



**Aviation Safety Council
Taipei, Taiwan**

**CI611 Accident Investigation
Factual Data Collection
Group Report**

Flight Operations Group

June 03, 2003

ASC-AFR-03-06-001

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I. Team Organization

Chairman:

Capt. Ranger Chen / Investigator, ASC, ROC

Members:

1. Thomas Wang / Investigator, ASC, ROC
2. Capt. Wan-Lee Lee / Director, Flight Standard Division, CAA, ROC
3. Capt. Wang-Yu Kao / Aviation Safety Inspector, CAA, ROC
4. Dave Kirchgessner / Air Carrier Investigator, NTSB, USA
5. Capt. Joseph M. MacDonald / Chief Pilot B747, Boeing Commercial Airplanes, USA
6. Capt. Chia-Hwai Tsao / B747-200 Fleet, CAL, ROC
7. Capt. Tung-Ming Liu / B747-200 Fleet, CAL, ROC

II. History of Activities

Date	Description
05/25/02	<ul style="list-style-type: none"> ● Collected: <ol style="list-style-type: none"> 1. CI611 Flight Plan 2. NOTAMs 3. Weather Information 4. Weight and Balance 5. Load Sheet and Plan 6. Fuel Load Sheet 7. Cargo Manifest 8. Last 30 day dispatch record for B18255
05/26/02	<ul style="list-style-type: none"> ● Collected: <ol style="list-style-type: none"> 1. Passenger manifest and seating List 2. Passenger Seat Configuration 3. Civil Aircraft Nationality - Certificate of Registration 4. Certificate of Airworthiness 5. CI611 Occurrence Notification Form 6. B747-200B Aircraft Flight Manual (Volume 1, 2, and 3) 7. CAL Flight Operations Manual 8. Navigation Charts (JEPPSEN, area only) 9. B747-200 Operations Manual (Volume 1, and 2) 10. B747-200 Airplane Operations Manual 11. B747-200 Minimum Equipment List, (MEL/CDL) 12. Cabin Attendant's Operations Manual 13. B747-200 Quick Reference Handbook 14. B747 Flight Crew Training Manual 15. CAL B742 IP Guide 16. Three Flight Crew members' personnel information, training program, and records
05/27/02	<ul style="list-style-type: none"> ● Collected: <ol style="list-style-type: none"> 1. Deposit Aviation Fuel Control Check Report 2. Fuel Sample
05/28/02	<ul style="list-style-type: none"> ● Examined CI611 wreckage at Makung Air Force Base.

05/30/02	<ul style="list-style-type: none"> ● Interviewed CM-2's widow. ● Interviewed CAL B747-200 Chief pilot. ● Interviewed CAL Crew Scheduling Manager. ● Interviewed CM-1's roommate. ● Interviewed FE's friend. ● Collected violation record and operations inspection records of pilots / CAL from the CAA.
05/31/02	<ul style="list-style-type: none"> ● Interviewed CI617/618 (TPE-HKG) flight crew including Capt., F/O, and FE, which was the last flight of B18255 (May 23, 2002) before the accident. ● Interviewed CI685/686 (TPE-SGN) flight crew including Capt., CP, and FE who flew B18255 on May 22, 2002.
06/01/02	<ul style="list-style-type: none"> ● Collected violation record and ops inspection records of pilots and CAL from the CAA. ● Visited China Airlines System Operation Control Division at CKS Airport. Briefed by Vice President, Duty Control Manager, and Manager and Flight Dispatch Department General Manager. ● Interviewed CI611 dispatcher. ● Surveyed China Airlines two B747-200 freighters. ● Collected: <ol style="list-style-type: none"> 1. CAL last year check records from CAA 2. CAL Violation record from CAA 3. CAL Aircraft Control Operations Measure (JC-001) 4. CAL Flight Dispatch Operations Procedure (OD-001)
06/03/02	<ul style="list-style-type: none"> ● Collected: <ol style="list-style-type: none"> 1. CAL B747-200 Training Program 2. CAL B747-200 Checklist Card 3. CAL Crew Report at May-13-02
06/05/02	<ul style="list-style-type: none"> ● Interviewed the CAL POI ● Collected: <ol style="list-style-type: none"> 1. The flight crew members' individual flight log for the last 3 months
06/20 ~	<ul style="list-style-type: none"> ● Transcribed the CVR recording.

