi normally, and the NTSB has not made EWA, in its capacity as a party to the investigation, aware of any evidence from the investigation, including evidence from the Cockpit Voice Recorder, that would indicate that the aircraft did not taxi normally.

Thus, the evidence, including the LPS, all eyewitness accounts, and all investigation evidence made available to EWA to date, leads to the conclusion that the aircraft was properly loaded, and EWA is aware of no evidence to the contrary.

B. Even the worst possible scenario involving improper cargo loading would not have caused the control difficulties encountered by the flightcrew.

Even though the possibility that the accident aircraft had a CG aft of the aircraft's limits is extremely remote, EWA sought to understand the extent to which an aft CG could affect the aircraft's controllability. To develop this

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8/ Id. at 29.

9/ Id. at 51.

10/ Id. at 63.

understanding, EWA tested the controllability of a DC-8-71 aircraft using a DC-8-71 simulator that was reprogrammed by the manufacturer to allow the aft CG limits to be exceeded. 11/ This manufacturer purposefully reprogrammed the simulator at the request of EWA, solely for the purpose of conducting these tests. For all of the simulator tests, Los Angeles International Airport was used because it had an elevation comparable to Mather's.

During testing, the CG was moved incrementally aft. Control was not lost until the CG was above 38%–well aft of the technical aft CG limit of the aircraft, which is 33.6%. Above 38%, the aircraft would "auto-rotate" as soon as power was applied, raising the nose wheel off the runway, making the simulator uncontrollable.

Perhaps the most important result of the simulator test is that it demonstrates that the improper loading of a DC-8 could not result in a normal rotation followed by the onset of control problems once airborne. The control problems that result from a CG that is too far aft would manifest themselves long before the aircraft rotated. The DC-8 simulator showed that it is doubtful that a DC-8 with an aft CG could even take off. At a minimum, the flightcrew would very likely recognize the problem immediately upon the application of power. It would be virtually impossible not to recognize such a problem during the elevator check at 80 knots because the aircraft behavior and responses to control inputs would have been abnormal. This simulator testing indicates that improper loading could not possibly be the cause of the aircraft accident.

With the information gained from the simulator tests regarding the limits of the controllability of a DC-8-71 in relation to its CG, EWA sought to determine the specific circumstances involving an improperly loaded aircraft that

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11/ Through the help of Aero Services, the CG limits imposed by the simulator software were re-written to allow the simulator operator to move the CG aft to simulate various hypothetical cargo loads.

could create a CG that approached or exceeded this controllability limit. EWA calculated the aircraft CG for six different loading conditions. 12/ For each of the

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12/ The six loading conditions were:

Condition 1. *LPS loading* – The CG was determined based on the cargo being loaded in accordance with the LPS from the accident flight. The resulting CG was 27.1%.

Condition 2. Significant improper cargo loading scenario – The CG was determined assuming that all pallets were loaded in the proper position, but the heaviest ULD's were loaded in the furthest aft position. While it would be theoretically possible to have misloaded the aircraft in this condition, the condition would be quite unrealistic since it would require the misloading of virtually every ULD. Nevertheless, a hypothetical load in this condition would result in a CG of 32.9%.

Condition 3. *Worst case improper cargo loading scenario* – The CG was determined based on the heaviest ULD's and pallets being loaded in the farthest aft position. This condition would simulate an improperly loaded aircraft, but would not involve the failure of any cargo restraining devices. It would be impossible actually to have loaded the aircraft in this configuration since it would require loading ULD's in positions that only physically accept pallets. Nevertheless, a hypothetical load in this condition would result in a CG of 35.4%.

Condition 4. *Single load shift scenario* – The CG was determined based on the pallet in position 18 (the heaviest pallet) being shifted aft one position. This would simulate the failure of the cargo restraining devices for position 18. It would be virtually impossible for this load shift to occur because of the physical limits imposed by the narrowing fuselage of the aircraft. A full shift of the cargo from position 18 to position 19 would cause significant damage to the interior of the aircraft. Nevertheless, this condition would result in a CG of 27.8%.

Condition 5. *Significant cargo shift scenario* – The CG was determined based on the pallets and ULD's in positions 6 through 18 each being shifted aft one position. This would simulate a failure of a significant number of cargo restraining devices. This condition is very improbable since it would require multiple failures. In addition, as noted above, it would be virtually impossible for the

conditions, the actual pallet and ULD weights, noted on the LPS were used, since the pallets and ULD's are weighed before being sent to the aircraft. It should also be noted that the scales at both Reno and Mather had been calibrated within the two months preceding the accident. Further, the accuracy of the scales at Mather, where the vast majority of the cargo aboard the accident aircraft was weighed, was verified after the accident. 13/

Condition 1 assumes a normal loading in accordance with the LPS. Conditions 2 and 3 assume improper cargo loading scenarios, with Condition 2 assuming a misload of the ULD's, but not the pallets aboard the accident aircraft, and Condition 3 assuming a "worst case" improper loading scenario in which all topside cargo is loaded in a sequence that would load the heaviest cargo the farthest

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pallet in position 18 to shift aft because of the physical limits imposed by the narrowing of the fuselage of the aircraft. Nevertheless, a hypothetical load in this condition would result in a CG of 33.9%.

Condition 6. *Entire load shift scenario* – The CG was determined based on the entire load being shifted aft one position. It would be impossible for this load shift to occur, since it would require the failure of numerous locking devices and would ignore physical obstructions to the movement of cargo aft. Nevertheless, a hypothetical load in this condition would result in a CG of 36.2%.

The data sheets for each of these six loading conditions are attached as Exhibit 4.

13/ It is standard Emery policy to calibrate the scales every six months. See Statement of Steve J. Murphy, EWW City Service Coordinator, Statements, at 37 (summarizing testimony that ULD's are weighed before they are sent to the aircraft for loading). The scales at both Reno and Mather were calibrated before and immediately after the accident. See Daily Service Reports for Mather (showing scale calibration before the accident on February 4, 2000 and successful test after the accident on February 17, 2000) and Inspection/Calibration Certificate for Reno (showing accuracy of the Reno scales on January 21, 2000), attached as Exhibit 5. The error was, at most, 0.33%, or 10 pounds for every 3,000 pound increment and EWA considers this error factor to be inconsequiential.

aft, and the lightest the farthest forward. It should be noted that Condition 3 would require that a ULD be located in position 18. As noted earlier, it would be physically impossible to load a ULD in position 18 given the dimensions of the ULD and the narrowing of the fuselage at position 18. Thus, Condition 3 represents a "worst case" loading that would be impossible to achieve. Conditions 4, 5, and 6 assume shifting cargo, and will be addressed below, in the discussion of the shifting cargo issue.

The cargo, when loaded in accordance with the LPS (Condition 1), resulted in a CG of 27.1%, well within the aft CG limit of 33.6%. Condition 2 resulted in a CG of 32.9%, well within the aft CG limit of 33.6%. The worst case improper cargo loading scenario (Condition 3) resulted in a CG of 35.9%, which would be far enough aft to exceed the technical aft CG limits of the aircraft, but would not approach the 38% controllability limits of the aircraft.

Thus, even the impossible-to-achieve worst case scenario for improperly loading the cargo, would not lead to the controllability difficulties encountered by the accident aircraft.

C. Speculation regarding the "improperly loaded cargo" theory has been refuted.

Early during the investigation, speculation and rumors suggested a theory that cargo could have been improperly loaded aboard the aircraft. These rumors are either flatly contradicted by the evidence, or not supported by the evidence.

1. The cargo handlers are not aware of any mistake in the loading.

One rumor raised soon after the accident alleged that Wesleder, an EWA mechanic at Mather, had told an EWA Captain that he had overhead the cargo handlers discussing a mistake in the loading. However, Wesleder testified

that he was not aware of any discussions about the aircraft load. 14/ Further, Wesleder's statements during the interview process indicate that he had no knowledge of any improperly loaded cargo—he testified that was not aware of any revisions to the load plan, and that he did not see any cargo put onto the aircraft that was subsequently taken off. 15/

2. It is routine at Mather for there to be a signed and an unsigned copy of the load planning documents

Speculation about improperly loaded cargo also resulted from the existence of two copies of the LPS. However, these concerns were resolved during the second interview of MAS Load Planner, Knippschild. 16/

During that interview, Knippschild explained that EWW had decided not to ship one container of mail on the accident flight. This decision was made before that container was loaded aboard the aircraft. Knippschild corrected the LPS by using correction fluid ("white-out") on the top, white copy. However, Knippschild did not white-out the two carbons of the LPS, which are pink and yellow.

As a result, the top white copy was legible, while the pink and the yellow copies were not completely legible, and indicated only that they had been changed. Using the normal Emery procedure, the white, legible copy of the LPS was photocopied before being signed by the captain. The unsigned photocopy was used, as it normally is, by EWW to transmit a Flight Confirmation Message ("FCM") to Dayton, to provide the EWW hub with information about incoming cargo in advance of its arrival. The original white copy of the LPS, and the yellow and pink carbon copies, were given to the flightcrew for the Captain's signature. The

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14/ Statements, at 50.

15/ Id.

16/ Id. at 59-60.

flightcrew copy of the LPS and the photocopy retained by EWW were identical, except for additions made after the photocopying. 17/ The pink and yellow copies of the LPS, which were retained by EWW station personnel, were referred to in the aftermath of the accident, since the Captain's white copy was destroyed.

3. The use of a "Christmas Tree" by load planners does not create a loading problem.

Some Group members speculated that the use of a load planning tool designed for a different model of DC-8 could have led to an improper load. This speculation was based on the MAS load planner's use of a "Christmas Tree" designed for the DC-8-63/73 rather than the Christmas Tree designed for the DC-8-71. However, the Christmas Tree is not the official calculation of the aircraft CG, 18/ and does not take into account variables such as the fuel load. The Christmas Tree is simply a tool used by some load planners to obtain an early estimate of the aircraft CG and verify that it will be within acceptable limits. *The flightcrew is always responsible for calculating the exact CG and has final approval of any load.* They are responsible to do this independent of any advance load planning by the load planners. Therefore, even if the Christmas Tree reflected inaccurate data, the computer used by the flight crew would have reflected any improper load.

In fact, the use of a Christmas Tree for a different model aircraft was largely irrelevant to the accuracy of the load planner's calculation, since the graph portions of each respective Christmas Tree are virtually identical. The accuracy of the Christmas Tree used by the MAS load planner was borne out in this case. The load planner estimated that the load would result in a CG of 27%; his Christmas

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17/ These include only "P15" and some minor additions made by the Captain, including some EWA spare parts that were loaded aboard the aircraft. The spare parts were loaded as Company Material ("COMAT").

18/ Statements, at 21 (noting that the "Christmas Tree" is just a "check").

Tree showed a CG of between 27% and 28%. The actual CG based on the loading as per the load plan was 27.1%. 19/ Because the aircraft CG moves aft as fuel is added, the crew calculated CG of 28.6% correlates very closely with the load planner's estimate based on the Christmas Tree.

