

Analysis of Air Crash Accident: Root Cause Analysis of IranAir Airlines Flight 1974- IR-277



Aliasghar Kazemiafshar^a, Derya Azık Özkan^b, & Türker Özkan^b
^aDepartment of Civil Engineering, & ^bDepartment of Traffic and Transportation Psychology
 MIDDLE EAST TECHNICAL UNIVERSITY



1. Accident Information

Date: 9 January 2011
Site: 10 km SW of Urmia, IRAN
 37°55'8"N 45°17'1"W
Aircraft type: Boeing 727-286
Operator: IranAir Airlines
Flight Number: IR277
Passengers: Fatalities 68/ Occupants: 94
Crew: Fatalities 10/ Occupants: 11
Total: Fatalities 78 / Occupants: 105



2. History of the Accident

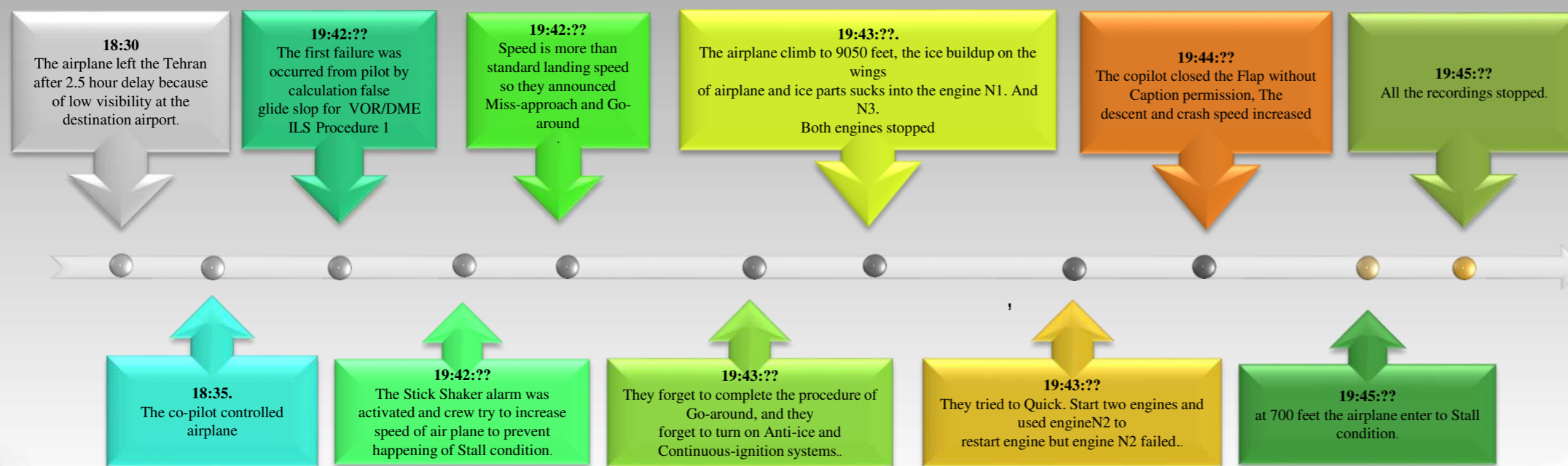


The flight IR-727 was departure from Tehran, IRAN to Urmia, IRAN on 9 January 2011 at approximately 18:30 after 2.5-hour delay and operated by IranAir. About 75 minutes after the takeoff (19:45) from Urmia International Airport, the airplane crashed the near Terman village about 8nm southeast of the airport (approximate position N37.558 E45.171) and broke up in six major parts. Of the 105 passenger on this flight, 78 dead (10 crew, 68 passenger) and 27(1 crew, 26 passenger) survived and airplane was destroyed. The airplane crash first because of human factor. Also there were some other factors reported in relation to crew members actions

3. Aim & Method

Therefore, the aim of this study is to investigate the flight IR-277 accident by root cause analysis to understand the main cause of the accident of IranAir Flight 277 in 2011. By the time of this research, the official report has not published. So, the information related to the accident was gathered from interview of survived passengers and unofficial CVR and FDR data report from some pilot's reliable websites. In order to collect the relevant information timeline method was used. The problems were detected by investigating relevant findings about accident. Lastly, problems related with accidents were analyzed by 5 Why technique and fishbone method.

