



FINAL REPORT

Occurrence No: 801/14

Aircraft:

**a) Embraer, EMB-505 Phenom 300,
registration marks: D-CRCR**

**b) Boeing 737-800,
registration marks: SP-ENY**

6 June 2014

Warsaw Chopin Airport (EPWA)

This Report is a document presenting the position of the State Commission on Aircraft Accidents Investigation concerning circumstances of the air occurrence, its causes and safety recommendations. The Report was drawn up on the basis of information available on the date of its completion.

The investigation process can not be considered as finally closed. The investigation may be reopened if new information becomes available or new investigation techniques are applied which may affect the wording related to the causes, circumstances and safety recommendations contained in the Report.

Investigations into air occurrences are carried out in accordance with the applicable international, European Union and domestic legal provisions for prevention purposes only.

The investigation was carried out without the need of application of the legal evidential procedure, applicable for proceedings of other authorities required to take action in connection with an air occurrence.

The Commission does not apportion blame or liability

In connection with Article 5 paragraph 5 of the Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation [...] and Article 134 of the Act – Aviation Law, the wording used in this Report may not be considered as an indication of the guilty or responsible for the occurrence.

For the above reasons, any form of use of this Report for any purpose other than air accidents and incidents prevention, can lead to wrong conclusions and interpretations.

This Report was drawn up in the Polish language. Other language versions may be drawn up for information purposes only.

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GENERAL INFORMATION

Category and type of aircraft :	a) airplane, Embraer, EMB-505 Phenom 300 (E55P) b) airplane, Boeing 737-800 (B738)
Aircraft registration marks:	a) DCRCR b) SPENY
Aircraft commanders :	holders of ATPL(A)
Flight organizers :	a) RH Flugdienst GmbH b) Enter Air Sp. z o.o.
Aircraft users :	a) RH Flugdienst GmbH b) Enter Air Sp. z o.o.
Aircraft owners :	Lack of data
Place of occurrence :	Warsaw Chopin Airport (EPWA)
Date and time of the incident :	6 June, 2014, 12:44 hrs UTC
Damage to the aircraft :	No damage
Injuries to persons :	No injuries

SYNOPSIS

Note: All times in the Report are expressed in UTC (LMT = UTC + 2 hours)

On 6 June 2014, at 12:44 hrs a runway incursion occurred. The crew of B738 (ENT5576) performed a flight to EPWA aerodrome and was approaching to landing on RWY 33. The crew of E55P (DCRCR) was waiting on TWY A0 short of RWY 15/33 and was informed that after two landings on RWY 33 may expect a clearance for taxiing on RWY 15. At 12:44 hrs the crew of ENT5576 received the clearance to land on RWY 33 and after the landing vacated RWY 33 via TWY S3. During the approach and the landing of ENT5576 the DCRCR crew entered the section of RWY 15/33 from TWY A0 to TWY D2 without a clearance.

Investigation into the occurrence was conducted by:

Bogdan Fydrych, MSc (Eng.) - Member of the State Commission on Aircraft Accidents Investigation.

In the course of the investigation the SCAA determined the following **causes of the serious incident**:

1. The use of improper phraseology by the Controller and DCRCR crew.
2. The clearance for taxiing (addressed to another crew) was erroneously received by the DCRCR crew.
3. The Controller's failure to notice RWY 15 incursion (from the threshold to TWY D2) by DCRCR.

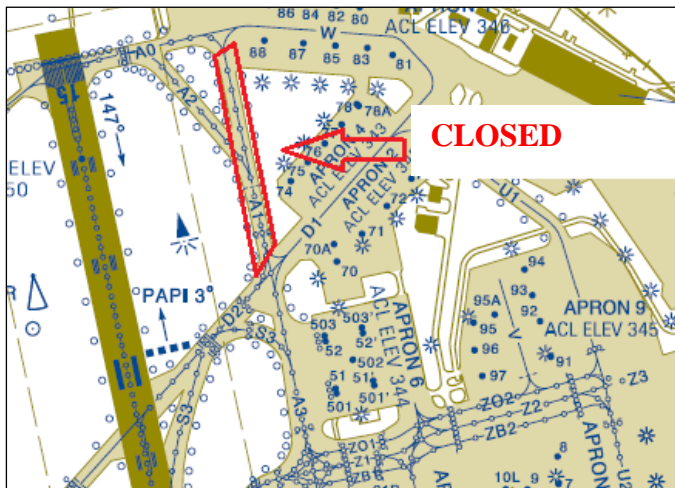
Contributing factors:

1. Impediments to ground movement due to the closure of TWY A1, E1 and E2 up to N.
2. Lack of STOP BAR lighting.
3. Meteorological conditions: thunderstorms.