4. Variances between the EWW planning sheet and the MAS planning sheet do not indicate a loading problem.

There was also speculation that possible errors in cargo loading resulted from variations between the load planning documents used by Jim Alder, EWW's operations supervisor at Mather, and the one used by Knippschild, the MAS load planner. In the course of preparing for a flight, James V. Alder, the EWA MHR Operations Supervisor, prepares loading worksheets for his use, as does Knippschild. However, it is Knippschild who prepares the final LPS. During his second interview, Knippschild, explained that the differences between the load planning documents used by Alder and those used by Knippschild were related to the mail that EWW had determined not to ship on this particular flight. 20/ During the course of planning for a particular outbound flight, the specific position where each pallet or ULD will be loaded may vary as the planners become aware of other cargo to be shipped and rethink their options. This is an integral part of the routine process of planning the loading of a cargo aircraft. In this case, EWW made the decision not to ship some mail after the process of building up the ULD's had begun. Because this was after Knippschild had included the mail in the ULD in the LPS, Knippschild had to white out the mail-related ULD. Knippschild then inserted the new, substitute ULD information into the whited-out space, which created a variation between the LPS prepared by Knippschild and the load planning document prepared by Alder. At no time was any ULD, pallet, or shipment of mail or other cargo unaccounted for, and the preliminary juggling of such cargo early in

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19/ See table for Condition 1, attached as Exhibit 4.

20/ Id. at 44.

the planning stages is simply a part of the job undertaken by carriers that specialize in the carrying of cargo. A review of these load planning documents by the Group members verified Knippschild's explanation to the satisfaction of the Group members.

Part of the concern early during the investigation over the mail was due to speculation whether an additional 6,000 pounds of mail could have been loaded aboard the aircraft without having been accounted for. This speculation was fueled by information indicating that 6,035 pounds had been removed from ULD No. 31019 when it was determined that the ULD would not be placed on EB017. 21/ There was speculation among Group members whether such an additional, unaccounted-for weight could actually have remained aboard the aircraft, and have been loaded far enough aft to cause the control difficulties experienced on the accident flight. However, in opposition to this speculation, Alder, EWA's Operations Supervisor at Mather, testified that the 6,000 pounds from ULD No. 31019 did not get onto the aircraft. 22/

Nevertheless, to resolve any question of whether all of the mail was accounted for, thus precluding the chance that some unaccounted-for weight was loaded aboard the aircraft, a review of all mail tendered to Emery within the immediately preceding few days was made. 23/ The mail review indicated that at the completion of operations on February 11, 2000, there was no mail at the facility.

21/ See Statement of James V. Alder. Statements, at 56 (noting that ULD No. 31019 had been bumped off the flight).

22/ Id. at 57.

23/ While it is unclear how much mail was on-hand at Emery at the beginning of the time period reviewed, Emery attempts, on a daily basis, to keep the amount of unmoved mail low. Thus, a review of the several days preceding the accident would indicate whether there was a significant amount of mail that had been delivered to Emery, but not accounted for on the load planning documents for the accident flight, by showing whether there had been more mail received during the time period than could be accounted for.

Between February 12 and February 16, 2000, 49,101 pounds of mail was delivered to Emery by the United States Postal Service ("USPS"). 24/ On February 17, 9,544 pounds were returned to the USPS, 25/ resulting in a net total of 39,557 pounds of mail that would have been available for movement from Mather by Emery. During the same period, Emery moved from Mather via air 22,375 pounds of mail loaded in the topside of departing aircraft, and an estimated 10,900 pounds loaded in the belly, with a tare weight of 2,690, for a net weight of 30,585 pounds. 26/ In addition, Emery moved from Mather via truck 12,260 pounds of mail with a tare of 2,070 pounds for a net weight of 10,190 pounds. This resulted in a net total of 40,775 pounds of mail moved by Emery from Mather during the same period Emery received 39,557 pounds from the USPS. Thus, the total weight of mail delivered to Emery was within 1,218 pounds of the total weight of mail moved by Emery, and it

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24/ A summary of the mail delivered to Emery by the USPS and the mail moved by Emery can be found in Exhibit 6.

25/ See document showing mail returned to United States Postal Inspection Team Leader, Mark F. Aamundstad, attached as Exhibit 7.

26/ It should be noted that the amount of mail moved in the belly of the aircraft is only an estimate. Although the weight of the cargo in the belly of the aircraft, as shown on the FCM, is accurate, the FCM does not segregate the portion of this weight that is mail from the remaining cargo. Thus, the portion of the cargo weight moved in the belly of the aircraft which is represented by mail must be estimated. However, MAS documentation indicates that 10 "cages" and 16 "OTR's" were loaded during the period from February 11-16, 2000. The process is further explained in the letter from Jim Alder, attached as Exhibit 8.

is extremely unlikely that there could be 6,000 pounds of mail aboard the accident aircraft that was not accounted for on the LPS. 27/

27/ The complete breakdown of mail movements is as follows:

Date	Delivered by USPS (lbs.)	Moved by Aircraft				Moved by Truck			Total
		Topside	Belly	Tare	Net	Total	Tare	Net	
Feb. 11	—	—	—	—	—	—	—	—	0
Feb. 14	18,360	0	4,200	0	4,200	0	0	0	4,200
Feb. 15	14,737	16,675	6,000	-2,020	20,655	12,260	-2,070	10,190	30,845
Feb. 16	16,004	5,700	700	-670	5,730	0	0	0	5,730
Subtotal	49,101	22,375	10,900	-2,690	30,585	12,260	-2,070	10,190	40,775
Feb. 17	-9,544	--	--	--	--	--	--	--	--
Total	39,557	22,375	10,900	-2690	30,585	12,260	-2,070	10,190	40,775

Even had there been 6,035 pounds of unaccounted-for weight loaded in the belly of the aircraft as speculated, it is unlikely that this weight could have been loaded in such a way as to affect the aircraft's controllability. Speculation revolved primarily around the possibility that this mail had been loaded in the "D" belly of the aircraft. Team Members estimated that it would require the addition of 6,000 pounds to the "D" belly to adversely affect the aircraft's controllability. However, the limited bulk space available in the "D" belly makes it very unlikely that that much mail could have been loaded there.

The above numbers indicate that Emery moved approximately 1,218 pounds of mail more than it received during the period of February 11-17, 2000. To some extent, this anomaly could result from the fact that the actual amount of mail moved in the belly of departing aircraft is only an estimate. It is, however, an estimate that is based on written records and local knowledge regarding the content of the shipments. Further, the amount of weight at issue in these estimates would be insufficient to account for any aircraft control problems.

5. There is no question that the cargo handlers were properly trained.

During the course of the investigation, some speculation arose as to whether the handlers were properly trained. This does not accord with the facts. All interviewed Cargo Techs questioned on the subject indicated that they had received training from MAS. 28/ MAS training includes training in EWA procedures. Moreover, EWA is aware of absolutely no evidence that any actions taken by a Cargo Tech were inappropriate such that training should be considered as causing or contributing to this accident.

II. THE ACCIDENT WAS NOT CAUSED BY A SHIFT IN THE CARGO.

A second possible theory of the cause of the accident is that cargo shifted aboard the aircraft to such an extent that it caused sudden aircraft controllability problems.

Cargo aboard a DC-8, such as the accident aircraft, can be loaded either topside, in one of eighteen locations, or in the belly, in one of four compartments (also called "pits"). Before being transported to the aircraft, topside cargo is initially loaded either on a pallet or in a ULD. 29/ The pallets and ULD's are then loaded into one of the eighteen topside positions and held in place by "bear

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28/ Rothchild indicated that she had received training in hazmat, loading, safety, and weight and balance procedures; Harris received on the job training ("OJT") in the use of loading equipment; Polani received OJT training, and he takes a hazmat test every six months; Nash received hazmat training and certification to operate certain equipment; Knippschild received two weeks of OJT for load planning; Crane indicated that he coordinates the training of MAS employees and that everyone must have annual hazmat training, and that the supervisors (Rothchild and Knippschild) receive monthly training on the Loading Manual; Woppert received OJT and hazmat training; and Younger received training on the K-loader, tug, dollies, and forklifts, and took hazmat tests. Statements, at 12-15, 19, 21, 26, 29, and 32.

29/ By EWA procedure, positions 1, 2, and 18 must be loaded with pallets rather than ULD's. Position 18 is the only position that will not physically accept ULD's.

claws," which are floor-mounted clamps that are locked around the base of the pallet/ULD to prevent their unintended movement. The cargo is locked into position when the locks are "up."

It has been speculated that a shift in either the topside or belly cargo (or both) could move the CG outside of the aircraft's CG limits, and lead to difficulty controlling the aircraft, or that a sudden shift could have created control difficulties, even if the CG limits were not technically exceeded. However, a review of the evidence indicates that it would have been virtually impossible for the cargo to have shifted significantly. Further, even a significant shift in the cargo would not likely have resulted in the control difficulties encountered by the flightcrew.

A. It would have been virtually impossible for a load to shift enough to affect aircraft controllability.

All eighteen of the positions capable of holding topside cargo on the accident aircraft were loaded with either pallets or ULD's. 30/ Positions 1, 2, 17, and 18, were loaded with pallets, and the remaining positions were loaded with ULD's. 31/ The belly was loaded with cargo in compartments "A" and "C." No cargo was loaded in compartments "B" or "D."

1. There is no evidence on the DFDR that supports a cargo-shifting theory.

Any cargo shift significant enough to cause aircraft controllability problems would be evidenced by an accompanying change in longitudinal acceleration parameter on the Digital Flight Data Recorder ("DFDR") readout.

30/ See Exhibit 9, providing information about the eighteen pallets and ULD's.

31/ Id. Note that pallet identification begins with "PAG", while ULD identification begins with "AAA"; see also statements, at 53 (Tavener referring to position 17 as a "pan"); Statements, at 18, 19, and 27 (MAS Cargo Techs Smith, Nash, and Williams recalling that positions 1, 2, and 18 were pallets).

However, the DFDR readout data shows no indication of any "spike" or "bump" in the longitudinal acceleration that would support a cargo-shifting theory.

2. **The likelihood of any shift in topside cargo was minimal, because cargo technicians verified that the bear clamps were locked.**

Testimony given to Group members by Cargo Techs that worked on the accident aircraft indicates that the bear clamps were locked in place on the pallets and on the ULD's in each of the eighteen topside positions aboard the aircraft:

- Winston B. Harris, Jr., MAS Cargo Tech, testified that he pushed the pallets and ULD's into position and stated that all locks were up.
- Edgart C. Laciste, MAS Cargo Tech, testified that he worked cargo from positions fourteen through four, including pushing the cargo into position and locking the locks. 32/ He stated that it was a normal loading operation other than needing to stand on the corner of one ULD to lock one of its corners.
- Ronald E. Smith, MAS Cargo Tech, testified that "I guarantee that every lock went up." 33/ Smith was aboard the aircraft before the loading of position 17.
- Frank L. Nell, MAS Cargo Tech, testified that all five locks were up on position 14 or 15. 34/
- Marvin Williams, MAS Cargo Tech, testified that all of the eighteen positions were engaged normally, and that none of the positions were hard to lock. 35/

32/ Id. at 17.