06/22/02	
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III. Factual Description

1.1 History of Flight

On May 25, 2002, at 1528 Taipei Local Time (0728 UTC), China Airlines (CAL) flight CI611, a Boeing 747-200 aircraft, ROC registration number B-18255, broke apart over the Taiwan Straits, about 23 nautical miles northeast of Makung, Penghu, Taiwan, after taking off at 1507 from Chiang Kai-Shek International Airport (TPE), Taoyuan, Taiwan, ROC, to Chek Lok Kok International Airport (HKG), Hong Kong. CI611 was on a scheduled passenger flight, departed with 2 pilots, 1 flight engineer, 16 cabin crewmembers, and 206 passengers aboard.

The captain (Crew Member-1, CM-1), reported for duty alone at 1305 CAL's CKS Airport Dispatch Office and was briefed by the duty dispatcher, including NOTAMs regarding TPE FIR for about 20 minutes. The first officer (Crew Member-2, CM-2) and flight engineer (Crew Member-3, CM-3) reported for duty at CAL's Reporting Center, Taipei, and arrived CKS Airport about 1330.

The aircraft took off at 1507 Taipei time, approximately 21 minutes after airborne, the aircraft disappeared from radarscope over Taiwan Straits, as the aircraft passed flight level 340 and was approaching flight level 350.

1.5 Personnel Information

1.5.1 The Captain (CM-1)

CM-1, a ROC Citizen, was born in 1951. He joined China Airlines on March 1, 1991, as a first officer. In March 1997 he was upgraded to captain. The medical certificate issued by the Aviation Medical Center reveals that CM-1 should wear corrective lenses while exercising the privileges of his airman certificate.

Both the interview and medical records reveal that CM-1 was in good health and did not take any medication or drugs. He had a good relationship with his family and was well respected by his colleagues. He was on stand-by and was called for the flight the morning of the accident. He had more than 24 hours off before the accident. He was the pilot in command and occupied the left seat.

1.5.2 The First Officer (CM-2)

CM-2, an ROC Citizen, was born in 1950. He joined China Airlines on February 1, 1990, as a first officer. The medical certificate issued by the Aviation Medical Center reveals that CM-2 should wear corrective lenses while exercising the privileges of his airman certificate.

Both the interview and medical records reveal that CM-2 was healthy and did not smoke or drink alcoholic beverages. He did not take any medication or drugs. He was on scheduled day-off and was called for the flight about 0700 the morning of the accident. He had more than 24 hours off before the accident. He was the pilot flying and occupied the right seat.

1.5.3 The Flight Engineer (CM-3)

CM-3, an ROC Citizen, was born in 1948. He joined China Airlines on March 1, 1977, as a flight engineer. The medical certificate issued by the Aviation Medical Center reveals that CM-3 should wear corrective lenses while exercising the privileges of his airman certificate.

The interview record reveals that CM-3 liked to exercise, stopped smoking about 3 years ago and did not drink alcoholic beverages. He did not take any medication or drugs. He had more than 24 hours off before the accident.

1.5.4 Flight Crewmembers' Basic Information

The basic information of the Cl611 flight crewmembers is summarized in Table 1.5.1.

Table 1.5-1 Flight Crewmember's Basic Information

ITEM	CM-1	CM-2	CM-3
Gender	Male	Male	Male
Age	51	52	54
Date Joined CAL	Mar-01-1991	Feb-01-1990	Mar-01-1977
License Type	ATPL 11136	ATPL 11030	FEL 90203
Type Rating Expire date	B747-200 CAPT Aug-31-2002	B747-200 F/O Jul-16-2002	B747-200 FE Jul-22-2002
Medical Class Expire date	Class 1 Jun-30-2002	Class 1 Oct-31-2002	Class 2 Sep-30-2002
Last Check Date	Aug-13-2001	Mar-17-2002	May-05-2002
Total Flight Time (H:M)	10,148:31	10,173:18	19,117:52
Flight Time (H:M) in Last 12 Months	647:16	753:16	809:29
Flight Time (H:M) In Last 90 Days	256:44	225:19	250:42
Flight Time (H:M) In Last 30 Days	69:11	67:16	68:30
Flight Time (H:M) In Last 7 Days	25:34	9:59	3:32
Flight Time (H:M) On B747-200	4,732:20	5,831:17	15,397:36
Flight Time On the Day Before the Accident Flight	0 hrs	0 hrs	0 hrs
Rest Period Before the Accident	(Over 24 hrs)	(Over 24 hrs)	(Over 24 hrs)

1.6 Aircraft Information

1.6.13 Weight and Balance

A China Airlines dispatcher at CKS Airport prepared the load sheet¹ for CI611. The dispatch release information of the CI611 zero-fuel-weight was 444,487 pounds and takeoff weight was 509,287 pounds:

Total Traffic Load	74,460 lbs.
Dry Operating Weight	370,027 lbs.
Takeoff fuel	64,800 lbs.