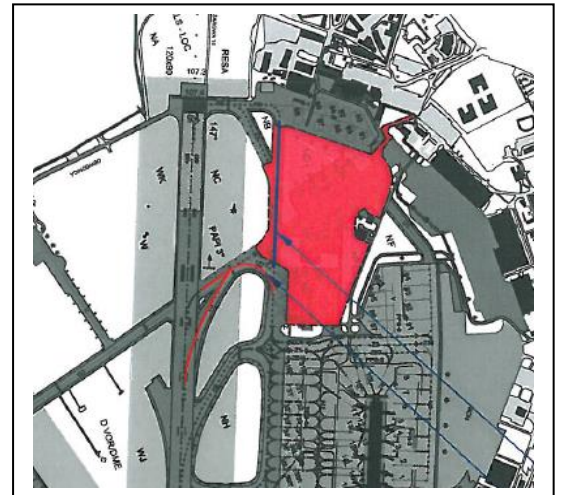
1. FACTUAL INFORMATION

1.1 History of the flight.

Four aircraft were involved in the occurrence: DCRCR, FYJ007, WS7404 (departing) and ENTS576 (landing). Due to the closure of TWY A1 the DCRCR crew was waiting for taxi instructions from TWY A0 via RWY 15/33 on which landings took place. STOP BAR lighting on TWY A0, short of RWY 15/33 was not operating, but the marking and the sign of STP BAR was correct.

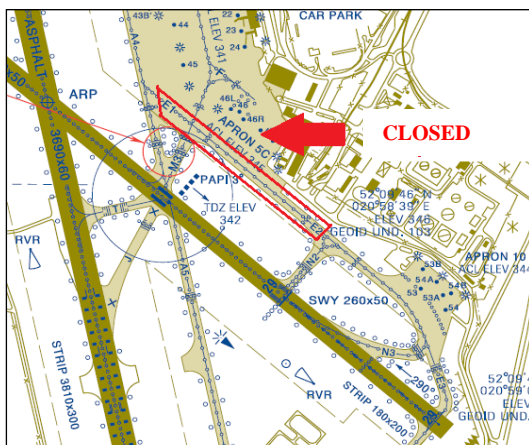


Extract from AIP Poland (closed TWY A1 marked)

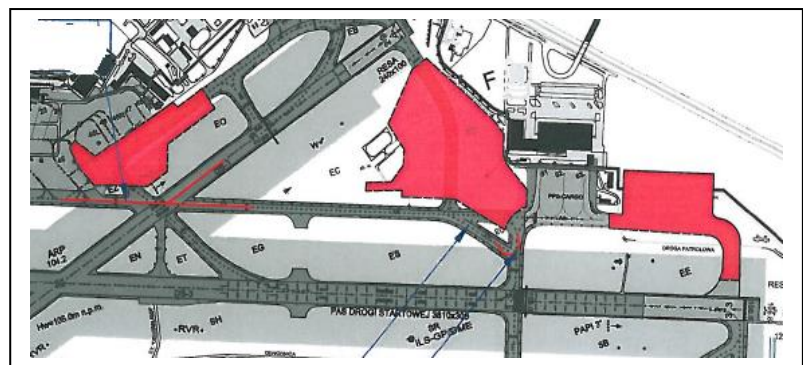


Extract from EPWA documentation (closed surfaces of the aerodrome marked).

Due to the closure of TWY E, the airplanes taking off from RWY 29 taxied on RWY 11/29 from TWY A4 on which STOP BAR controlled by TWR personnel was installed.



Extract from AIP Poland (closed TWY E marked).



Extract from EPWA documentation (closed surfaces marked).

Thunderstorms occurring in the aerodrome area caused heavy workload for personnel of the aerodrome air traffic control unit (TWR) due to the need for coordination of headings of departing aircraft with APP.

Boeing 787 was about to take off from the beginning of RWY 33 and its crew was arranging with a controller (in Polish) a backtrack procedure on RWY 33 and the takeoff between landing aircraft.

The crew of DCRCR was waiting on TWY A0 and was instructed to expect the clearance to taxi from RWY 15 threshold after two landings on RWY 33. The instruction was acknowledged by the crew with the phrase: “*ROGER*”.

