INTERNATIONAL ASSOCIATION of MACHINISTS and

AEROSPACE WORKERS, AFL-CIO, CLC

AIR TRANSPORT

DISTRICT LODGE 142

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KANSAS CITY, MISSOURI, U.S.A.

ANALYSIS AND RECOMMENDATIONS REGARDING

T.W.A. FLIGHT 800

JULY 17, 1996

Submitted by:

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2. Introduction:

1.The International Association of Machinists and Aerospace Workers as a party to the investigation of the accident involving a Boeing 747-131, N93119 operated as TWA Flight 800 between Kennedy International Airport, Jamaica New York and Paris France on the evening of July 17, 1996, submit these findings of our investigation.

2.We wish to commend the staff, management, and board members for their cooperation during this investigation. The flexibility exhibited during the investigation, especially since this investigation was the longest to date, and other investigations were ongoing.

3.The fact that the media has put and other groups continue to bring pressure on the board, we find it very comforting that the focus was not changed due to these forces.

4.We understand steps have been taken to prevent reoccurrence of other agencies interference with the investigative process and we certainly hope this never occurs again.

5. We must comment on the Federal Bureau of Investigation and United States Attorney of Southern New York involvement as it pertains to the IAMAW. We were judged to be a possible criminal element, and not worthy of participation in this investigation. We feel that our expertise was unwelcome and not wanted by the FBI. It wasn't until all avenues were exhausted that the FBI requested our help. The threats made during the first two weeks of the investigation were unwarranted and are unforgettable!

6.We felt then and continue to feel that if the investigation had been conducted per established protocol, possibly we could have completed it earlier.

3. Systems:

1. All systems and components examined have been found to be in working order and operating within their operational limits as certified. Examination of individual components confirms this assessment. Observed damage to electrical connectors to components was the result of hydraulic fluid leakage. "Skydrol" does destroy everything that it comes in contact with! The replacement of this type of fluid has not been considered to be effective.

4. Aircraft Wiring:

1.We conclude that the existing wiring recovered from flight 800 wreckage does not exhibit any evidence of improper maintenance or any malfunction that lead to a spark or other discrepancy. Examination indicates that the wiring was airworthy and safe for flight.

2 Examination indicating that a wiring bundle exhibited arcing is challenged for the following. The wiring showed evidence of tension type failure and fire damage in the area indicates that fire was in the immediate area as other wiring exhibited fire damage. Protocol was not followed, all members of the group do not remember discussing this wire and including it in their field notes. The wire has not been discovered!

3.Evidence observed in other aircraft examined as part as the investigation has exhibited poor to unsatisfactory maintenance practices. No evidence of improper, poor, or incomplete maintenance was found in the wreckage of the accident aircraft.

4.The manufacturer and operator for various reasons select wiring type used. While economics does have a role in the selection, safety, and durability have equal or a more overbearing role.

5.TWA's Federally approved inspection procedures, are visual and detailed with an area and specific item concept.[1] Area inspection constitutes a detailed inspection of areas exposed or visible through routine open up. Specific Item constitutes a detailed inspection of a specific item. It is limited to the defined item(s) and does not cover the associated area. Engineering in concert with Inspection management define what will be inspected, how and when.

6.The survey conducted by the investigation of different aircraft, was performed in the latter matter. Specific item inspection did discover problem areas and conditions. Only metal shavings imbedded in sealant from a previous field repair was discovered. None was known to be associated directly with this accident.

7.The findings were confined to one aircraft type, operation, condition, or manufacturer. Potential problems can be identified through out the world's fleet of commercial aircraft both in the operation, maintenance, and design, not to mention the manufacturing of all aircraft by all manufacturers. No live operational aircraft were examined. No examination was accomplished during an actual maintenance check. Therefore we express the concern that any findings are subject to questions.

[1] Trans World Airlines General Policy and Procedures Manual, Chapter 2-1-5, Page 12, May 15/94.

8. The inspection of aging wiring, will contribute to wear, and damage of existing wiring installations in commercial aircraft. While military aircraft and commercial aircraft share similar designs, they are operated in completely different environments. Generally military aircraft do not operate anywhere near the cyclical and hours of commercial aircraft for obvious reasons. The experience level of maintenance and engineering is not comparable. The commercial industry sees far more discrepancies and problems than the military unless the military is engaged in conflict.

9.Wiring covering types is used for many reasons, the one that remains paramount continues to be safety! Safety is the beginning base line in all selections. Serviceability, and economics follow.

10.The one wire noted as having evidence of arching[2], remains in dispute. Further inspection of wire bundle 332 on March 14, 2000, revealed no evidence of arching or chafing. The members disagree as to the actual condition. This wire is not mentioned in the field notes; only a notation by one participates on a drawing. Protocol demands that findings are to be witness by a majority if not the entire participating group. Therefore we find that any mention of reliance on this item be dismissed.