33/ Id. at 18.

34/ Id. at 24.

35/ Id. at 27.

- Larry L. Younger, MAS Cargo Tech, testified that he takes personal responsibility for all locks, and that he has no recollection of any problems with any locks. 36/

- Nash, MAS Cargo Tech, testified that either she or a supervisor would normally receive reports of any locks that were broken, and that she received no such reports. 37/

Thus, there is uniform and uncontroverted testimony that all pallets and ULD's were properly locked into position.

3. The likelihood of any shift in topside cargo was minimal, because cargo loaded aboard the pallets and ULD's was secured in place.

The testimony also indicates that the cargo aboard the pallets and ULD's was secure. Normally, cargo is secured on pallets by the use of five locks on the long side, and four locks on the short side for attaching the nets.

- Nash testified that the netting was in place and the tie downs were secure and tight on the pallets. 38/ She also testified that ULD's are loaded with the netting part forward, 39/ making it less likely that cargo could shift aft.

- Younger testified that the nets were tight, and that there were no rips. 40/ Younger also noted that when he tried to move a pallet by pushing on freight aboard the pallet, the freight moved only one inch, indicating that the cargo was well secured within the netting.

- Joseph R. Polani, MAS Cargo Tech, testified that the nets appeared tight to him. 41/

36/ Id. at 33.

37/ Id. at 20.

38/ Id. at 19.

39/ Id. at 20.

40/ Id. at 34.

41/ Id. at 15.

- James V. Alder, EWW Operations Supervisor, testified that he checked the netting on at least one pallet and saw that it was tight. 42/

- David H. Tavener, EWW Supervisor in Reno, testified that he had built up the containers and pans in Reno and that there had been nothing unusual. 43/ Tavener testified extensively regarding the loading of the cargo originating in Reno and destined through Mather to Dayton, noting that the cargo was well secured, and recalling such details as the specific loads on each pallets and ULD's originating in Reno. For instance, he testified regarding the position of each item of cargo in the pallet in position 18 during the accident flight, indicating its security through the use of lashing ropes. Tavener also recalled building up the cargo loaded in position 17 on the accident flight, including the use of red lashing rope to secure the corners of the pan.

- Testimony from EWW supervisors at Mather and Reno indicated that they were knowledgeable about the proper procedures for building up the ULD's and pallets, and noticed nothing unusual about the load. 44/

Thus, not only does all evidence indicate that the pallets and ULD's were locked into place, but it also indicates that all cargo was well secured in place aboard the pallets and ULD's.

42/ Id. at 57.

43/ Id. at 53-54. In addition to his testimony, Tavener provided sketches showing his general recollection of the loading of pallets on the accident aircraft. See Memorandum from David Tavener to Ken Egge, Chair, NTSB Operations Group (Feb. 21, 2000), attached as Exhibit 3.

44/ See Statements of Steve J. Murphy, EWA City Service Coordinator, Statements at 37, and David H. Tavener, EWW Supervisor at Reno, Nevada, id. at 53.

4. Even if the cargo was not held in place by the pallet and ULD locks, or the containers, or netting, the likelihood of a significant cargo shift is minimal because there was no place for the cargo to move.

Even had the cargo locks not been in place, or even had the locks failed to restrain the pallets or ULD's, it is unlikely that, during a normal flight profile, the cargo could have shifted to such a degree as to cause control difficulties. This is because the ability of the cargo to shift would have been limited in several ways, even had the locks or restraints failed.

For instance, while there was an unoccupied space aft of position 18 ("position 19"), the Group's analyses eliminated the possibility that a pallet in position 18 could shift to position 19. The rigid stops and the contours of the fuselage would have made this impossible, since the fuselage rapidly narrows, like a funnel, aft of position 18. Similarly, the Group noted that ULD's loaded in position 17 may only shift aft approximately four to six inches before movement is limited by contact with the aircraft fuselage. 45/

The physical impossibility for cargo loaded in position 18 or 17 to move aft would, in turn, make it impossible for cargo loaded in other positions to move aft. Once the cargo in position 18 or 17 is secured in place, and assuming that there are no empty cargo positions, the minimal room that exists between each contiguous pallet or ULD would cause each successive pallet or ULD to act as a stop for the movement of contiguous pallets or ULD's. As a result, the likelihood of any shift in the topside cargo that would affect the aircraft's controllability is extremely remote, if not impossible.

5. **The likelihood of any shift in belly cargo was minimal. The cargo was secured in position and unlikely to shift, and it was**

45/ Id. at 11 (summary of Group Aircraft and Loading Area Observation Activities).

too light and loaded too far aft to significantly impact the CG if it did shift.

Compared to the topside cargo hold, the belly of the DC-8 holds relatively little cargo. In fact, according to the LPS, cargo was loaded only in compartments "A" and "C" of the accident aircraft. Additionally, EWA used compartments "B" and "C" to transport some company material. As a result, compartment "A" contained 1,090 pounds of cargo, compartment "B" contained 474 pounds of company materials, and compartment "C" contained 1,600 pounds of cargo, and an additional 1,310 pounds of company material. Compartment "D" was empty.

The cargo in compartment "A" originated at Reno, and was not taken off the aircraft in Mather. 46/ Rudy Hahn, MAS Cargo Tech, testified that he connected the net in compartment "A," and locked the pit door. 47/ Further, Younger testified that the compartment was full, 48/ making it unlikely that there could have been any significant shift of the cargo in that compartment.

The cargo in compartment "C" included several pieces of long freight and some mail. 49/ Jeff D. Battise testified that he loaded the long freight aft of the door, and that he and Knippschild secured the netting. 50/ Knippschild also testified that he normally looks at cargo in the belly, and that the nets were put up

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46/ Statements, at 21 (Knippschild), and 17 (Laciste).

47/ Id. at 23.

48/ Id. at 32.

49/ Id. at 21.

50/ Id. at 25.

in the cargo for this flight. 51/ Rothchild testified that it is her responsibility to ensure that belly cargo gets loaded as per the load planner's plan. 52/

Taken together, these facts demonstrate that there could not have been any shift in cargo loaded in the belly of the accident aircraft significant enough to affect the aircraft's CG or the aircraft's controllability.

B. Even a significant shift in the cargo would not lead to control difficulties that could not have been controlled by the flightcrew.

In addition to the calculations performed by Emery for this investigation, which were addressed earlier during the discussion about whether there was a possibility that any cargo was improperly loaded, Emery calculated the effect on the aircraft CG of various hypothetical conditions involving shifts in the cargo.

Whereas Condition 1 assumed that the aircraft was loaded in accordance with the LPS, Condition 4 tested the shift aft of a single pallet or ULD by one position, by determining the CG of the aircraft by assuming that the 4,400 pounds loaded in position 18 were loaded in position 19, even though this condition is not physically possible. The result of this shift in the single position of cargo aft by one position was to move the CG aft to 27.8%. This is a very small shift from the original CG of 27.1%, and would likely be virtually imperceptible to the crew.

Condition 5 assumed that all of the cargo in positions 6 through 18 shifted back one position to occupy positions 7 through 19; again, a condition not physically possible. In this case, the final CG was 33.9%, or very close to the aircraft's aft CG limits.

51/ Id. at 22.

52/ Id. at 62; see also id. at 13 (describing cargo loaded in belly of accident aircraft).

Only when using the scenario where the entire load is shifted aft by one position (Condition 6) was the aft CG limit exceeded resulting in a CG of 36.2% (which exceeded the technical aircraft CG limits by 2.6%). Although this condition is physically impossible, *the resulting CG of 36.2% is still within the controllability limits of 38% established in the simulator.*

In sum, none of the loading conditions tested by Emery exceeded the 38% CG that marked the limits of controllability of the aircraft in the simulator test, even though it would have been physically impossible for many of these conditions to occur. Even the shifting of all topside cargo aft by one position, the worst possible configuration tested (and one that would not have been physically possible), would have resulted in an aircraft CG that would ultimately have been within the aircraft's controllability limits.

LOAD PLANNING SHEET DC8-7.1

Evergreen WORLDWIDE AIRLINES A EAC COMPANY

FLT.# 017 DATE 2/16/01 OF-523-71 (07/98)

ACFT.# 80794 PIC Stables

COMPARTMENT LIMITATIONS - *NOTE : SEE REVERSE SIDE FOR SPECIFIC ZONE / SHELL LOADING GROUP LIMITATIONS.

GROUP A	8693	8322	8559	8657	8387	8687	8387	13187	13187	9887	8687	8687	6887	6887	6887	6887	6887	5913
GROUP B	8693	8322	8559	8657	8387	8687	8387	9887	9887	9887	7007	7007	6887	6887	6887	6887	6887	5913

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
DEST.	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	HDY	
ULD	33214	10419	13982	31876	30884	32028	44175	1222	4958	31264	30173	30825	32571	2411	31668	31399	17376	30814	
GROSS WEIGHT	3700	1350	3600	3580	3390	3070	2770	2490	2210	1940	1310	4210	4580	3060	4570	5700	3410	4400	
BIN MAX. WT.	2551	2910	-0-	2551	3989	4343 B	1701				2935	4503	-0-	2429	2173	2172	1244		

	1B	2B	3B*	4B	5B	6B	7B	11B	12B	13B*	14B	15B	16B	17B
DEST.	HDY	HDY		HDY	HDY	HDY	HDY	HDY	HDY		HDY	HDY	HDY	HDY
GROSS WEIGHT				500	590		774	960 + 410	350 + 461		400	400		

TOTAL FWD LOWER COMPT. LIMIT - 19,350 LBS.

TOTAL AFT LOWER COMPT. LIMIT - 18,150 LBS.

CAUTION: INSTALL TAIL STAND BEFORE LOADING OR UNLOADING AIRCRAFT

COMBINED LOWER AND UPPER COMPARTMENT WEIGHT NOT TO EXCEED UPPER LIMITATION

	1+ 1B	2+ 2B	3+ 3B	4+ 4B	5+ 5B	6+ 6B	7+ 7B	8	9	10	11+ 11B	12+ 12B	13+ 13B	14+ 14B	15+ 15B	16+ 16B	17+ 17B	18	19
TOTAL WEIGHT	3760	1350	3600	4080	3980	3070	2770 + 774	2490	2210	1940	1710 +960	4610 +350	4580	3460	4970	5700	3410	4400	

UPPER DECK MAXIMUM FLOOR LOADING 300 LBS/SQ. FT.

LOWER DECK MAXIMUM FLOOR LOADING 120 LBS/SQ. FT. ALL.

The shipments described on the attached Waybills/ Shipper's Declarations have been loaded in the compartments indicated, contain no damaged or leaking packages and have been inspected in accordance with 49CFR 175.30(b).(c).