Based on the given locations and weight of the passengers, fuel, and cargo, the aircraft's takeoff center of gravity in mean aerodynamic chord (MAC) was calculated to be 25.6 percent.

¹ See appendix 2-1 for the load sheet for CI611.

1.18 Additional Information

1.18.2 Summary of Interviews

1.18.2.1 Relevant Personnel Interviews

1.18.2.1.1 The Dispatcher who Briefed CM-1

The dispatcher briefed the occurrence captain of flight CI611 on May 25. He stated that CM-1 came in to the Dispatch Office by himself. He briefed the captain according to the computer flight plan (CFP), weather information, and NOTAMs. CM-1 asked him "anything special?" He mentioned the NOTAMs regarding the TPE FIR (See Appendices 2-2, 2-3, and 2-4, NOTAM RCTP FIR/TAIPEI FIR, A0383 WRNG, and RCTP FIR/TAIPEI FIR RST A0280 for detail). The captain acknowledged the information and believed that the A0280 military action would not affect his flight operation because the gunfire altitude was from sea level to 12,000 feet.

CM-1 had gone to the CAA Flight Information Station for the weather information package prior to arriving at the Dispatch Office. CM-1 signed the flight release at 1305.

He said that CM-1 looked normal to him on that day and he noticed nothing unusual.

1.18.2.1.2 The Flight Crews who had Flown B18255 Prior To The Accident

The flight crew stated that no discrepancies noted in the maintenance logbook, and there were no special issues concerning their flight. The fuselage skins were smooth without wrinkles. The cargo door had been operated open and close normally during preflight check.

There were no system problems on this aircraft. The pressurization, the flight controls, the hydraulics, and the electrical systems were all normal for the flight on May 23, 2002.

The flight crew stated that they rarely needed to repeat the same discrepancy. The maintenance personnel fixed all the problems immediately after their submission.

The flight crew also stated that if a pilot failed his training, he would be given another chance. He could have additional hours and then rechecked. If he failed the second time, he could be dismissed.

1.18.2.1.3 CAL B747-200 Chief Pilot

The Chief Pilot said that he was responsible for oversight of the B747-200's safety in flight operations, dispatch and promotions. He said he achieved safety by monitoring the pilot schedules/pairings, maintaining pilot discipline, and reviewing seniority.

The company policy was to pair new captains and first officers with a more experienced pilot until they had completed their first year in that position.

The company held technical meetings twice a month and the CVR/FDR on each aircraft was checked typically several times a month. There was no FOQA program for the B747-200. If any anomalies were found, the flight safety team consisting of a captain and a first officer would follow-up with the associated crewmembers.

The China Airlines has a reporting system for passenger delays and mechanical problems. These forms were routed to the Flight Engineer's Office or the Chief Pilot. This reporting system was used for all the fleets.

The CAL also has a provision of Flight Safety Reporting System for the pilots to send anonymous safety report.

There had been no maintenance problems within the last 15 days of the accident aircraft.

The accident aircraft had always been a passenger aircraft.

1.18.2.1.4 CAL Crew Scheduling Manager

At the day of the accident, CM-1 was on stand-by at home and was called in for the flight. CM-2 was on scheduled day-off but was put on stand-by when the regularly assigned stand-by first officer was assigned to another flight.

The B747-200 fleet has a long history, most of the crewmembers were senior and the crew pairs were easy to develop.

1.18.2.1.5 Principle Operation Inspector for CAL

Each inspector's annual work plan was based on the requirements of the CAA handbook. Each inspector was assigned a minimum of 30 hours /month to observe line operations or in training of the crewmembers.

