Aviation Safety Council

Taipei, Taiwan

SQ006 Accident Investigation

Factual Data Collection

Group Report

Air Traffic Control Group

February 21, 2001

ASC-FRP-01-01-003

I. Team Organization

Chairman: K.F. Chou
Members:
1. Hank Liu Chief, Air Traffic Control Branch, ATSD, CAA
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II. History of Activities

Date	Event
Nov 1	1. Obtained Statements made by the Duty Controllers at CKS Tower
Nov 2	1. ATC / Weather / Airport Group Formed 2. Inspection of crash site and adjacent paved areas by day
Nov 3	1. Inspection of crash site and adjacent paved areas by day 2. Noted data obtained from the Digital Flight Data Recorder 3. Review of Cockpit Voice Recorder data
Nov 4	1. Examined the lighting control panel in the CKS Tower and clarified operating procedures 2. Inspection of crash site and adjacent paved areas by day 3. Inspection of crash site and adjacent paved areas by night 4. Interviewed local controller 5. Interviewed ground controller
Nov 5	1.Examined the taxiway lighting control panel in the CKS Tower and clarified operating procedures
Nov 6	1. Examined the lighting control panel in the CKS Tower and clarified operating procedures 2. Reviewed the Terminal Approach Radar tape recording
Nov 7	1. Interviewed Civil Aeronautics Administration officials 2. Interviewed Senior Flight Operations Officer 3. Viewed recordings of airport security cameras
Nov 8	1. Interviewed CKS Airport Management officials 2. Viewed recordings of airport security cameras
Nov 9	1. Transcribed ATC voice recordings on frequencies 121.7, 121.8 and 129.3 (from 2250LT/1450UTC on Oct.31, 2000 to 0030LT

	on Nov.1,2000 (1630 UTC on Oct.31, 2000) 2. Viewed recordings of airport security cameras
Nov 10	1. Examined the lighting control panel in the CKS Tower and clarified operating procedures 2. Interviewed local controller 3. Transcribed ATC voice recordings on frequencies 121.7, 121.8 and 129.3 (from 2250LT/1450 UTC on Oct.31, 2000 to 0030LT/1630UTC on Nov.1, 2000 on Oct.31, 2000) 4. Viewed recordings of airport security cameras
Nov 11	1. Transcribed ATC voice recordings on frequencies 121.7, 121.8 and 129.3 (from 2250LT/1450UTC on Oct.31, 2000 to 0030 LT on Nov.1, 2000(1630UTC on Oct.31, 2000) 2. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash) 3. Viewed recordings of airport security cameras
Nov 12	1. Transcribed ATC voice recordings on frequencies 121.7, 121.8 and 129.3 from 2250LT/1450UTC on Oct.31, 2000 to 0030 LT on Nov.1, 2000(1630UTC on 31 Oct 2000) 2. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 13	1. Transcribed ATC voice recordings on frequencies 121.7, 121.8 and 129.3 (from 2250LT (1450UTC) on 31 Oct 2000 to 0030 LT on 1 Nov 2000(1630UTC on 31 Oct 2000)) 2. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 14	1. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)

Nov 15	1. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 16	1. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 17	1. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 18	1. Transcribed voice recordings of Channel 1 (communications between CKS Tower and ground vehicle at the scene of the crash)
Nov 25	1. Authentication of ATC transcripts
Nov 29	1. Interviewed Ground Controller & Flight Data Controllers
Nov 30	1.Interviewed Clearance Delivery controller
Dec 1 ~ Feb 3	1.Preparation of ATC Group Report Draft
Feb 20 ~ Feb 21	1.ATC Group Draft Report Review Meeting

III. Factual Description

(1.1 ~ 1.7 deliberately left blank)

1.8 Aids to Navigation

There were no reported difficulties with navigational aids at CKS International Airport.

1.9 Communications

There were no communications problems between SQ006 and CKS Airport Control Tower.

(1.10 ~ 1.17 deliberately left blank)

1.18 Additional Information

1.18.1 ATC Operations

1.18.1.1 ATC Staffing (see Appendix 3 -01)

At the time of accident, the CKS International Airport Control Tower was staffed with four controllers: one local controller, one ground controller, one clearance delivery controller and one flight data controller.

There is no cab coordinator working in night shift however, the supervisor at approach control should take charge when traffic situation requires.

1.18.1.2 ATC Workload

During the course of the event, Local Controller communicated with the accident aircraft, which was the only traffic under his jurisdiction and the Ground Controller communicated with two aircraft starting engines. The Local Controller pressed the crash alarm in response to the accident as he observed the event. The remaining controllers were working at Clearance Delivery and Flight Data positions.