Then two landings on RWY 33 took place, but due to the fact that ENT5576 approaching to landing on RWY 33 was too close, the DCRCR crew did not receive the clearance to enter RWY 33, as previously announced. At that time WS7404 and FYJ007 received backtrack instructions on RWY 29 from TWY A4. ENT5576 received the clearance for landing on RWY 33.

During the landing approach and touchdown of ENT5576 the DCRCR crew was taxiing without a clearance on RWY 15 from TWY A0 to TWY D2. This happened because the DCRCR crew misunderstood information addressed to another crew. After ENT5576 landing the DCRCR crew informed the Controller that it had received the clearance for taxiing on RWY 33. The Controller informed the DCRCR crew that such a clearance had not been issued.

1.2 Injuries to persons.

None.

1.3 Damage to aircraft.

None.

1.4 Other damage.

None.

1.5 Personnel information.

- On the day of the occurrence the flight crews of the involved airplanes possessed valid ratings and valid Aero-Medical Certificates.
- TWR Controller - male, aged 36.
He has possessed Air Traffic Controller License since 2009.
On the day of the occurrence he possessed valid ratings and valid Aero-Medical Certificate.

1.6 Aircraft information.

Boeing 737-800: Serial No.: 28592, Year of Manufacture: 1999.

The aircraft possessed Certificate of Registration and Certificate of Airworthiness.

Embraer, EMB-505 Phenom 300: Serial No.: 0069, Year of Manufacture: 2011.

The aircraft possessed Certificate of Registration and Certificate of Airworthiness.

1.7. Meteorological information.

Thunderstorms occurred in the area of the aerodrome.

1.8. Aids to navigation.

Operational.

1.9. Communications.

During the occurrence the continuous radio communication with the pilots was maintained.

1.10. Aerodrome information.

Warsaw Chopin Airport (EPWA) has two intersecting runways and many taxiways with numerous intersections and several aprons. EPWA aerodrome should be categorized as a complex one.

The aerodrome does not have A-SMGCS (Advanced Surface Movement Guidance and Control System). A-SMGCS is a modular system consisting of various functions to support the safe, orderly and efficient movement of aircraft and vehicles at the airports in all circumstances, according to the traffic volume and complexity of the airport, taking into account the required performance in different meteorological conditions.

A-SMGCS supports the air traffic controllers providing better situational awareness. It is an important element in the safety network that allows for early detection and resolution of conflicts and is also a source of information useful for the planning of aviation operations.