5. Fuel Measuring:

1. Examinations of the FQIS systems especially the measuring probes, the problem of sulfate build up has been noted. No studies have indicated with certainty that this problem will cause a spark that could lead to an explosion. Jet-A commonly used in commercial aviation has less of a chance to cause an explosion. The maintenance noted that could cause problems, i.e. crimping, wire stamping, etc. has not been proven to be widespread in the industry.

2. No viable solution has been advanced to correct this condition. Nor has it been proven that the condition is a problem! Inaccurate measurements are an indication of this problem, and normal maintenance entries and corrections remove the subject probes.

6. Fuel

1. Studies of the fuel actually aboard the aircraft at the time of the accident do not suggest any abnormal conditions.[3]

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[2] Attachment of Systems Group Member Attendance Summary And Groupmember Statements About "Evidence Of Arching" Noted On Bundle W332 Wires.

[3] Powerplants Exhibits 8I, 8O, and 8P.

7. Fuel Tank

1. Fuel tanks are vessels designed to store, and transfer fuel for use as a propellant. The very nature makes them dangerous in operation and when maintenance is performed in and around them. The response of the Federal Aviation Administration in issuing Airworthiness Directives and Notices of Proposed Rulemaking actions do address concerns that require attention.[4] The U.S. Air Force study concerning the use of ACM's on the ground serves some idea as to the conditions created while running these units on the ground for passenger convenience only![5] Overall the use of one or two ACM's versus four for essential military hardware is not reflective of the investigation's focus. Maintenance inside in-service aircraft is difficult and restrictive. Clear instructions with measurable goals will be required to attain the desired results.

8. Fire and Explosion:

1. An explosion did occur within the center fuel tank during TWA Flight 800. We have not been a party to any evidence, wreckage, or tests that could conclude that the center tank explosion was and is the primary contributor to this accident. With a "low-order" explosion as this was believed to be, no report has been produced to confirm the force expected to be generated. This must be identified in order to confirm the force required to severe the keel beam of the aircraft in the manner that it was.

2. While studies have suggested that the explosion traveled at an angel that keep it from striking the front bulkhead. The damage to the potable water bottles and the failure of the cargo compartment fire bottles to open indicates that no fire or heat reached this area. This suggests that if the explosion did occur as suggested, did it produce enough energy to breach the fuselage?

3. In reviewing aspects that may be of significance as to the Investigation of TWA Flight 800, the IAM finds two that must be reviewed closer. The first is the Fire And Explosion Group Field Notes On Splatter Deposits and the second, the damage to the L3 door area.

The Fire And Explosion Group Field Notes On Splatter Deposits in paragraph 8.2 state: "The temperatures associated with the deposit generation process exceeded the auto-ignition temperature of the fuel in the WCS, possibly by an appreciable margin. Scenario 3 therefore raised the question as to whether an overheat that had generated the deposit could also have caused the WCS initial event."

In addition to the field notes is Tony Cable's AAIB report on WCS Splatter Deposits. In the report Inspector Cable states in paragraph 4.1, " The deposit was generally continuous across fractures in the WCS top skin. In most cases parts of individual streaks could be found on either side of the fracture. There were some signs of possible discontinuity across a small length the fracture between CW114 and CW164, at

[4] AD 97-03-13, and NPRM 96-NM-57-AD
[5] Boeing Center Wing Tank Study

Str 30, LBL 90-92, but the evidence was in conclusive." The significance of Inspector Cable's report is that the deposits were not found on the fractures surfaces. This supports the idea that an event could have occurred prior to the WCS initial event and may have initiated the WCS event.

In paragraph 8.3 of Inspector Cable's report 12 suggestions are made that may assist in establishing the way in which the deposits occurred. These suggestions were never addressed and answered.

The damage to the L3 door area is significant for two reasons. The first is relative proximity of the L3 door to the splatter deposits on WCS and the second is the damage to areas near the L3 door that appear to originate from the exterior of the aircraft.

The following are the damaged areas of the L3 door:

1. The window of the L3 door is glazed and the rest of the door shows no exposure to heat.
2. Damage to the forward lower corner of the L3 door.
3. The forward frame of the door and the damage to the door locks. Specifically, the direction of force that caused the locks removal from the forward frame.
4. The cause of the deformation of the upper section of the pickle fork .
5. Damage to the L3 Flight Attendant jumpseat and the passenger seat groups forward of the jumpseat.
6. Deformation of the fuselage below the threshold of the L3 door.
7. Damage to the floor area under the L3 jumpseat.
8. Approximately nineteen (19) holes in the fuselage below the L3 door that appear to originate from the exterior of the aircraft.
9. Deformation to the fuselage below the window belt forward of the L3 door.

9. Witness to the accident:

1. It is our conclusion that no witness saw the actual explosion nor can any witness state conclusively that an object other than the aircraft was present in the vicinity of the accident aircraft at the time of the accident! The method of the investigation as it pertains to the witness statements is suspect and highly unreliable.