1.18.1.3 ATC Procedures (see Appendix 3-02)

The Standard Operating Procedure for Ground Control and Clearance Delivery Positions of CKS Control Tower requires the ground controller to inform the aircraft in maneuvering area when visibility drops to below 2000 meters:

The relevant phraseology is as follows:（Ref:Para.3.5.6, SOP, CKS Approach and Tower）

"PART OF AIRPORT IS INVISIBLE FROM TOWER,
TAXI SLOW DOWN WITH CAUTION."

There are procedures in ATP-88（see Attachment 3-2A）for controller to issue progressive taxi / ground movement instructions when:

1. Pilot/operator requests.
2. The controller deems it necessary due to traffic or field conditions ,e.g., construction or closed taxiways.
3. As necessary during reduced visibility, especially when the taxi route is not visible from the tower.

The progressive taxi instruction was not issued for SQ006.

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1.18.1.4 Runway lighting controls

(see details in Airport Group Report)

1.18.1.5 Airport Surface Detection Equipment (ASDE) (see Appendix 3-03)

The airport is not equipped with an ASDE though the control tower has been requesting for the installation of such radar system since 1994.

CAA has the budget to purchase two ASDEs in 2001. The date to commission the ASDEs has been scheduled in December 2004.

The following are the summary of CAA ASDE procurement process：

Date	Summary	Attachment
Jul.19,' 94	ANWS declined the request to install ASDE at CKS due to the limited use of ASDE in foggy season (only a few hours in a year)	1
Aug.17,' 94	Withdraw the budget of ASDE at Kaohsiung	2
Aug.30,' 94	CAA instructed ANWS to research the installation of ASDE at CKS	3
Sept.8,' 94	ANWS suggested CAA to suspend the ASDE installation due to fewer requirements in foggy season and budgetary considerations.	4
Apr.18,' 96	ANWS requested ASDE installation to upgrade the ATS services.	5
May 24,' 96	CAA meeting concluded to schedule a survey of ASDE siting.	6
Jul.3,' 96	CAA meeting after survey concluded: ✧ Site of ASDE proposed at ramp close to jet way. ✧ To plan for a new tower with ASDE installation.	7
Jul.18,' 96	ANWS agreed the conclusion.	8
Jan.7,' 98	CAA meeting concluded: ✧ To plan the installation of ASDE. ✧ ANWS to collect ASDE related information and to observe ASDE operation in adjacent countries ✧ A proposal of ASDE installation is submitted to CAA no later than May 1998 and to be included in budget of year 2000.	9
May 12,' 98	ANWS submitted 10 preferable sites for ASR and ASDE.	10
Jun.8,' 98	CAA meeting discussing 2nd ASR, ASDE installation and Doppler radar phase-in projects.	11
Sept.28,' 98	CAA suspended ASDE site proposal to accommodate CKS future expansion and a discussion be scheduled later date.	12
Jan.6,' 99	CAA approved ANWS' s request of ASDE sites and installation plan.	13
Jan.14,' 00	CAA delayed the ASDE procurement for a year due to other prioritized projects.	14
May 5,' 00	ANWS requested budget of ASDE in 2001,CAA	15

replied:

- ✧ to collect more information re:ASDE
- ✧ to consider whether to install one set ASDE first.
- ✧ Other feasible alternatives.

Jul.1,' 00	CAA instructed ANWS to carry out the ASDE procurement project in stages starting from 2002.	16
Nov.28,' 00	CAA requested approval from MOTC to escalate the ASDE procurement project one year earlier (2001).	17

1.18.1.6 Safety management (Incident reporting and tracking)

Incident reports are actioned by pilots, ATC and airport management. Serious incidents are also reported to Aviation Safety Council.

1.18.1.7 ATC Interviews

The air traffic control positions and legend used in the roster in CKS Airport Tower at the time of SQ006' s accident are as follows: (see Attachment 3-01 & 3-05)

i) Local Control（LC）
ii) Ground Control（GC）
iii) Flight Data（FD）
iv) Clearance Delivery（CD）

The duty air traffic controllers were:

i) Controller A
ii) Controller B
iii) Controller C
iV) Controller D

The ATC Group interviewed Controller A and B on November 4, 2000, Controller A on November 10, 2000, Controller B&C on November 29, 2000 and Controller D on November 30, 2000 . Controller A and B were interviewed together on November 4, 2000. The Chief of Air Traffic Services Management Office and the Tower Chief were present during all interviews.