The attached documentation and declarations are a part of this notice, meet the requirements of 49CFR 175.35(b) and contain the specifics of the shipments.

HAZARDOUS MATERIAL (HM)

UN/ ID NO.	WAYBILL NO.	CAO (X)	NO. OF PKGS.	COMPT.	TOTAL *TI	DEST.

* ENTER TRANSPORT INDEX (TI) FOR RADIOACTIVE YELLOW II AND III

TRIP INFORMATION

INDEX: -324.9 BOW: 149241

TTL CARGO WGT ON THIS STATION: 61980

TTL MAIL WGT ON THIS STATION: 6004

TOTAL GROSS WEIGHT: 211221

ORG: MHR DEST: HDY

ATA: ATD:

HM INSPECTED BY: R. Knipschild

LOAD PREPARED BY: R. Knipschild

PIC NOTIFICATION: [redacted]

*AIRCRAFT 8177U & 811AL WEIGHT LIMITS FOR : 3B = 2910 AND 13B = 4503

GROUP A		
500MH	8016P	8076U
8079U	8084U	8085U
8087U	8091U	8177U
GROUP B		
811AL		

DC-8-71 USE WAR FORM OF-521

I certify all cargo, ULDs, and associated cargo restraining devices have been inspected and meet the standards described in the EWA Aircraft Loading Manual. I have supervised the loading of all cargo and ULDs and have determined the cargo is secure in the positions described on this load planning sheet.

[redacted] 2/16/01 (Date)

(Type Line)

UR-0696 (9/98) Litho in U.S.A. Printed on Recycled Paper

DISTRIBUTION: WHITE - FLIGHT CREW YELLOW - ORIGIN OFFICE PINK - GROUND HANDLER

STATEMENTS

TABLE OF CONTENTS

A. ACCIDENT

Operator:	Emery Worldwide Airlines, Inc.
Location:	Rancho Cordova, California
Date:	February 16, 2000
Time:	About 1951 Pacific Standard Time[1] (PST)
Airplane:	McDonnell Douglas DC-8-71F, N8079U

B. OPERATIONAL FACTORS/HUMAN PERFORMANCE GROUP

Kenneth L. Egge
Operational Factors Division (AS-30)
Group Chairman
National Transportation Safety Board
Washington, DC

Evan A. Byrne
Human Performance Division (AS-50)
Human Performance Investigator
National Transportation Safety Board
Washington, DC

"TR" Proven
Air Safety Investigator
Federal Aviation Administration
Washington, DC

William E. Douglas
TriJet Weight Engineering
Douglas Products Division
Boeing Commercial Airplane Group
Long Beach, CA

R. Patrick Nelson
Director, Ground Services
Emery Worldwide Airlines
Vandalia, OH

Karlton K. Okamoto
Manager, Cargo Systems Design
Long Beach Division
Boeing Commercial Airplanes Group
Long Beach, CA

Michael W. Smyth
Flight Manager
Emery Worldwide Airlines
Vandalia, OH

Dirk J. P. Visser IV
Air Line Pilots Association, International
Emery Worldwide Airlines
Vandalia, OH

[1] All times are Pacific Standard Time (EDT) based on a 24-hour clock, unless otherwise noted. Actual time of accident is approximate.

C. DETAILS OF THE INVESTIGATION

The Operational Factors/Human Performance Group convened at Mather Airport, Sacramento, California (SFD), on October 25, 1999, to begin the field phase of the accident investigation. The Operational Factors/Human Performance Group interviewed the Miami Aircraft Support cargo loaders, supervisor, load planner, and Northwest Regional Manager, four Emery Worldwide Airlines Reno mechanics, Emery Worldwide mechanic stationed at Mather Airport, the captain and second officer who flew the second to last flight leg prior to the accident flight, and the first officer who last flew the accident airplane prior to the accident flight, TAMCO contract mechanic at Mather, Emery Worldwide City's Service Coordinator, Reno Emery Worldwide AM Ops Supervisor, Emery Worldwide Ops Supervisor at Mather. Applicable manuals and documents were obtained from Emery Worldwide Airlines and the FAA.

The Operational Factors/Human Performance Group concluded activities on February 24, 2000.

1.0 HISTORY OF FLIGHT

On February 16, 2000, an Emery Worldwide Airlines, Inc., McDonnell Douglas DC-8-71F, registration N8079U, departed Mather airport, Sacramento, California, on February 16, 2000, about 1949 Pacific Standard Time[2] (PST). Shortly after takeoff, the flight declared an emergency. The airplane crashed into an automobile salvage yard east of the airport in Rancho Cordova, California, about 1951. The airplane was consumed in the post-crash fire. All three crew members on board were fatally injured.

2.0 AIRPLANE INFORMATION

2.0.1 WEIGHT AND BALANCE

TAKEOFF WEIGHTS	
	WEIGHT (Pounds)
Basic Operating Weight	148,767
Upper Cargo Load	59,290
Lower Cargo Load	2,690
Spare Parts Kit (SPK)	1,784
Total Cargo	63,764
Maximum Taxi Weight[3]	331,000
Take Off Fuel Weight	66,700
Take Off Gross Weight	279,231
Maximum Takeoff Gross Weight[4]	328,000

[2] All times are Pacific Standard Time (EDT) based on a 24-hour clock, unless otherwise noted. Actual time of accident is approximate.

[3] Manufacturer's Airplane Flight Manual limitation.

[4] Manufacturer's Airplane Flight Manual limitation.

TAKEOFF STABILIZER TRIM SETTING AND SPEEDS	
Takeoff Stabilizer Trim Setting	28.9%
Takeoff Flap Setting	15
Takeoff Speeds	V_1=126 knots, V_R=146 knots, V_2=158 knots

3.0 FLIGHT CREW INFORMATION

3.0.1 The Captain, Kevin G. Stables

Date of birth: [redacted]
Date of hire with Company: 10/19/94

Pilot and flight engineer certificates and ratings:
Airline Transport Pilot Certificate Number [redacted]
Airplane Multiengine Land/Airline Transport Pilot
Airplane Single Engine Land/Commercial Privileges

Type Ratings:
ATR-42/Airline Transport Pilot
ATR-72/Airline Transport Pilot
B-727/Airline Transport Pilot
DC-8/Airline Transport Pilot
ND-262/Airline Transport Pilot

Flight Instructor Certificate Number [redacted]
Airplane Single and Multiengine
Instrument Airplane

Medical certificate:
First Class (issued 02/15/00), with the limitation, "Must wear corrective lenses for near and distant vision"

Flight experience according to Emery Worldwide Airlines records:

FLYING TIME		HOURS
Total		13,329
Total Emery Worldwide Airlines DC-8 Captain		2,128
Last 24 hours	(not including accident flight)	1.2
Last 7 days	(not including accident flight)	1.2
Last 30 days	(not including accident flight)	51.7
Last 90 days	(not including accident flight)	119.1

Training and checks:

TRAINING / CHECKS	DATE
Initial DC-8 type rating	08/05/98
Initial DC-8 proficiency check	08/05/98
Completed DC-8 initial operating experience	09/23/98
Last recurrent training Airplane specific (DC-8) and general subjects	02/11/00
Last DC-8 proficiency check	06/30/99

3.0.2 The First Officer, George Y. Land

Date of birth: [redacted]

Date of hire with Company: 09/15/96

Pilot and flight engineer certificates and ratings:

Airline Transport Pilot Certificate Number [redacted]

Airplane Multiengine Land/Airline Transport Pilot

Airplane Single Engine Land/Commercial Privileges

Type Ratings: None

Medical certificate:

First Class (issued 06/24/99), with the limitation, "None"

Flight experience according to Emery Worldwide Airlines records:

FLYING TIME		HOURS
Total		4,511
Total Emery DC-8		2,080
Last 24 hours	(not including accident flight)	0.0
Last 7 days	(not including accident flight)	0.0
Last 30 days	(not including accident flight)	47.2
Last 90 days	(not including accident flight)	142.8

Training and checks:

TRAINING / CHECKS	DATE
Initial DC-8 proficiency check	10/28/96
Completed DC-8 initial operating experience	02/25/97
Last recurrent training Airplane specific (DC-8) and general subjects	09/19/97
Last DC-8 proficiency check	10/29/99

3.0.3 The Second Officer, Russell E. Hicks

Date of birth: [redacted]
Date of hire with Company: 09/15/98

Pilot and flight engineer certificates and ratings:
Airline Transport Pilot Certificate Number [redacted]
Airplane Multiengine Land/Airline Transport Pilot
Airplane Single Engine Land/Commercial Privileges

Type Ratings: DC-8/Airline Transport Pilot

Flight Engineer Certificate Number

Medical certificate:
First Class (issued 04/22/99), with the limitation, "None"

Flight experience according to Emery Worldwide Airlines:

FLYING TIME		HOURS
Total (Based on resume when hired and Emery records)		9,775
Total Emery DC-8 F/E		675
Last 24 hours	(not including accident flight)	1.2
Last 7 days	(not including accident flight)	1.2
Last 30 days	(not including accident flight)	60.0
Last 90 days	(not including accident flight)	154.8

Training and checks:

TRAINING / CHECKS	DATE
Initial DC-8 proficiency check	11/03/98
Completed DC-8 initial operating experience	12/08/98
Last recurrent training Airplane specific (DC-8) and general subjects	
Last DC-8 proficiency check	09/02/99
Last DC-8 line check	12/08/98

4.0 Aircraft and Loading Area Observation Activities

On February 19, 2000, the Operations Group examined the cargo system on aircraft N500MH which is a 71 model that had undergone freighter conversion. The airplane was on the Emery ramp at MHR. The group observed the loading and unloading of an empty ULD AAA container and observed the operation of the floor locks. An empty 88 by 125 inch pallet was also loaded into position 18.

The group noticed that there were 4 different colors of locks: green, red, blue, and clear anodized. Most of the locks on the deck were green. The majority of the system was Pemco hardware. The blue locks also had an indication of Pemco. The red had none. The clear anodized lock had a forged base whereas everything else was machined. The Pemco lock part number was 500-44-5. The W/O number 27690. One of the locks appeared new, the inner pawl number was 50055, eligiblity DC-8, B-727, and B-737. The vertical restraint height in the position 18 siderail was approximately the same height as the fixed end stops forward and aft (positions 1 and 18) and the longitudinal locks. The vertical restraint on the side guide rails in position 1 through 17 were approximately 1 inch higher. The latch bases varied in type.

The ULD container that was loaded laterally (correct orientation for positions 1 through 17) was observed to have approximately a 2 inch clearance from the ceiling. The ULD container could not be put in longitudinally into the airplane. The locks were put down aft of position 17 and a ULD container oriented laterally was positioned until it contacted the aircraft approximately 4-6 inches aft of the normal aft position for position 17.

An empty ULD container was rolled over a fully raised lock on the far right side (aft looking forward). The container had to be raised to move over the raised lock. The group noticed that the base of the ULD remained under the siderail vertical restraint. There was about a half-inch of clearance remaining.

