

Working on Boeing Aircraft – Peter Marosszeky FRAeS

The author's experience of working on Boeing Aircraft for 56 years – a most interesting and rewarding times. Peter Marosszeky is a Fellow of the Society and has been an elected member of the Society's Sydney Branch Committee since 2005.

With over 56 years of the most interesting and rewarding times working on Boeing aircraft, a career that has taken me through various fascinating and rewarding roles from station engineer with Pan American to supervisor line maintenance, manager engineering and maintenance operations with American airlines, manager engineering and maintenance South Pacific with United Airlines then to Qantas as manager maintenance and engineering at Qantas Link and then general manager maintenance and engineering for the new start-up low cost international carrier, Australian Airlines. Going onto being an academic at the University of NSW and a consultant to industry with Aerospace Developments Pty. Ltd. and a volunteer engineer with the Historic Aircraft Restoration Society, the largest repository of warbirds and historic flying aircraft in Australia...it has been interesting.

Boeing Story 1: The focus of this story is the work of the Boeing Aircraft on Ground (AOG) team and the remarkable feats of recovery and ingenuity in the repair and return to service of aircraft that have been involved in accidents. Over the years I have had the good fortune of being associated with the recovery of other broken aircraft. This was the first and most memorable event, the aborted take-off and



26.

3 - CONCLUSIONS

1. The flight crew were properly qualified for the flight.
2. The aircraft was airworthy.
3. The aircraft was inadvertently loaded 6,800 lb in excess of the flight planned weight, primarily as a result of use of a defective hydrometer.
4. During the take-off roll, and shortly after V_1 speed had been attained, the aircraft struck seagulls and Number 2 engine sustained a compressor stall as a result of bird ingestion.
5. The take-off was abandoned after V_1 but the over-run was not inevitable.
6. All engines developed full reverse thrust during the deceleration.
7. The aircraft and its systems were capable of normal operation.
8. The effective point of commencement of take-off was displaced some 320 feet from the threshold as a result of the rolling start technique employed from a side entry to the runway together with progressive application of thrust.
9. The head wind component encountered by the aircraft was significantly less than that forecast and that used in the take-off computations.
10. The increased gross weight of the aircraft resulted in the aircraft travelling 200 feet further than it would have travelled had it been loaded as planned.
11. The crew actions in the abandoned take-off procedures were timely in respect of throttle closure, application of reverse thrust and actuation of speed brakes but the evidence indicates that there may have been a delay in application of wheel brakes beyond that delay assumed in the accelerate/stop certification performance calculations.
12. The probable cause of the accident was that, in the circumstances of an abandoned take-off, the aircraft could not be brought to a stop within the nominally adequate runway length because of an error in the calculation of load, a reduction in wind velocity from that forecast and the use of rolling start and braking techniques which would not ensure most effective use of the available runway length.

subsequent crash of Pan Am flight 81201 in Sydney, December 1st. 1969.

The BASI analysis of the accident: The BASI Report provided extensive details of the accident and the conclusions are reflected below as the causes of this unfortunate event:

Aircraft history

The aircraft was a Boeing 707-321B, Serial Number 20029, and had been owned and operated by Pan Am since its manufacture. The aircraft was delivered to Pan Am on the 4th. March 1969 and the Certificate of Aircraft Registration was issued on the 27th. March 1969. The aircraft had flown a total of 3,044 hours since new and had flown 930 hours since the last equalised service and 79 hours since the last Terminal Service. There was no evidence in the aircraft records of any engineering deficiencies which could have been relevant to the accident and all reported deficiencies had been corrected.



Aircraft Recovery

Sydney is the main base for Qantas they were not only the prime support organization for most airlines they were also managers of the Crash Aircraft Recovery Kit, along with professional and experienced engineers.

Pan Am headquarters in New York was advised of the accident and promptly issued instructions. Mr. Bill Hertle Pan

Am supervisor maintenance San Francisco Base was sent down the next day to assume control of the operation and to act as the liaison with Boeing AOG team. The salvage took approximately nine days and with the use of the recovery equipment and heavy lifting machinery. Qantas had assigned Hangar 191 to position the aircraft for the repair work to be carried out. On December 12th. The Boeing assessment team had arrived and made out a work scope for the repair of the aircraft, the details were published and included in the contract between Boeing and Pan Am.