1.18.1.7.1 Summary of Interviews with Controller A (see Appendix 3-05 & 3-06)

According to Controller A , weather conditions were poor when he took over the Local Control Position. SQ006 was taxiing out for departure and there were two other aircraft (CX2043 and CI004) pushing back from the parking bays at the time.

SQ006 contacted Taipei Tower on frequency 129.3 MHz at about the time it turned from taxiway WC onto NP. Controller A could only see the aircraft' s lights which gradually disappeared as the aircraft taxied towards N1.

As there was no other aircraft on approach or taxiing, Controller A cleared SQ006 for take-off from runway 05L when the crew reported ready. The crew read back runway 05L correctly. Controller A said that he could not see SQ006 line up for take-off when it began its take-off roll due to the low visibility. His first eye contact of the aircraft after he issued the take-off clearance was when he saw sparks, followed by an explosion. Controller A said that he pressed the crash alarm and that Controller C transmitted initial instructions to the rescue fire fighting crew on a hand-held radio (Channel 1). He also said that Controller B notified the approach radar controller of the accident.

Controller A said that the intensity of the Runway 05L runway lights and the red and yellow zone taxiway lights had been selected in accordance with a matrix (lighting intensity setting table) displayed near the lighting console.（re: ATP-88, Para. 3-4-10,TAB. 3-4-4.）

The ATC Group interviewed Controller A a second time on November 10, 2000 (see Attachment 3-06). During the second interview, Controller A explained that the airport lights are inspected by the maintenance unit daily. He said that this is done one zone of the airport at a time. The lights of each zone are switched on/off according to the maintenance unit' s request.

1.18.1.7.2 Summary of Interviews with Controller B (see Appendix 3-05 & 3-07)

Controller B was interviewed by the ATC Group on November 4 and 29, 2000. He had proceeded on his planned vacation leave after the Group' s first interview with him on November 4.

When Controller B took over the Ground Control Position at 2300 LT, only SQ006, CX2043 and CAL004 were on frequency 121.7 MHz. He said that he cleared SQ006 for taxi to runway 05L via taxiways SS, West Cross, NP and N1

As Ground Controller, he was responsible for activating the appropriate taxiway lights. He had activated the taxiway lights for the White, Yellow and Red zones. He added that the Local Controller was responsible for the runway lights. As a general rule, these are switched on when landing aircraft are about 15 nautical miles from touch down. For continuous landings, the approach and runway lights would be left on and there would not be frequent switching on and off of the lights. The SOP for lights did not require the approach lights to be switched on for departures.

1.18.1.7.3 Summary of Interview with Controller C (see Appendix 3-08)

Controller C recalled that she had been in the Ground Control Position prior to taking over the Flight Data position. While at Ground Control Position, she handled flight SQ006. She had initially informed SQ006 to expect runway 06 but subsequently approved SQ006' s request for departure on runway 05L. No reason was given by the pilot for the request.

After the accident occurred, Controller C instructed Ground Controller to inform Taipei Approach that SQ006 had crashed and that runway 05L was closed. She then took over from the Local Controller, who asked to be relieved.

Controller C said that she did not, during her stint, turn on any of the lights as it was not her duty. It was the duty of the Ground Controller to switch on the taxi lights and the duty of the Local Controller to switch on lights associated with the runway.

Controller C said that she did not switch any of the runway / taxiway lights on or off after she took over the Local Control Position subsequent to the accident. Regarding the request by the "Yellow Vehicle" driver for the lights to be switched on, she said she knew that the Ground Controller at the time had responded to the request, but she did not know which lights he selected.

Regarding the maintenance of airport lights, Controller C explained that there was no pattern to the requests by maintenance to switch on any particular set of lights for checking. The requests were, to her knowledge, quite

random, and Tower staff would turn on and off the lights as requested. On the night of the occurrence she had not done any light switching for maintenance purposes.

1.18.1.7.4 Summary of Interview with Controller D (see Appendix 3-09)

According to the rotation of staff, Controller D was on his rest break at the time of the accident. He was also monitoring the Clearance Delivery frequency. [Although Taipei AIP states that Clearance Delivery position is suspended after 2200LT hrs daily, the radio frequency for Clearance Delivery was still monitored.]

Controller D said that just as he completed making the ATIS broadcast, he heard a loud explosion and saw a fire on one of the runways. He immediately alerted the fire service through the radio.