CAL's FOM was completely revised in 2001 and CAA reviewed CAL's operations specifications and proficiency check requirements. CAA and CAL reviewed the FOM every 6 months and then a revised edition was issued to all the crewmembers. In the past, CAL had used the manufacturer's AOM. Now, each fleet had an AOM developed by the company.

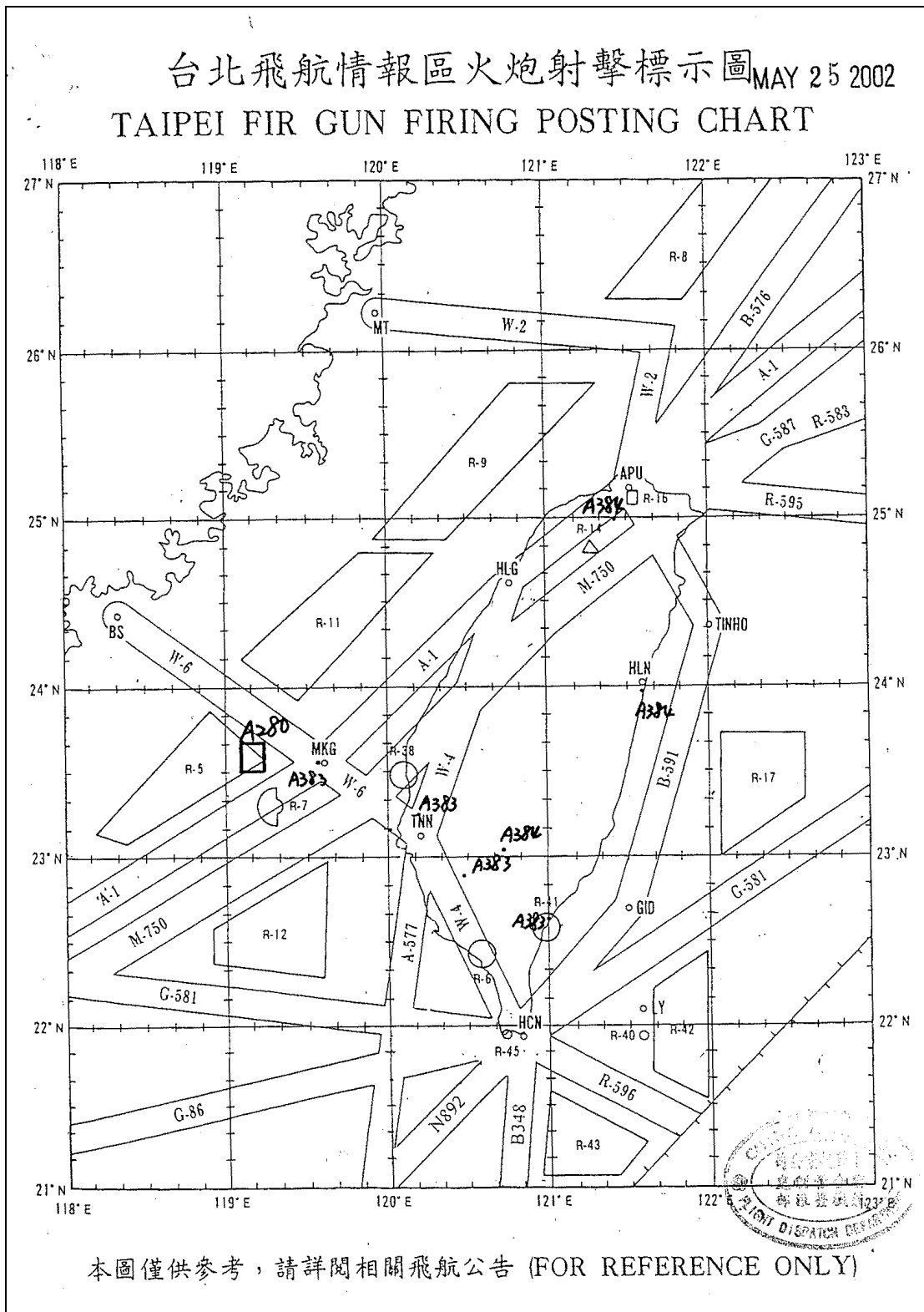
After the accident, CAA and CAL reviewed the records associated with the crew pairings, language abilities and personalities.

He stated that the lack of inspector manpower was a problem. Three additional inspectors will be hired on August 1, 2002.

He met with CAL officials and discussed ways to improve their operations, and concluded to increase the frequency of routine inspections.