The group observed broken C tracks under a wobbling lock and observed wear under the fitting. The C track position contained dirt and metal filings. The group observed varying sections of flooring. The white flooring sections felt softer under foot than the other sections.

The group examined the lower belly cargo area. Tires were observed in both A pit and C pit. There was a net directly behind the tires in C pit. The door area nets in pit C were of different mesh sizes. The net was observed to be clean. The tires in A pit were aft. Door nets were installed.

The group toured the loading facility at the Emery MHR station. Some members of the group observed one empty ULD container that had the edge rail on the door side that bowed up in the middle. A corner fitting of a container had a broken corner fitting. The group observed a weighing demonstration on the scale. The ULD was variably positioned on the scale off center and the scale weight remained constant.

D. INTERVIEWS

Interview:	Delane E. Rothchild, Supervisor, Miami Aircraft Support Brooks Burdette, Legal Counsel
Date:	February 18, 2000
Time:	~1000
Location:	Mather Department of Airport Building
Present:	Egge, Nelson, Smyth, Visser

Job title: Supervisor. Rothchild's overall job function is to supervise the ramp. She gives out job assignments, gets information for the upload and download, gets block times and, in general, sees that the ground operation runs smoothly, safely, and on time. She physically goes to the Emery warehouse to talk to the "lead." After the airplane arrives, she uses the radio to communicate with him. It is her job to make sure that the containers/pallets get on board the airplane in the proper order. All of the containers/pallets are identified by a four or five-digit number. She was asked about her training – she worked UPS planes originally and trained to UPS standards. She said she had recurrent training but it was not detailed.

She stated that it was a "normal" load the night of the accident. They started by loading the bellies.

She stated that she has been with Miami Aircraft Support about five years. She received training in hazmat, loading and safety. She stated that initially she was not trained on computing weight and balance but she was trained later.

Before a flight arrives, she stated that she is told what is coming in. Reno faxes Miami Aircraft Support the load that is coming in via "flight com." The supervisor at Emery informs her of what freight is going out of Mather Airport. On the night of the accident, the inbound flight from Reno had "17 positions top side." There were four of these going back on.

The outbound load included "pans" [pallets] in positions 1, 2, and 18 on the airplane. This is not unusual. The rest were "cans." "Pans" are built-up in the warehouse, covered with plastic, and enclosed in netting. The net is held down on the pallet by 18 locks, five in the front, five in the back, and four on each side. The containers/pallets are put on the airplane one at a time. She doesn't go topside to check each position. (Sometimes, the containers/pallets do not fit right.)

Rothchild stated that there is one surveillance camera outside and a few surveillance cameras in the warehouse.

She stated that she talked to the pilots and they did not express any concerns. She stated that the pilots check outside the airplane and if they have any questions, they ask her. She stated that she brings the pilots coffee and donuts. In a conversation with the first officer, he told her how much he appreciated all she does for

them.

She stated that she saw the airplane block in. The flight crew stayed on the ramp. There was nothing unusual; the loading process was "smooth."

She stated that she does not receive yearly training. She receives equipment certification every three months on the belt loader, K-loader, and fork lift.

She stated that there is a tag showing the weight and destination on each of the containers/pallets. There is an identification number on each of the "pans." She always double-checks this number. The mail on board is combined in the total weight.

She stated that as a supervisor, she has a training book.

She stated the load is partially staged and staged as it comes out of the warehouse.

She stated that she checks airworthiness of ULDs as they come out of the warehouse. She looks for holes, cracks, warping, and tears. She does not see this very often.

If there were a problem with a floor lock, the loaders would alert her. She stated that she would inform the mechanic. She stated that she was not aware of any problems with the floor locks that night.

She stated that she does not marshal the airplane.

She stated that the fork lift driver puts ULDs on K-loader.

She stated that she takes hazmat awareness training every year.

On the accident flight, she stated that there was 1090 pounds of freight remaining in "A-pit." She stated that two Postal "OTRs" were loaded in the belly. There was some long freight loaded in "C-pit." She stated that it was "real light that night."

She watched block out and went to the office. She didn't see takeoff. There was nothing abnormal on blockout.

Interview: Winston B. Harris Jr., Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time:
Location: Mather Department of Airport Building
Present: Egge, Nelson, Smyth, Visser

He has been employed by MAS for 1 month. He has no prior experience in aviation.

Harris said he received training in using loading equipment through OJT with different people.

Harris was on duty on the night of the accident. He hooked up the GPU and moved the K-loader.

After loading 5 containers he heard a "pop" noise. He had no idea what it was. The noise sounded like a firecracker. Frank who was inside the plane also heard this noise. The noise was behind him as he walked away from the position 14 hut. He said it did not sound like a lock sound. He said it came from around the 5th ULD that had been loaded He wasn't sure if they were loading the belly at the time.

Harris continued working topside. He said he did not speak with the pilots.

He said he pushed huts into position and said locks were locked. He gets proper position for the ULDs from the K-Loader operator. He said there was nothing unusual – all locks up.

He saw the block out of the airplane. He watched the engine start and observed white colored smoke for over 1 minute after both 1 and 2 engines were running. He said it was around the entire wing.

He was asked what direction the popping sound had come from – he said it came from around the ULDs. He had been walking towards the cargo door and turned around when he heard it.

He said it took a long time at the runway, about twice the normal time. He watched the takeoff and described it as nothing unusual.

He said after the wheels were off the ground he left.

Interview: Joseph R. Polani, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel

Date: February 18, 2000
Time:
Location: Mather Department of Airport Building
Present: Egge, Nelson, Smyth, Visser

He stated that he has been employed by Miami Aircraft Support for 3 years and 3 months. He stated that he currently operates a forklift. He learned his job by observing and received training after his shift and on Saturdays. He uploads and downloads the freight. He also brings freight from the Emery warehouse out to the airplane. He stated that he was on duty on the night of accident.

He stated that Maintenance services the airplane with oil as usual. He was not aware of any problems.

He said there were two pans on the ramp. He said the block in was normal. He said there was routine maintenance.

He stated that on the night of the accident, three "cans" got bumped. The bumped "cans" went to the warehouse.

During engine start, he noticed a puffing noise with a bang. He watched the takeoff. He said that the aircraft banked real hard left at about 80'. He said that during engine start he didn't see any smoke other than after start – it was normal smoke. He watched the takeoff. He said the aircraft pulled up too soon he thought. He said the airplane took off quickly and banked left quicker than normal.

He said he had no functions topside on the night of the accident. He said that Delane gives him load numbers of ULD to be loaded. He said that there was nothing unusual about the loading – it was normal speed. He said the load appeared to be OK.

He said the loading on the topside was going great. He said the nets were nice and tight. He said they had clear plastic over the cargo on the pallet and then straps.

He watched the takeoff. He said it was very quiet on departure -- More so than usual. He pointed at taxiway D as the point of takeoff (after being presented a map of the airport).

He said they never use the forklift to load directly on the airplane --he said they always use the K-loader.

He said his initial training was OJT. He said he had no hazmat training – only takes an open book test every 6 months. He said if it is wrong Gary explains the correct answer and why.

He said the bellies were being loaded at the same time as the topside. He said that Butch marshalled the airplane out.

He said that Delane checks the numbers of the ULDs to load and points at them for the forklift drivers to pick up.

He said the airplane took off on the middle runway which is a little closer on takeoff.

He said the airplane blocked out a little early. He said they had no problem closing the door.

He said there was hazmat in position one on the cookie sheet.

He said the belly was done fast and then they helped topside.

He said there were two OTRs and one-quarter pallet of mail.

He said there were six to seven people working topside. The aircart was running normal.

He didn't talk to the crew but he sees them on a regular basis.

Interview: Edgart (Butch) C. Laciste, Cargo Tech, Miami Aircraft Support
Brooks Burdette
Date: February 18, 2000
Time: 1315
Location: Mather Department of Airport Building
Present: Egge, Nelson, Smyth, Visser

He has been employed by MAS for 3 years as a cargo tech loader.

He marshalled the accident aircraft in. It was normal operations. He said the tail stand was OK – someone else put the tailstand in place. He worked the bellies and loaded two boxes, 6 tubes, several coffin-type boxes that were hard to load.

After the belly load was complete he went topside. He started at #14 and got out of the airplane after position 4. He said on the topside he was locking locks and pushing cans. He had to stand on the corner of one ULD to get the corner locked in. Other than that all normal.

He said it was a normal engine start. He marshalled the airplane out and did not see any bouncing of the nose during taxi – it was normal. He said during loading he heard no unusual noises.

He was asked about the belly cargo – he said nothing was added to the A-pit. In the C-pit there were 2 long boxes: 15 tubes 5 to 6 feet (cardboard); and 2 long coffin-type 10 to 12 foot; and 4 to 5 coffin type 8 feet long. He said they were bulky but not real heavy.

He said it was a normal power setting for taxi. He watched the takeoff. He insists it occurred on the runway closed to them. He said it was at night – dark out when the airplane took off.

Interview: Ronald E. Smith, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1340
Location: Mather Department of Airport Building
Present: Egge, Nelson, Smith, Visser

He has been employed at MAS for 2 years. He is a cargo tech and mainly operates the forklift.

He was on duty the night of accident. He said the plane was on final at 1830. approximately. He went to perform the ~~perform~~ Airborne Express pushback at 1830.

He wasn't around for the download. He returned at 1903 after the download was complete. He helped for the onload topside. When he got on the plane position 1 was loaded; position 18 was turned and they were waiting for 17. He said "I guarantee that every lock went up." He said there were no problems with the cans. He said there were no voids. There were definitely 18 positions – positions 1, 2, and 18 were definitely flats.

He said the taxi out was smooth and normal. He watched block out and takeoff to just after lift off. He saw the airplane lift off and then he left. He could see the aircraft clearly even though it was night time. He said the airplane used the outside runway.

He said there were no unusual sounds during loading. He said there were no unusual engine sounds during engine start. He said there was a normal loudness on takeoff.

Interview: Debbie L Nash, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1400
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

She does the K-loader and marshals out the aircraft. She has since 9/24/97. She received training in Hazmat and has been certificated on the equipment she operates. She operates all the equipment except the forklift. She is recertificated every three months by having the supervisor observe her while she operates the equipment.

She described the evening of the 16th.: She was on the K loader waiting for the cargo. When the aircraft came in, she positioned the K loader, put the sill guards in place and downloaded all 17 positions.

She began the loading by putting #18 in position 3 or 4. Then put position #1 in the in position and then loaded the remaining pallets. They spun the pan in that position that night towards the cockpit. She said 3 quarters of the pallet was square with the lower area facing toward the cockpit. The load was lighter than usual.

She did not note anything as unusual. After the cargo door was closed she left and watched the departure and take off. The take off appeared normal. She saw the lift off and it appeared different because the aircraft turned at a lower than normal altitude. She watched the take off until the turn began and she got in the car and left.