10. Maintenance Records:

1. Nothing in the maintenance records indicate that any maintenance was performed in an improper manner. Questions were raised within the group of unsafe practices of mechanics. Nothing positive could be proved pertaining to maintenance as a direct cause of this accident. As a contributing factor, we do not believe that a link can be proved as a contributing cause to the accident.

11. Cabin Interior

1. During the investigation of TWA flight 800 cabin wreckage began to disappear from the cabin wreckage hanger. Indications were that the disappearance was due to the removal of wreckage by the FBI. Field notes from the Cabin Documentation Group (CDG) stated this fact.

The Chairman's factuals for the cabin Documentation Group omitted this information from the group's field notes that the FBI had taken and conducted tests on wreckage from the cabin hanger. The CDG has not received a list of the wreckage items that were taken, the tests that were done, the results of the tests and when or if the wreckage was ever returned. The CDG is not sure if all wreckage items that were taken were returned.

In the winter of 1997 after the CDG field notes were written the group sent at least two items from the hanger to NTSB headquarters for testing. The two items that we know about were a piece of the carpet near the center fuel tank and a sample of the flooring. The CDG has not been informed of the type of tests completed on these items and the results of these tests.

12. Database

1. The validity of the Tag database has been in question from the beginning of the TWA Flight 800 investigation. The Navy retrieved wreckage faster than they could adequately tag pieces of wreckage and document the recovered wreckage's location. The inadequate documentation procedures eventually led to the NTSB declaring a ninety- percent (90%) standard of validity.

2. Numerous meetings were held to resolve the validity of the tag database during the investigation phase of flight 800. The two meetings held at the Calverton hanger did little to resolve the validity issues. The final meeting in October of 1997 at NTSB Headquarters in Washington D.C. raised a much larger issue. During this meeting it was revealed that Mr. Paul Harkin working for the government had entered the Calverton hanger and tagged at least 100 pieces of wreckage. Mr. Harkin did not and has not provided a list of wreckage items that he tagged or any documentation as to why these items should receive the tags he supplied.

The October 1997 was the last meeting on the validity of the tag database. The NTSB has left the validity issue remain unresolved while at the same time using the tag data base to support several groups. The location of recovered wreckage as denoted by their tags has been used in the trajectory study and by the sequencing group. We now have at least two groups drawing conclusions on data that has at least a ten percent (10%) chance of being wrong. Adding Mr. Harkin tagging wreckage without any documentation or records and the conclusions that used the tag data for support become suspect,

13. Conclusions

1. This accident occurred while the aircraft was in flight. The causes and circumstances that contributed directly to the accident are unknown. Many avenues have been and continue to be researched as to the cause of the accident.

2. A definite cause cannot be determined at this time. The center wing fuel tank did explode! We find that its explosion was as the result of the aircraft breakup. The initial event caused a structural failure in the area of Flight Station 854 to 860, lower left side of the aircraft. A high-pressure event breached the fuselage and the fuselage unzipped due to the event. The explosion was a **result** of this event!

3. The engines (powerplants) were operating, two were producing energy when they impacted the ocean. As they were producing energy, they were producing electrical energy and power.

4. Due to circumstances beyond the aviation accident investigative team's control, witness statements are not reliable to help in the determination of this event that may have happen outside of the aircraft in close proximity to the aircraft.

5. The explosion did not enter the forward cargo compartment. The explosion exited the center wing fuel tank.

6. It appears to the IAM that a major event may have occurred on the left side of the aircraft. It could have contributed to or been the cause of the destruction of Flight 800.

12. Recommendations

1. Among the recommendations submitted it is understood that some may have been accomplished and some may be in the process of being completed. We submit them for the record.

1. A definite MOU (Memorandum of Understanding) between the Federal Bureau of Investigation and the National Transportation Safety Board. The bureau does not possess the technical expertise to conduct and control aviation accident investigation.

2. Improved inspection and maintenance practices to reflect current and future industry standards by the Federal Aviation Administration.

3. Adoption of aviation electrical/electronic standards throughout the aviation industry.

4. Inspection standards established in concert with maintenance representatives from official recognized maintenance groups.

5. Better and more concise communication between the engineering field and the maintenance field. This must be exercise to the floor where the maintenance is accomplished.

6. Realistic time periods to accomplish maintenance and inspection procedures in the field and in the hangar. Time studies produced by manufacturers are unrealistic in that all environments are not considered.

7. Better access to items requiring inspection and maintenance once the aircraft has been put into service.

8. Further study of aviation fuels. Determine the explosive force of fuels in use and future fuel that by be used.

9. Study the destructive properties of the currently used hydraulic fluid in use by the industry.

10. Promote a sharing of information gathered by the military and civilian aviation communities to promote safety of aviation maintenance and operations.

11. Strengthened and keep the party system for aviation accident investigations.