He did not notice which taxiway lights had been selected because he was kept busy answering the various telephone calls that followed the accident. Controller D said he did not know if runway 05R edge lights had been selected prior to the accident.

Controller D explained that according to the SOP in CKS Tower, the taxiway and runway lights should be switched off if there was no traffic. When asked whether the approach lights for runway 05L were on at the time of the accident, he said that according to their SOP the approach lights for runway 05L should have been switched off as there was no arrival traffic.

1.18.1.7.5 Summary of Interview with Senior Flight Operations Officer （SFOO）- Driver of the Yellow Vehicle (see Appendix 3-10)

The SFOO from Flight Operations Section was on Apron B at the time of the accident. He said that he rushed to the accident scene via the shortest route he could find. He thought that he routed via taxiway N7 for the runway.

The SFOO said that some time after the accident occurred, he asked the Control Tower to switch on all the runway lights of runway 05 (he did not specify 05L or 05R). When the lights came on, he realized that he was on the grass patch beside taxiway N6.

1.18.1.7.6 Summary of Interview with Civil Aeronautics Administration Officials

(see details in Airport Group Report)

1.18.1.7.7Summary of Interview with Airport Management Division of CAA

(see details in Airport Group Report)

1.18.1.8 ATC Communication Tape Recording Transcripts

The radio frequencies used by Taipei Tower are:

129.3 MHz Local Control Position（LC）
121.7 MHz Ground Control Position (GC)
121.8 MHz Clearance Delivery Position（CD）

1.18.1.8.1 Local Control Position- 129.3 MHz (see Appendix 3-11)

The flights in contact with Local Controller prior to the accident were BR858 CI065 and SQ006. BR858 was a B747-400 aircraft from Hong Kong to Taipei. The flight had initiated a "missed approach" at 2252 LT (1452 UTC). It made several subsequent calls to Local Control for updates on the weather conditions. Following the SQ006 accident, BR858 was informed that runway 05L was closed and asked if it needed "to be diverted". The transcript does not capture the pilot's reply.

CI065 was a departing B747-400 aircraft bound for Bangkok, Thailand. It took off from runway 05L at 2302 LT (1502 UTC). While taxiing out for departure, CI065 reported that the intensity of the runway lights was "OK". CI065 held on the runway until informed that the surface wind was gusting from 26 kts to 45 kts with a crosswind component of 12 kts from "the left".

SQ006 contacted Local Control at 2313 LT (1513 UTC) and was cleared to "hold short runway 05L". Surface wind information (020 deg 24 kts gusting to 43 kts) was passed to SQ006 while the aircraft was taxiing. SQ006 was cleared for take-off from runway 05L at 2315 LT (1515 UTC). Surface wind information in the take-off clearance was 020 deg 28 kts gusting to 50 kts.

1.18.1.8.2 Ground Control Position - 121.7 MHz (see Appendix 3-12)

The flights in contact with Ground Control prior to the accident were CI 065, CX2043, CI004 and SQ006.

CI065 was cleared for taxi to runway 05L via NP with instruction to hold short of runway 05R. The flight was informed of BR858 holding for weather improvement. CI065 requested to be allowed to contact Local Control as soon as possible in order to get the latest wind information.

CX2043 was a Hong Kong bound departure. It reported that cargo loading could not continue owing to wind conditions. Later when the flight reported ready, CX2043 was initially informed that Hong Kong could not accept the flight. ATC did not elaborate. However, the flight was later cleared to start and pushback for runway 06. Following the accident, CX2043 was instructed to tow into bay B7.

CI004 was a B747-400 aircraft bound for San Francisco. The aircraft was parked in Bay A5. After receiving its ATC clearance, the aircraft was cleared to pushback for runway 05L. Following the accident, CI004 reported fire on an " aircraft landed on runway 05R" and requested permission to enter parking bay A8. Ground Control approved the request.

SQ006 requested permission to taxi for departure at 2305 LT (1505 UTC) and was cleared to runway 05L via taxiway SS, west cross and NP. The read-back by SQ006 was consistent with the clearance issued by Ground Control. SQ006 was instructed to contact Local Control at 2313 LT (1513 UTC).

1.18.1.8.3 Clearance Delivery Position - 121.8 MHz (see Appendix 3 -13)

SQ006 first contacted Clearance Delivery at 2253 LT (1453 UTC). The aircraft was parked at bay B5. Communication between Clearance Delivery and SQ006 was for ATC clearance to Los Angeles. The flight was asked to contact Ground Control at 2257 LT (1457UTC).