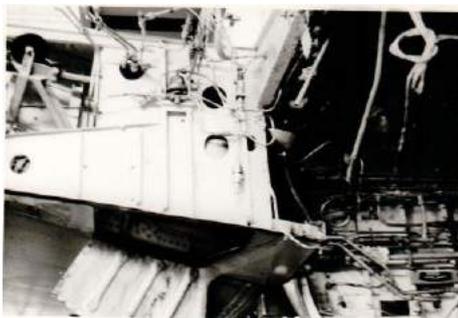


The Boeing Aircraft on Ground (AOG) incident repair team

For further information refer: www.boeing.com/news/frontiers/archive/

The team was led by Mr. George Lansing who had overall authority of the contract and the Boeing team that consisted of 53 technicians, engineers and specialist support people (60 planned initially) including:

- Travel agent and logistics coordinator
- Equipment, tooling and drill sharpening specialist
- Catering and hotel coordinator
- Ground transport coordinator
- Engineers
- Technicians
- Sheet metal mechanics.



The team was a specialist crew chosen for their skills in aircraft recovery. The opportunity to work with this team provided an invaluable experience for future roles, not to mention experiencing the discipline of team work and camaraderie between the team members. Teams were to operate two 11 hour shifts working 7 days with a bus assigned for transportation to and from the Chevron Hotel located at Kings Cross and Hangar 191 at the Qantas

jet Base. The senior Boeing people had an Avis rent a car provided for their transport requirements.

All the parts required for the repair came from the Boeing production line including the specialist tooling and equipment, scaffolding was supplied by the local manufacturer Hills Co. Pty. Ltd. Any sundry items were provided on loan from Qantas. In the Qantas agreement with Pan Am it was agreed

that no work was to be planned or undertaken by Qantas unless special circumstances arose, the exception to this was the repair of three of the engines in the Qantas Engine Overhaul Centre under their FAA Station Approval including testing in the Jet Engine Test Cell. The fourth engine was deemed serviceable.





The cooperation and coordination between the Boeing team, Qantas Engineering and Pan Am staff was exceptional, there were some freight and logistic issues where nine boxes of equipment went missing during shipment, however these were eventually located and shipped to Sydney.

The Test Flight: The aircraft was released from the Hangar on January 28th , 1970 and after pre-flight checks were performed a test crew undertook a test flight under the control of the Boeing test pilot, the following telex sums up the aircraft's performance:

QL SYDMMPA CPY SYDOWPA
 .HNLOOPA 291855 HNLXTPA
 FOR HERTLE/BILL ANC CREW
 COMMENDATIONS ON A GOOD JOB. AIRCRAFT HANDLED WELL IN CONSIDERABLE MODERATE
 CAT AND PRECISION CRUISING TECHNIQUE VS FUEL CONSUMPTION INDICATES RIGGING
 EXCELLENT. DURING TAKEOFF SYD CMA NECESSARY TO RECYCLE GEAR LEVER TWICE TO
 RAISE NOSE GEAR. SUSPECT SEQUENCE VALVE DUE LIGHT INDICATIONS. OVERALL
 PERFORMANCE VERY GOOD.
 CONGRATULATIONS AND THANKS /S/RED HORT
 =MGP1855CLK =291922

Release to Service

The final status message read:

QF NYCMJPA CPY NYCOXPA NYCOLPA MIAMCPA SFOMMPA SFOMUPA SYDMMPA SYDOAPA
 .SYDMMPA 290811 SYDXTPA
 N892 REPAIR STATUS SIXTY TWO AND FINAL STOP A/C DEPARTED TRIP 812229 ON TIME AT 0744
 STOP TTS 59 DAYS 9 HOURS AND 04 MINUTES STOP
 SEA GULL HERTLE =JS0820H

On reflection: The commitment, teamwork, and producing the same level of high-quality work provided a valuable insight into the quality and design of Boeing aircraft.

Boeing Story 2: This experience proved valuable two years later when one of the first Pan Am 747s (N652PA) serving Sydney landed long and became bogged off the cross-wind runway, just short of a major sewer viaduct narrowly avoiding a potential disaster. The strength of the 747 design meant there was no structural damage and we only had to replace two damaged nose wheel tyres.



The aircraft returned to service the next day and continued a 35-year career with Pan Am and other airlines.

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