In response to questions she provided the following information: The rotation rate and attitude appeared normal. She waited for the aircraft to take off because the crew is not allowed to leave the area until the aircraft is airborne. She saw the pilots get out of the aircraft and walk around. The aircraft took off to the right of where she was standing, which is the normal place for it to lift off on the basis of her experience. To her recollection, there were 3 pallets and 15 cans. The pallets were netted and placed in position 1,2, and 18. It appeared the tie downs were tight. The top side crew pushes the cans back and locks them in the plane. She wouldn't be able to tell if the locks were not put in place. The pallets were about 3-4 feet high. She mentioned that #18 needs to be lower since the area in the back is lower than the general aircraft area. The sill guards were put in A pit when the loading was complete. She helps push if the can is heavy. If a lock doesn't work she would tell people and decide if the remaining locks were satisfactory. She knows the weights of the cans because she can see it on the side of the pallet or container. Based on that weight she knows if she'll be needed to push the can. The Hazmat was placed on position one – she saw the hazmat. Number 1 and 2 were about the same height. She said of the 3 pans was to her waist and the other two were to her hips. (ONE)

She first said she was not around during the engine start. She was by the shed during

the engine start. She doesn't recall seeing engine smoke.

She said the load was lighter than usual. She said that night she didn't see any load greater than 6000 pounds. Whereas she usually sees them 6000-8000 pounds.

She said nobody verify the locks after the loaders lock them. She said if a lock was broken they would tell her or a supervisor.

She said Drex went up on the airplane; Delane went on and off; all else normal movements.

She said inbound flight FCM was in error – with a can in 1 and 18.

NOTE: she should have sheet

She doesn't have a load sheet.

She said all cans go in with nets forward. She said all the doors face forward.

She said she has caught previously straps that were undone and they catch on the loader. She said last week there were two broken locks.

Interview: Richard W Knippschild, Load Planner, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1455
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

Employed by MAS for 4 ½ years and is presently the "leadman".

He does the load plan and certifies new employees on new equipment. He has the general responsibility to ensure that everything gets done right. On the evening of the accident he clocked in and then got with the "build up manager", Jim Alder and set up his paperwork. He takes Jim's numbers and transfers them to his paperwork, Delane gets the numbers from him and transfers them to her sheet.

Once the load plan is done he makes copies. He then takes the load plan and any Hazmat information to the crew. He also checks the belly area to ensure the bins are closed. He decides where the cans are loaded. He knows that #1,2, and 18 must be pallets and he ensures that occurs unless there is a void. They will occasionally void position two. He ensures the cans stay within zone weights, in cg. He said the Emery and ramp supervisor check airworthiness of ULDs.

The load was lighter than normal. It is usually around 75,000 pounds and this one was 61,000 pounds. The CG was a little tail heavier than usual because the last 3 or 4 cans were light -- but it definitely within limits. His target CG is 23%. This one was 27%. He has seen 29 or 30% and it was OK.

In response to questions he offered the following: The crew performs the official weight and balance on the computer. He didn't see any loading topside. He watched them warm up the engines. He gave the paperwork to Delane. He received two weeks of training from Mike and Bob Phelan. He said he received 2 weeks of OJT for load plan and no recurrent training. He worked under supervision for a while. He did practice problems and then was certified. He takes no proficiency training in weight and balance and doesn't demonstrate proficiency.

In response to the question as to whether there was any check and balance on the weight recordation, he said that he looks at the weight while it's on the scale at the same time as Jim. He transfers the can scale weight to the load sheet.

He plans the load based on his overall experience and uses the Christmas tree to check. The A pit was not changed on this flight, 3 pieces of long freight were placed in C pit. There were 2-3 cases of mail, about 1500#, put in C pit. There was nothing in B or D pit. He described the long freight as 2 wooden boxes and one cardboard box. He described the long freight as 8 feet long.

All three crewmembers looked normal in all regards. Delane goes up and gets the

paperwork from the cockpit. The start appeared normal. He rarely looks topside, he looks at the belly. Nets were put up in the belly. The load coming in was normal, they downloaded and started loading. The load in A pit was in the forward area – 1100 pounds came in and not touched.

He once had a problem with the weight and balance when he exceeded a zone limit and they had to move some belly freight. Usually 3 or 4 containers are already built when he or Jim arrive. There were 4 done when he arrived on Wednesday night. They were mail cans. Jim does the weighing. He never recalled seeing Jim make a mistake – the scale is right there. The flyaway kit had 2 wheels and one brake assembly. The loaders remove the tail stand and it remains at the airport.

He said he would notice if the tailstand was close to the ground and it wasn't.

Interview: Rudy Hahn, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1535
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

Employed by Miami Aircraft Support as a Cargo Tech for two years.

He downloads and uploads cargo. On the evening of the accident he put cones around the aircraft, then opened the C pit and downloaded and uploaded it. He then moved the cones and put one of the sill guards in the A pit and connected the net. Someone else put the other sill guard in the pit.

He knew what to put in C pit because 2 cans worth of stuff and 5-6 pieces of long freight were delivered to the pit. He learned to drive the belt loader, tug, and operate the GPU and aristocrat cart.

He heard one of the engines sputter on start. It didn't start smoothly. It was one of the engines on the left side. He saw the aircraft move, taxi down the ramp and takeoff. He didn't see any smoke. He saw it make a left turn after takeoff that appeared normal. Sounded normal. After he left, he saw black smoke but didn't know the aircraft crashed until he saw it on television.

In response to questions he offered the additional information: The engine which sputtered seemed to sputter for a few seconds and then run normally. The aircraft lifted off even with the Emery building. Long pieces are loaded first and then cargo boxes are loaded on top. The takeoff noise sounded normal. The long freight was put directly on the floor. The belly freight is loaded and is not strapped down. He locked the A pit door but not the C pit door. He described the long freight as 6 inches by 6 inches.

Interview: Frank L Nell, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1615
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

Employed by MAS for two months as a Cargo Tech. He previously worked for Kitty Hawk.

He generally works on top, or GPU, or airstart, or tail.

On Wednesday he worked the airstart and on top. He helped download 17 positions and upload 18 positions. The heaviest position was approximately 5000 pounds. The load was lighter than normal. It was a "light night."

When he was in position 9 he heard a sound like a lock coming down. He heard the noise after position 15 or 14 were locked in. He did not find the cause of the sound but he only looked at the front 5 locks and all were up. He mentioned it to Winston who also heard the sound. There was no problem loading or off loading. When he was finished with the loading he watched the aircraft taxi out and recalled the nose wheel leaving the ground. The aircraft appeared to rotate in front off him. He ran the APU during engine start. The start was normal. He observed the cargo door close normally. He didn't know the PSI on the aircart. He started with Kitty Hawk in August. He said it was a normal start. He said the liftoff was more in front, slightly left.

He said the sound sounded like metal on metal. He said the floor was normal and there were no soft spots. Nothing was jammed. The nets on the pallets were tight. Saw the main door close and Debbie shut the vent door.

Interview: Jeff D. Battise, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1630
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

Job Start Date: December 1999.

Jeff worked Wednesday evening, Feb. 16, 2000. Jeff loads and unloads cargo usually in the belly compartments. This particular night, Jeff drove the belt loader and put "3 cans" out by the wings. Sometime in the process, Jeff put the tailstand in place. Jeff unloaded the "C". This is the compartment aft of the center wing section. Jeff loaded long crates into the "C" compartment. This long freight went aft of the door. The long freight was "normally tossed" but did not bang cargo into the aircraft structure. Regular mail was loaded after the long freight. Jeff put the net up and secured the net on the left. Jeff said that Rick put the net up and secured the net on the right. Jeff said that Rick shut the door. Jeff drove the offload freight back to the dock. Jeff said that he did not take the tail stand off and did not know who did this task. The tailstand was put back on the "walking belt loader". Normally Jeff removes the tailstand and puts it on his belt loader. Jeff said that the airplane "moved like it normally does". Jeff recalls 3 tires at front of "C" pit.

He said C pit was 30 percent boxes and bags. He said long pieces were loaded aft of the net and mail was loaded both sides of the net.

He said he watched the takeoff and it was towards his right side as he was looking at the runway.

He said his training was OJT. He was not specifically trained on the equipment. No hazmat training.

He said it was a normal engine start there was no smoke. He didn't notice any up or down movement of the airplane while it was taxiing.

Interview:	Gary L. Crane, Station Manager, Miami Aircraft Support Brooks Burdette, Legal Counsel
Date:	February 18, 2000
Time:	1650
Location:	Mather Department of Airport Building
Present:	Operations group (minus Byrne)

Service History: 4+ years

This is Gary's first job in aviation. Gary worked Wednesday evening, Feb. 16, 2000. Gary is responsible for running the administrative part of the service. He said he oversees and participates in the operations, he interfaces with customers, helps load, coordinates training. Gary drove the forklift that night. Gary took the ULDs out from the warehouse and aligned the ULD slave racks.

Gary mentioned that two ULDs were bumped from the aircraft that evening. Gary mentioned that the "operation went extremely smooth". During the loading Gary watches the nose gear in relation to the tailstand. He said he didn't look at the tailstand after the loading was complete. He did not go topside during the loading.

He said the engine start was normal and it was a normal taxi.

Gary stated that everyone must have annual HAZMAT training. He said the hazmat test is Emery's test. There is also a quarterly equipment training that goes over basics, operations, and items to check. Gary stated that the Loading Manual handles the net requirements pertaining to loads that the net can handle and the limits for net damage. Gary stated that there is monthly training on the Loading Manual for supervisors – Delane and Rick. He said during training they address the consequences of improper loading. He said he holds meetings with the cargo techs.

He said he also works with Kitty Hawk and provides pushout service for Airborne Express and occasional charters.

He said the ULDs were in good shape with no obvious damage. He said they have no regular maintenance program for the ULDs.

Interview: Marvin Williams, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 18, 2000
Time: 1940
Location: Mather Department of Airport Building
Present: Operations group (minus Byrne)

Job Start Date: Feb. 7, 2000

Prior to this job Marvin worked with Kitty Hawk since July 1999. Marvin worked Wednesday evening, Feb. 16, 2000. He checked in at 1700 and the plane arrived at 1815. Marvin hooked up the GPU and worked the topside to download and upload freight.

Marvin stated that upon the airplane's arrival, aircraft position 2 had a void and 15 cans and 2 flats were downloaded. The upload consisted of 15 cans and 3 flats. The flats were put in aircraft positions 1,2 and 18. That night the operations went "smooth". All of the Cargo Techs working topside contributed with raising the locks. There were 5 guys topside. Each put locks up.

He said the engine start was normal and there were no unusual noises.

The pallets and containers had "no damage". Marvin got his training at Kitty Hawk and was checked out by MAS for tug and GPU operation. Marvin stated that engagement of the locks were cross checked amongst the Cargo Techs. That night, Marvin stated that the load was not all that heavy. The freight on the pallet for position 18 was waist high, it wasn't all that heavy. He said the far rightside lock (aft looking forward) was full up. He was pushing 17 or 16 when he ran over that lock. He said it was the only loud noise he heard and he just went back and pushed it down. An extra Cargo Tech was used that night on the topside.