He said that CM-1 was a good pilot and followed all SOPs during his last check ride. He had no comments regarding CM-2.

2-2 TAIPEI FIR GUN FIRING POSTING CHART



2-3 TAIPEI FIR A0383


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RCTP FIR/TAIPEI FIR
=====
A0383 WRNG VALID FM 0205230000 TO 0205311800
      EFF: 0000, 0600, 1200 AND 1800 DLY
      REF AIP GEN 3.5-5, DUE TO PROXIMITY OF MEI-YU FRPNT,
      STUDY BALLOONS ARE RELEASED AS FLWS,
      1. TYPE: RADIO SOUNDING
      2. COLOR: LIGHT YELLOW
      3. WEIGHT: 100 GRAMS (WITH SENSOR)
      4. ALT: FM SFC TO 100000FT IN AVG
      5. DIRECTION OF MOVEMENT: SUBJECT TO WIND DRIFT
      6. ASCEND RATE: ABOUT 40-45 MINUTES TO REACH 40000FT
      7. RELEASE POINT:
          CHEER-MEI, KAOHSIUNG (2253N 12029E)
          MAKUNG (2333N 11933E)
          SHUE-CHIA, TAINAN (2315N 12011E)
          TAIMA, TAITUNG (2237N 12100E)
      ALT: SFC UP TO 100000FT

P0290 PIB RCTP FIR, VALID FOR 25 MAY 2002 2ND VERSION
PART 10 (WARNING)
RCTP FIR/TAIPEI FIR
=====
A0384 WRNG VALID FM 0205230000 TO 0206302400
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2-4 TAIPEI FIR A0280

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NIL
RCQC/MAKUNG
=====
A0280 FRNG VALID FM 0205010000 TO 0205310900
      EFF: 0000-0400, 0500-0900 DLY ON 1-4, 6-11, 13-18, 20-25,
      27-31 MAY
      1100-1300 DLY ON 1, 8, 15, 22, 29 MAY
      AREA: 2330N, 2340N, 11905E, 11915E
      RMK: AIRSPACE BLOCKED
      ALT: SFC UP TO 12000FT

RCKU/CHIAYI
=====
A0363 FRNG VALID 0205192300 TO 0205311300
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V. Attachments

No	Item
2-01	Flight Operations Group Interview Notes
2-02	CI611 Flight Plan
2-03	Area NOTAM, FIR, for CI611
2-04	Weather Information for CI611
2-05	Weight and Balance
2-06	Load Sheet and Plan
2-07	Fuel Load Sheet
2-08	Cargo Manifest
2-09	B18255 dispatch record for last 30 days
2-10	Passenger Name and Seating List
2-11	Passenger Seat Configuration
2-12	Certificate of Registration of Civil Aircraft Nationality
2-13	Certificate of Airworthiness
2-14	CI611 Occurrence Notification
2-15	B747-200B Aircraft Flight Manual (Volume 1)
2-16	B747-200B Aircraft Flight Manual (Volume 2)
2-17	B747-200B Aircraft Flight Manual (Volume 3)
2-18	CAL Flight Operations Manual
2-19	Navigation Charts (JEPPSEN area only)
2-20	B747-200 Operations Manual (Volume 1)
2-21	B747-200 Operations Manual (Volume 2)
2-22	B747-200 Airplane Operations Manual
2-23	B747-200 Minimum Equipment List (MEL/CDL)
2-24	Cabin Attendant's Operations Manual
2-25	B747-200 Quick Reference Handbook
2-26	B747 Flight Crew Training Manual
2-27	CAL B747-200 IP Guide
2-28	Flight Crew Personnel Information
2-29	Flight Crew Personnel Information
2-30	Flight Crew Personnel Information
2-31	Flight Crew Training Plan and Record

2-32	Flight Crew Training Plan and Record
2-33	Flight Crew Training Plan and Record
2-34	Depot Aviation Fuel Control Check Report
2-35	Fuel Sample
2-36	CAL last year record checked by CAA
2-37	CAL Violation History by CAA
2-38	CAL Aircraft Control Operations Measure (JC-001)
2-39	CAL Flight Dispatch Operations Procedure (OD-001)
2-40	CAL B742 Training Program
2-41	CAL B747-200 Checklist Card
2-42	CAL Crew Report from CM-3 at May-13-02