1.18.1.8.4 Transcript of Channel 1 Communications - 459.2 MHz (see Appendix 3 -14)

Channel 1 transcript captured communications with several parties including Yellow Vehicle 101 which was driven by Senior Flight Operations Officer. According to the transcript, Yellow Vehicle 101 requested for runway 05 lighting to be switched on. This request was made at 2357 LT (1557 UTC). Following this request, the driver of Yellow Vehicle 101 reported that he thought he was at taxiway N6.

1.18.1.8.5 Transcript of Intercom at Taipei Tower (see Appendix 3 -15)

In the transcript, a lady' s voice is captured stating that an aircraft " during take-off at runway 05L, currently located at N7 is now on fire. We wanted to notify the fire service but could not reach them. Please notify them immediately". The transcript does not indicate whom the lady was talking to.

1.18.1.9 Security Video Cameras (see Appendix 3 -16)

Videotapes recorded between October 31and November 1,2000 from a total of 14 cameras at CKS Airport were reviewed. In addition, recordings made on November 4 and 6, 2000 during known activation of the runway lights were also viewed.

Cameras 22, 23, 64, 66, 77, 78 and 79 were directed at the burning wreckage of SQ006 after the accident occurred. A row of lights was observed at 2359 LT (1559 UTC) on camera 64. On camera 66, a row of blue lights was observed at 2343 LT (1543 UTC). The runway lighting status after the accident could not be determined.

Camera 77 captured what appeared to be aircraft lights in the distance. The definition of the lights improved as the aircraft approached to abeam the camera. A flash was seen and almost at the same time a white shape observed followed by an explosion just out of camera view.

On Camera 92, which was located on the domestic terminal near the taxiway N1, aircraft lights could be seen at the time SQ006 was expected to take-off. Green and blue lights could be seen at 2356 LT (1556 UTC).

Runway lights for 05L and 05R could not be distinguished on the recordings made on November 4 and 6, 2000.

1.18.1.10 NOTAMs & AIP Supplement

1.18.1.10.1 NOTAMs (see Appendix 3- 17)

On August 31,2000, Taipei published NOTAM A0606 (replacing NOTAM A0604) stating that a portion of runway 05R/23L between taxiway N4 and N5 would be closed with effect from 0900 LT (0100 UTC) on September 9,2000 until 0900 LT (0100 UTC) on November 22,2000. It added that taxiway N4 and N5 would remain available.

On November 1,2000, NOTAMs A0758 and A0759 were published on the closure of runway 05L/23R and taxiway NP and NS "due to FOD".

On December 22,2000, Taipei issued a NOTAM A0907 (replacing A0860). It stated that with immediate effect, runway 05R/23L was to be used as a taxiway. Take-off or landings were prohibited.

1.18.1.10.2 AIP Supplement (see Appendix 3 -18)

AIP Supplement A007 C015/00 dated October 3, 2000 informed that runway 05R/23L would be re-designated taxiway NC with effect from 0100 LT on November 2,2000 (1700 UTC November 1,2000). The runway centerline lights (green) and the edge lights (white) would remain on taxiway NC until further notice. Runway markings would be changed.

On October 23,2000, the Air Traffic Services Division of CAA Taipei published a NOTAM informing that the re-designation of runway 05R/23L to taxiway NC would be postponed until further notice.

1.18.1.11 Lighting SOP - ATP 88 (see Appendix 3 -19)

Taipei Airport lighting SOP (ATP 88) provides information on when airport lights should be switched on.

Intensity settings guidance for approach and runway lights is included in the lighting SOP. The usual maximum intensity the controller could select for approach lights is level 3 and level 4 for the edge, centerline and touch down zone lights. Greater intensity (up to level 5) may be selected on request.

1.18.1.12 CKS Approach / Tower Operations Manual (see Appendix 3-02)

The CKS Approach/ Tower Operations Manual gives detail guidance on energy conservation without jeopardizing flight safety. It is stated that the airport lights should be switched off when not in use.

1.18.1.13 Runway Visual Range (see Appendix 3-20)

The Runway Visual Range (RVR) print-out on October 31, 2000 indicates that runway 05L lights were switched on at 2313LT (1513 UTC) and switched off at 2324 LT (1524 UTC). The lights had been set at level 3 out of 5 levels.