Pallets – the smaller one didn't have to be put under rails you just had to line it up and push. By smaller one he was referring to the ULD put in position 18. Marvin said they didn't have any problems with the cans. He said "it's hard to have trouble when you have five guys up there." He said none of the positions was hard to lock.

Marvin did not wear earplugs that evening during loading but said that some Cargo Techs do wear them. He said he didn't Marvin stated that as the aircraft took off it "went up like normal". The lift off was to his right.

He said the 18 positions were normally engaged and they pushed them back at a normal speed which is slow.

He didn't know how they went over the lock and it stayed up. He heard it – a loud pop as they went over it. He didn't see it up before they went over it.

Interview: Jeffrey B. Woppert, Cargo Tech, Miami Aircraft Support
Brooks Burdette, Legal Counsel
Date: February 19, 2000
Time: 0815
Location: Mather Department of Airport Building
Present: Operations group

Job Start Date: Early Dec. 1999

Woppert worked Wed. night February 16, 2000. He normally loads and unloads the cargo. He arrived at the ramp about 1700 and the airplane came in about 1800.

Woppert stated that he along with Jeff installed the tailstand. Woppert put out the cones marking the aircraft. Short one cone, he had to get a cone from Kitty Hawk. An arrangement is in place to borrow equipment from Kitty Hawk.

Woppert worked the "C" pit. The cargo door was opened and the belt loader was moved up to the aircraft. Two cans were placed next to the loader. He and Rudy put cargo off the loader and into the cans. Gary and Joe picked up the cans.

Two pieces of long freight approximately 12'-13' was loaded aft of the door in the "C" pit. This long freight was light on one end and heavy (approx. 80-100 lbs.) on the other end. He said he couldn't hold it for long periods of time. The heavy end was oriented facing forward once loaded. During the loading Rick assisted while Butch went upstairs. Jeff B. was inside the "C" pit. He said they had some trouble getting the long freight in. During the loading of the long freight, the load was bumped up against the airplane hatch. Woppert was pushing the long freight from the ground. Mail was also loaded into C pit. He said that that there wasn't a lot of mail and estimated it was the equivalent of 3 containers - the area can take 7. He said he and Rudy were feeding general mail in boxes. He took the mail cans back to the loading dock.

He then helped in the air start. The engines started normally and there was no unusual smoke. No special noises. He disconnected the air hose and closed the flap. He then went

Jeff W. did not enter aircraft during the whole time of operation. Jeff W. wears headsets during that night's load operations and did not hear any unusual sounds when loading C pit.

He said the only problem was the freight 12 to 15 feet long. They had to take a piece of wood off it to get it in. He said it was hard to get it into the door. He said that Rick, Butch, and Jeff were in the airplane and Rudy and he (Woppert) were on the ground pushing from the bottom.

He did not work topside.

Jeff W. mentioned that a work week consists a half day Monday evening, six hour full days Tuesday through Friday, and a half day Saturday morning. His specific hours are 0600 to 0900 and 1700 to 2000. He did not have a second job.

He was asked about training. He said Ron Smith took him out and showed him the equipment and checked off on a sheet. He said his training was OJT. He was in the Air Force ten years as a military police. He has no previous experience working on airplanes.

He didn't go into C pit so he said he didn't know what was in C pit other than the cargo loaded. H

Jeff W. stated that most nights they load long freight.

Jeff W. stated that he took a HAZMAT training course.

Jeff W. did not see the entire takeoff but saw the aircraft bank left into the clouds upon departure. He wasn't sure about that though. He said the engines have a normal whining sound and that was routine in this case. He said it was a total normal operation.

He said he was standing at the gate and the airplane took off somewhere to his left.

He did not remove tailstand. He was working the nose area at the engine start. He wasn't really aware of the nose strut. He was taught to pay attention to the tail stand as if that comes close to touching the ground it means a loading problem. In this case it wasn't near touching the ground.

He normally works on the bottom of the aircraft. He said the flow was normal no breaks in action and he described it as a smooth operation.

He said they sometimes borrow ground equipment from Kitty Hawk, he wasn't sure whether they borrow locks or other hardware – said that the mechanic would do that.

He has been loading the belly since he started working. Most nights they get long freight. They sometimes have difficulty getting it in. That night they took a lot of force to get it into the airplane. The were pushing and pulling with 4 people.

Reached up normal level to get the air-hose off.

He said that he took a test from MAS for his hazmat training.

Interview: Robert L Jessup, Captain, Emery Worldwide Airlines
Date: February 19, 2000
Time: 1010
Location: Emery Worldwide, Mather Airport, California
Present: Operations group

Employed by Emery Worldwide Airlines as a DC-8 Captain based in RNO. Been an employee for 11 years. He has approximately 8000 hours with 7000 in the DC-8. He was previously a mechanic with TWA, Flying Tigers, and in general aviation. He was then a flight engineer for several years and began at Emery as a flight engineer.

He flew the flight from Dayton to Reno on February 16. He got off at RNO.
Kevin Stables flew as a deadheader from DAY-RNO and as Captain from RNO-Mather.
Terry Hill was his first officer from DAY-RNO and flew as FO from Reno to Mather. Don Maher was his flight engineer from DAY-RNO and got off in Reno.

The aircraft seemed to be in better shape than other aircraft. There was nothing unusual about the aircraft. The first officer flew the leg to RNO. Jessup said there did not appear to be any flight control problems. He said he had flown the airplane before in the recent past and said it was a good flying airplane. He said it was a "detailed, clean aircraft." They wrote up the number 2 nav because the aural tone was inoperative. Didn't recall any MEL items.

He did not know the PIC well. He only knew him casually.

Before the flight from DAY he sat in Dayton for 8 hours. Maintenance had resealed a window. The window heat on the captain side was MEL'd.

He saw Captain Stables during the day and noticed that he had apparently worked out because he saw him in a sweat at one time. He said he was feeling good. He thought he heard Captain Stables say that he planned to tell the company that he would be stopping at DAY due to the long day. Jessup said Stables was unhappy about the delay.

Jessup said captain Stables slept on the plane coming out. They had never flown together. Stables was based at Reno and there are four crews based at Reno. He has flown with Hill a couple of times, but it has been a while. Hill did a good job flying. Hill had an occasion to need to make a go around and do holding and he did well. Hill seemed to sleep all day in the hub.

In response to questions he added the following:
He has not ever experienced a cargo shift except once an empty container rolled and the heard it and rejected the takeoff. They only had a few containers on the aircraft at the time.

He occasionally does a preflight of the cabin area. The flight engineer mostly does the

cabin and the threshold locks by the doorway and cargo door.

He has never had loading problems but has had a couple of "out of limits" load. The out of limits load was discovered after loading had begun.

The aircraft was OK when he left it at RNO.

He said normally the whole crew would have gotten off in RNO but the first officer continued on to MHR. They were scheduled to depart DAY at 1038z and actually left about 1800-1900z. They went to RNO instead of MHR.

He said Emery provides a hotel if they get to RNO early to start a trip.

He said the flight control checks on the ground at DAY were normal. The airplane rotated normally, the engine start was normal. On takeoff, he recalls hearing Hill adjusting the trim.

He said he likes to check the 9 G net.

He mentioned that Delane is friendly with the flightcrew and often takes food orders for returning crews.

He has not seen significant loading problems with Emery. He mentioned that loaders can make mistakes but crews do catch them and make corrections. He said if the CG is within limits but is too far out of his personal comfort zone he will have it adjusted.

He said no catering by the company was provided from DAY to RNO. He said engine starts, nothing unusual.

The group interviewed Jessup after he had flown the inbound trip to MHR on N500MH.

Interview: Larry L. Younger, Cargo Tech, Miami Aircraft Support
Date: February 19, 2000
Time: 1105
Location: Mather Department of Airport Building
Present: Operations group

Service History: 1.5 years

Larry was working Wed. night February 16, 2000.

Larry was working the topside.

Larry's account of the evening of the crash started with clocking in. He then built up a "mail can" then 15 minutes went buy and the aircraft arrived. Larry pushed out the stairs. Larry got the door sills. One can was unloaded prior to the installation of the door sills.

They downloaded the airplane, waited for 18 to come in. They loaded the airplane. Larry took the door sills off and put them on the K loader.

After the loading was completed, while Larry was waiting to pull back the stairs, Larry recalls a 2 pilots and a mechanic looking at the left wing for about 10 or 15 minutes with a flashlight. He thought they were going to have a mechanical delay. The area focused upon by the group was the aft side of the wing and inboard from the tip. Larry describes the mechanic as looking from the back side of the "flap" forward. The pilot then got back on the airplane. He did not hear what they were talking about. He said they were looking and pointing with the flashlight. He doesn't think anyone else saw the pilots and the mechanic by the wing.

Larry pulled the stairs away.

As far as the download, everything came off except Position 1 which was untouched.

Pallets were loaded in Positions 1, 2 and 18. The outbound load was lighter than normal. The pallet placed in Position 18 was chest high and he could clearly see over it. Larry is 6'4". The freight on the pallet in Position 1 was "real low" with HAZMAT. Larry described this pallet as low enough to sit on. The freight on the pallet in Position 2 was at his waistline.

Larry stated the he received training on the K-loader, marshaling in & out of the aircraft, tugs and dollies (tugs no longer used), and forklifts. Larry stated he took multiple choice HAZMAT test. He said there was no book for the test but he had a book to study. His training was OJT and he was trained on Saturdays.

This night the load was not heavy. Larry stated, "it was a breeze, cans just zipped

past". There were no problems with any locks that night.

He was asked about who is responsible for designating the proper position for the ULD's and ensuring that the locks are locked. He said the K loader driver tells him the position of the ULD and he puts it in the position. He said he is responsible for the positions, and added that they all are responsible because they all were pushing cans back. He said it was not a company assigned responsibility. He said he everyone is responsible to lock the locks but he has taken a personal responsibility for all of the locks. That night he has no recollection of any problems with any locks. He said if there are problems with the locks he goes to the supervisor and tells them.

Engine start was normal and there was no smoke. He was not wearing earplugs at the time. The only thing that was not normal was the mechanic by the wing.

Larry saw a normal takeoff the airplane went up and it looked routine. He said it made a left turn.

Larry noticed "A" pit was full. He only took the sills out.

He said maintenance and one pilot stayed by the wing. The second pilot came down and went around to where they were. They were pointing. They were out by the wing more – toward the tip.

Hazmat on the pallet in Position 1 was more on the left.

The freight on the pallet in Position 18 covered all of the cookie sheet. This pallet was a regular sized pallet.

Larry did not notice any can running over a raised lock.

Larry does not wear earplugs and did not hear a popping noise during loading and was not asked about it at the time.

There were no clouds that night. He said the airplane took off to his right and he was by the shed. He said it was normal loud as usual.

Larry said the cans were moved a faster than normal walk but not running. They impacted the locks pretty solidly.