4. Information Mapping (Timeline of the Accident)



5. Problem Analysis

The accident occur after 75 minutes of the take off and the crew could not understand the problem. The official report has not published.

Problems	Why?	Why?	Why?	Why?	Why?
Problem 1: Miss approach at first try	The copilot controlled the airplane and the captain controlled at the landing procedure at the end of the flight	Pilot want to train copilot, but it is against flight safety policy	The pilot use false gild slope, so the speed is decrease and the Stick shaker alarm activated	In order to control speed they increase speed	The speed is more than standard landing speed so they cancelled landing and announced miss approach and go around
Problem 2: Wrong decision from cockpit crew after Miss-approach	During Miss approach and Go around , stick shake alarm and controlling airplane speed were distracted them	Forget to complete checklist for Go around	Forget to active Anti-ice and Continues ignition		
Problem 3: Weak crew management and communication	Copilot don not permit captain to close flaps	Captain do not tell the emergency situation to cabin crew to prepare passengers for crash(CRM was not applied properly)	The crew do not familiar to fly in the cold, snow and foggy weather	Weak communication between airplane and control tower, captain don not announced emergency situation to control tower	The speed is more than standard landing speed so they cancelled landing and announced miss approach and go around

5. Problem Analysis(cond't)

Human factors
The captain breaks the safety flight rules and allow copilot controlled air plane at visibility under 1500m and slippery runway.

Human factors
The cockpit crew working to control stick shaker and airplane speed so, they forget to complete the checklist of Go-around and forget to turn on Anti-ice and continues ignition systems.

Human factors
The pilots and the crew calculated false glide slope for VOR/DME ILS Procedure 1 and they don't recognize the speed of airplane decrease until the moment the Sick Shaker alarm was activated.

The airplane crash first because of human factor , because crew don't follow producer and check list, if the pilot was not let copilot control the airplane and wrong calculation in gild slope can be prevented by following flight root and policy. They forget to turn on two important button which is easily prevented by simple go-around checklist.

Communication Factors
The copilot without captain permission closed the flaps and increase the descending speed.

Human factors
The caption did not say emergency situation so the cabin crew, so they did not tell to passengers to go to Emergency Brace position.

Environmental factors
Weather of Urmia airport was foggy and snow with low clouds and the landing runway was not clearly seen at the level at which the descent started.
Also ,the ILS inurement at Urmia airport for calculation visibility is old version and have less accuracy than newer versions

6. Findings & Recommendations

To conclude; in order to identify the problems, different types of root cause analyses were performed. As a result, the apparent causes of this accident can be listed as:

- Human factor
 1. Miss approach at first try
 2. Wrong decision from cockpit crew after Miss-approach
 3. Weak crew management and communication
- Environmental factors

1. Landing runway was not clearly seen at the level at which the descent started.
 2. ILS inurement at Urmia airport for calculation visibility is old version and have less accuracy than newer versions
- This accident was an important example for "Human Factors" subject. When these tables are carefully examined in terms of causes; different countermeasures and interventions can be applied to future safety practices. In order to reduce the possibility of human error, the relationships of human with other safety elements should be carefully examined and necessary precautions should be taken. For example; changing the company policy of safety; taking all the precautions and making all the controls repeatedly and not letting a takeoff if there is a problem out there; preventing any kinds of hierarchical relationships in the cockpit; giving the necessary importance to the training of the employees, updating the training programs according to the needs of the company and the conditions, repeating the education at specific time periods.

7. References

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