1.18.1.14 Incidents at CKS Airport

The ATC/Weather Group was able to obtain six reports of incidents that had occurred in CKS Airport since March 1998. These are:

- March 27, 1998

  A Cathay Pacific B747 aircraft (CX006) was cleared for take-off on runway 05L while another aircraft was taxiing on the runway. CX006 held on the runway until the other aircraft was clear.
- July 6, 1998

  A Cathay Pacific aircraft (CX420) entered a closed taxiway. Pilot' s view of the incident was that it was a misunderstanding arising from usage of language. He also observed that although the taxiway had been NOTAMed as closed, there had been no obstruction lighting to mark the limit of the work area.
- March 24, 1999

  A Cathay Pacific aircraft (CX421) was directed by ATC into a closed taxiway (no additional details available).
- March 5, 2000

  A China Airlines B747-400 (CI065) aircraft took off on runway 05L while another aircraft, a B747-100 (UP7846) was turning into the runway.

- March 23, 2000

  A CM922 flight (B737) was cleared for take-off on runway 05L while another aircraft, a MD11 (BR671) was still on the runway. CM922' s take off clearance was cancelled when BR671 alerted the tower that it was still on the runway.

- October 22, 2000

  A Singapore Airline flight SQ7693 initiated a go-around at decision height (DH) on runway 05L as the crew could not make visual contact with the runway. During the go-around, the Captain of the flight noted that the runway and approach lights had not been switched on. The controller later apologized for forgetting to switch the lights on.

IV. Appendices

3-01	Chiang Kai-Shek Approach / Tower Duty Roster of October, 2000.
3-02	Standard Operating Procedures – Chiang Kai-Shek Approach / Tower
3-2A	ATP-88 Para.3.7.2
3-03	CAA' s Procurement of Airport Surface Detection Equipment
3-04	AIP-ENR 1.14-1 Air Traffic Incident Reporting
3-05	Record of interview with Duty Tower Controllers (local and ground)
3-06	Record of second interview with local controller on Nov 10, 2000
3-07	Record of second interview with ground controller on Nov 29, 2000
3-08	Record of interview with flight data controller on Nov 29, 2000
3-09	Record of interview with clearance delivery controller on Nov 30, 2000
3-10	Record of interview with Senior Flight Safety Operations Officer on Nov 7, 2000
3-11	Transcript of VHF129.3 MHz recording
3-12	Transcript of VHF121.7 MHz recording
3-13	Transcript of VHF121.8 MHz recording
3-14	Transcript of UHF459.2MHz (Channel 1) recording
3-15	Transcript of conversation between Approach Control and Control Tower
3-16	Report of Airport Security Tape Review
3-17	NOTAMs
3-18	AIP Supplement A003, A004
3-19	Air Traffic Control Procedures – Airport Lighting
3-20	Runway Visual Range & Runway Lights Intensity
3-21	Chart on CKS Airport Security Camera Locations
3-22	Chiang Kai-Shek Approach / Tower Facility Logs
3-23	Chiang Kai-Shek Airport Office Organization Chart
3-24	Facility Fault records in October 2000, CKS Tower
3-25	Flight progress strips for SQ 006
3-26	Flow Chart of Chiang Kai-Shek Airport Runway Maintenance Project
3-27	ICAO Annex 14, Relevant Chapters
3-28	Lighting Fault records, CKS Tower
3-29	Lighting Operations Procedures of Chiang Kai-Shek Approach / Tower
3-30	Manual on Runway Edge and Taxiway Centerline lights for Runway 05R/23L
3-31	Navaids Fault records in October 2000, CKS Tower
3-32	Physical Certificate for Local and Ground Controllers, CKS Tower
3-33	Rating Certificate for Local and Ground Controllers, CKS Tower

3-34	Report of observations on Airport Lighting Panel
3-35	Runway 05R Maintenance work Schedule & Related Schedules
3-36	Runway incursions at CKS Tower in March 2000
3-37	Statements by Duty Controllers of Chiang Kai-Shek Tower controllers
3-38	Statements by Watch Supervisor of Chiang Kai-Shek Approach / Tower
3-39	Chiang Kai Shek Runway 05L/23R Localizer critical and sensitive areas
3-40	Meeting Minutes regarding conversion of Runway 05R to taxiway NC.
3-41	Proposal/Approval correspondence re: conversion of Runway 05R to Taxiway NC
3-42	Statement from CAA regarding CAA policy/criteria for Runway operation
3-43	Ground reports regarding confusion of Runway 05R and 05L
3-44	Reopening of Runway 05L after SQ006 Occurrence

＊Appendix 21 through 44 were not directly referenced in this factual description however, there are relevant data that may be referenced in future application.