The mechanic had a tall ladder and was working on the back side of the wing. A pilot came over and then another pilot. They were working almost to the tip of the wing. They were outside of the outside engine. He showed on a model that they were looking up at the outboard third of the wing. They used a tall ladder. He stated that he saw an oval access panel that he gestured to the group as about 12 inches long. The screws had been removed and the panel had swung to the side.

CRASH

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 Page 1 23:05:37

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:05:32

Emery	IATA
	(Type) (Number) (Owner) P A G 33214 NW

Serviceability Code SER Date Entered Service 120399 Leasing Code

Current Movement	Location DAMAGED	Date 21700	Vehicle 017/TLP	
**********	Location MHR	Date 21700	Vehicle EB017	
* Past *	EB017	21700	--------	
* Five *	MHR	20200	EB017	
* Movements *	EB017	20200	--------	
**********	RNO	11800	EB018	

Temporary Movement Number Tare Weight 265

CMD 1 - Return to menu

Display Device . . . . . : @PADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:05:02

Emery	IATA
	(Type) (Number) (Owner)
	P A G 1049 JG

Serviceability Code SER Date Entered Service 10500 Leasing Code

Current Movement Location DAMAGED Date 21700 Vehicle 017/TLP

Location	MHR	Date	21700	Vehicle EB017
Past Five Movements	EB017		21700	--------
	MHR		20900	EB018
	EB018		20900	--------
	HDY		20900	EB013

Temporary Movement Number Tare Weight 265

CMD 1 - Return to menu

5769SS1 V4R3M0 980729 HUB38A 02/20/00 23:02:28

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:02:18

Emery	IATA		
	(Type)	(Number)	(Owner)
	AAA	139Z	EB

erviceability Code SER Date Entered Service 71486 Leasing Code

Current Movement	Location	DAMAGED	Date	21700	Vehicle 017/TLP
**********	Location	MHR	Date	21700	Vehicle EB017
Past *		EB017		21700	--------
Five *		MHR		20900	OAKMHRBM
Movements *		OAK		20800	TROAKI40
**********		TROAKI40		20800	--------

Tare Weight 595

CMD 1 - Return to menu

Print Key Output HUB38A Page 1
5769551 V4R3M0 980729 02/21/00 00:05:49

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 00:05:44

Emery

IATA

(Type)	(Number)	(Owner)
A A A	3187Z	EB

Serviceability Code SER Date Entered Service 91098 Leasing Code

Current Movement	Location MHR	Date 21700	Vehicle EB017	
**********	Location EB017	Date 21700	Vehicle --------	
* Past *	MHR	21500		OAKMHRMS
* Five *	OAK	21200		SJCOAK
* Movements *	SJC	21200		EB510
**********	EB510	21200		--------

Tare Weight 555

CMD 1 - Return to menu

Feb 20 2000 19:15 P.01

Display Device . . . . . : QPADEV0007
User . . . . . : T5_SYSCO_P

2/20/00 Inquiry By ULD Number 23:03:30

Emery	IATA
	(Type) (Number) (Owner)
	AAA 30884 EB

Serviceability Code SER Date Entered Service 12498 Leasing Code

Current Movement	Location	Date	Vehicle
	DAMAGED	21700	017/TLP
**********	MHR	21700	EB017
* Past *	EB017	21700	---------
* Five *	MHR	21200	EB018
* Movements *	EB018	21200	---------
**********	HDY	21100	EB017

Tare Weight 600

CMD 1 - Return to menu

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 Page 1 23:04:28

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:04:19

Emery	IATA
	(Type) (Number) (Owner) A A A 32028 EB

Serviceability Code SER Date Entered Service 81898 Leasing Code

Current Movement	Location	Date	Vehicle
	DAMAGED	21700	017/TLP
**********	MHR	21700	EB017
* Past *	EB017	21700	--------
* Five *	MHR	21500	EB018
* Movements *	EB018	21500	--------
**********	HDY	21500	EB203

Tare Weight 555

CMD 1 - Return to menu

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:04:41

Emery	IATA
	(Type) (Number) (Owner) A A A 4413 EB

Serviceability Code SER Date Entered Service 30597 Leasing Code

Current Movement	Location DAMAGED	Date 21700	Vehicle 017/TLP
**********	Location MHR	Date 21700	Vehicle EB017
* Past *	EB017	21700	--------
* Five *	MHR	21600	OAKMHRLV
* Movements *	OAK	21600	EB382
**********	EB382	21500	--------

Tare Weight 580

CMD 1 - Return to menu

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCD_P

2/20/00 Inquiry By ULD Number 23:02:06

Emery	IATA
	(Type) (Number) (Owner) A A A 1222 EB

Serviceability Code SER Date Entered Service 101196 Leasing Code

Current Movement Location DAMAGED Date 21700 Vehicle 017/TLP

**********	Location MHR	Date 21700	Vehicle EB017
* Past *	EB017	21700	---------
* Five *	MHR	21100	EB018
* Movements *	EB018	21100	---------
**********	HDY	21000	EB381

Tare Weight 350

CMD 1 - Return to menu

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 Page I 23:03:00

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:04:52

Emery	IATA
	(Type) (Number) (Owner) A A A 4958 EB

Serviceability Code SER Date Entered Service 30778 Leasing Code

Current Movement	Location DAMAGED	Date 21700	Vehicle 017/TLP	
**********	Location MHR	Date 21700	Vehicle EB017	
* Past *	EB017	21700	--------	
* Five *	MHR	21500	EB017	
* Movements *	EB017	21500	--------	
**********	RNO	21000	EB018	

Tare Weight 560

CMD I - Return to menu

Display Device . . . . . : QPADEV0007
User . . . . . : T5_SYSCO_P

2/20/00 Inquiry By ULD Number 23:03:42

Emery	IATA
	(Type) (Number) (Owner)
	AAA 3126 EB

Serviceability Code SER Date Entered Service 52197 Leasing Code

Current Movement	Location	Date	Vehicle
	DAMAGED	21700	017/TLP
**********	MHR	21700	EB017
* Past *	EB017	21700	---------
* Five *	MHR	20900	OAKMHRBM
* Movements *	OAK	20500	TROAKI40
**********	TROAKI40	20500	---------

Tare Weight 645

CMD 1 - Return to menu

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:02:45

Emery	IATA
	(Type) (Number) (Owner) A A A 30153 EB

Serviceability Code SER Date Entered Service 102297 Leasing Code

Current Movement	Location	Date	Vehicle
	DAMAGED	21700	017/TLP
**********	MHR	21700	EB017
* Past *	EB017	21700	--------
* Five *	RND	21500	EB018
* Movements *	EB018	21500	--------
**********	MHR	21500	OAKMHRKF

Tare Weight 585

CMD 1 - Return to menu

Print Key Output

5769561 V4R3M0 980729 HUB38A 02/20/00 Page 1 23:03:29

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:03:17

Emery	IATA
	(Type) (Number) (Owner) A A A 30825 EB

Serviceability Code SER Date Entered Service 122497 Leasing Code

Current Movement	Location	Date	Vehicle
DAMAGED		21700	017/TLP
MHR		21700	EB017
EB017		21700	--------
MHR		21500	MHRINVLV
OAK		21300	EB382
EB382		21200	--------

Past Five Movements

Tare Weight 565

CMD 1 - Return to menu

Feb 20 2000 18:23 P.07

Print Key Output

5769551 V4R3M0 980729 HUB38A 02/20/00 Page 1 23:04:40

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:04:30

Emery	IATA
	(Type) (Number) (Owner) A A A 3257 EB

Serviceability Code SER Date Entered Service 30793 Leasing Code

Current Movement	Location	Date	Vehicle
	DAMAGED	21700	017/TLP
**********	MHR	21700	EB017
* Past *	EB017	21700	--------
* Five *	MHR	21600	DAKMHRLV
* Movements *	DAK	21600	EB382
**********	EB382	21500	--------

Tare Weight 380

CMD 1 - Return to menu

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 23:02:38 Page 1

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:02:30

Emery	IATA
	(Type) (Number) (Owner) A A A 2411 EB

Serviceability Code SER Date Entered Service 91486 Leasing Code

Current Movement	Location DAMAGED	Date 21700	Vehicle 017/TLP	
**********	Location MHR	Date 21700	Vehicle EB017	
* Past *	EB017	21700	--------	
* Five *	RNO	21500	EB018	
* Movements *	EB018	21500	--------	
**********	MHR	21500	OAKMHRKF	

Tare Weight 590

CMD 1 - Return to menu

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 Page 1
23:03:15

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:03:01

Emery	IATA
	(Type) (Number) (Owner) A A A 30568 EB

Serviceability Code SER Date Entered Service 112997 Leasing Code

Current Movement	Location DAMAGED	Date 21700	Vehicle 017/TLP	
**********	Location MHR	Date 21700	Vehicle EB017	
* Past *	EB017	21700	--------	
* Five *	MHR	21500	EB017	
* Movements *	EB017	21500	--------	
**********	RNO	21000	EB018	

Tare Weight 570

CMD 1 - Return to menu

Print Key Output

5769SS1 V4R3M0 980729 HUB38A 02/20/00 Page 1 23:04:05

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:03:53

Emery	IATA
	(Type) (Number) (Owner) A A A 31399 EB

Serviceability Code SER Date Entered Service 81998 Leasing Code

Current Movement	Location DAMAGED	Date	21700	Vehicle 017/TLP
**********	Location MHR	Date	21700	Vehicle EB017
* Past *	EB017		21700	--------
* Five *	MHR		21700	017FCMMG -
* Movements *	HDY		21200	EB309 -
**********	EB309		21200	--------

Tare Weight 670

CMD 1 - Return to menu

he describes this as a PN

Print Key Output

5769551 V4R3M0 980729 HUB38A 02/21/00 Page 1 00:05:42

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 00:05:26

Emery	IATA		
	(Type)	(Number)	(Owner)
	P A G	17396	JG

Serviceability Code SER Date Entered Service 110498 Leasing Code M

Current Movement	Location	MHR	Date	21700	Vehicle	EB017
**********	Location	EB017	Date	21700	Vehicle	--------
* Past *		RND		21500		EB018
* Five *		EB018		21500		--------
* Movements *		HDY		21500		EB115
**********		EB115		21500		--------

Temporary Movement Number Tare Weight 682

CMD 1 - Return to menu

which is in our system.

Display Device . . . . . : QPADEV0007
User . . . . . : TS_SYSCO_P

2/20/00 Inquiry By ULD Number 23:05:26

Emery	IATA		
	(Type)	(Number)	(Owner)
	P A G	30814	JG

Serviceability Code SER Date Entered Service 20899 Leasing Code L

Current Movement Location DAMAGED Date 21700 Vehicle 017/TLP

**********	Location MHR	Date 21700	Vehicle EB017
* Past *	EB017	21700	--------
* Five *	RND	21500	EB018
* Movements *	EB018	21500	--------
**********	MHR	21200	EB018

Temporary Movement Number Tare Weight 265

CMD 1 - Return to menu