AIP POLSKA
 AIP POLAND

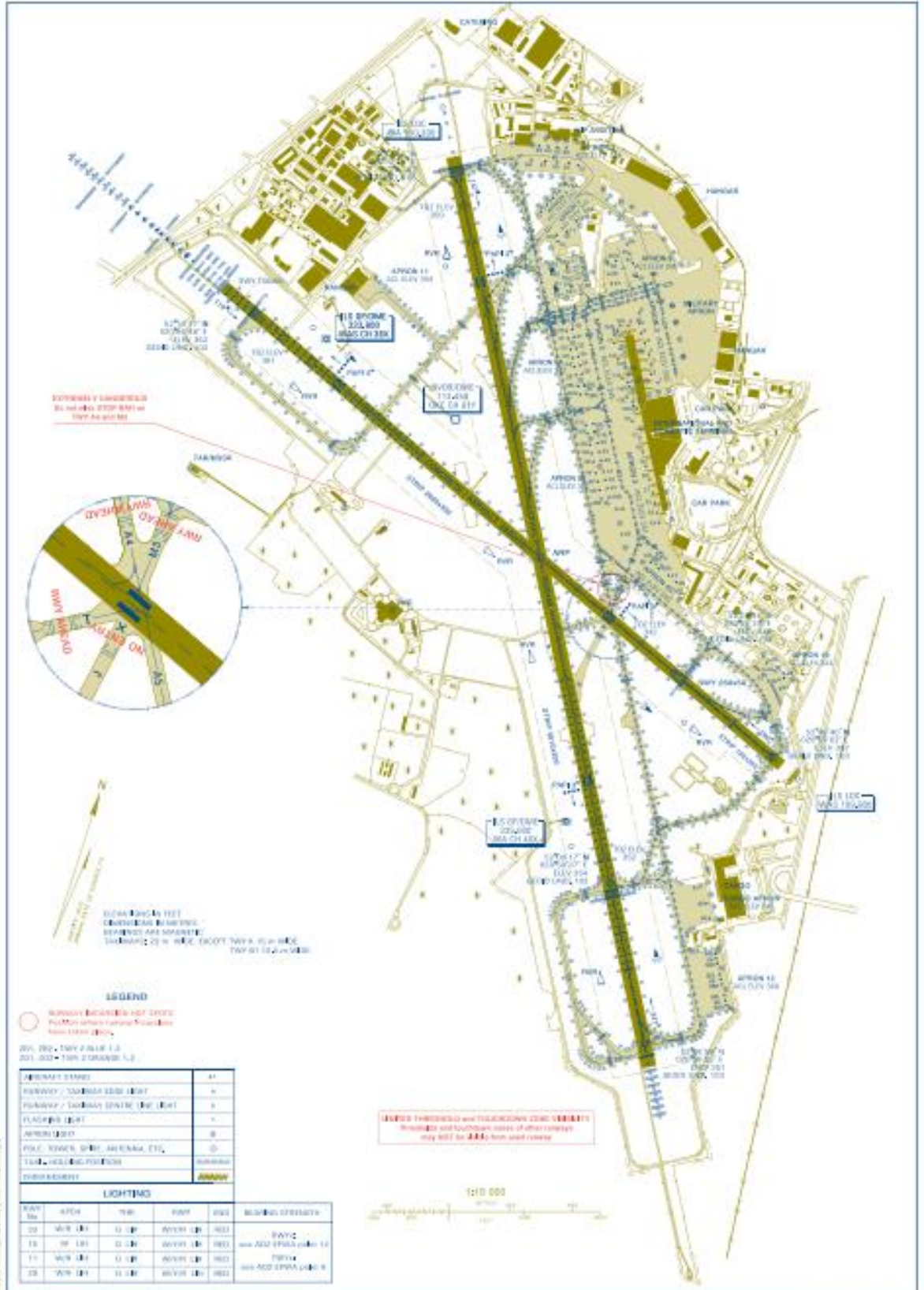
AD 2 EPWA 1-1-1
 25 JUL 2013

AERODROME CHART - ICAO

52°09'57" N
 020°58'02" E ELEV 362 ft

TWR 118,300
 GROUND 121,000

WARSAW CHOPIN AIRPORT



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AIRAC AMDT 139

1.11. Flight recorders.

The flight recorders were not read out.

1.12. Wreckage and impact information.

Not applicable.

1.13. Medical and pathological information.

Not applicable.

1.14. Fire.

Fire did not occur.

1.15. Survival aspects.

Not applicable.

1.16. Tests and research.

Standard methods were applied for analysis of the documentation related to the occurrence.

1.17. Organizational and management information.

On 9 June 2014 SCAAI was notified about the occurrence by the Polish Air Navigation Services Agency. Initially the occurrence was categorized as an incident. On 17 June 2014 SCAAI was informed that according to the radar recording, during touchdown of ENT5576 the DCRCR was still on RWY33. Therefore, in accordance with the SCAAI Regulations the occurrence category was changed into “ Serious Incident”.

1.18. Additional information.

In accordance with the recommendations of *Annex 13 to the Convention on International Civil Aviation* and *Regulation of the European Parliament and of the Council* SCAAI notified about the occurrence ICAO, EASA, European Commission, the States of Manufacture and the States of Registry of the involved airplanes.

The Draft Final Report was forwarded to the Civil Aviation Authority, Polish Air Navigation Services Agency, Warsaw Chopin Airport management and the German Commission (BFU). Their comments were taken into account in the content of the Final Report.

1.19. Useful or effective investigation techniques.

Not applied.

2. ANALYSIS

2.1. Occurrence analysis.

Chronology of events:

Time: 12:39:39 hrs – holding on TWY A0, short of RWY15 threshold, the DCRCR crew established communication with EPWA TWR Controller. The Controller informed the crew: „*expect two landings on RWY33, then your backtrack*”. The DCRCR crew read back: “*after landings expecting backtrack*”;

Time: 12:40:12 hrs – the first announced airplane landed;

Time: 12:42:30 hrs - FYJ007 crew asked the Controller about the possibility of takeoff from RWY29 starting from TWY A4. The Controller did not agree for takeoff from the place proposed by the crew, informed the crew that it was No. 3 for takeoff and

ordered: „*make backtrack, vacate N2*”. The crew of FYJ007 acknowledged the taxi instruction;

Time: 12:42:32 hrs – the second announced airplane landed;

Time: 12:42:50 hrs – the Controller cleared the crew of FYJ007 moving for takeoff from RWY 29: „*backtrack RWY29, vacate left N2, continue E*”. The crew of FYJ007 correctly read back the clearance;

Time: 12:43:30 hrs - the second landing airplane on the Controller’s order vacated RWY33 via TWYS2;

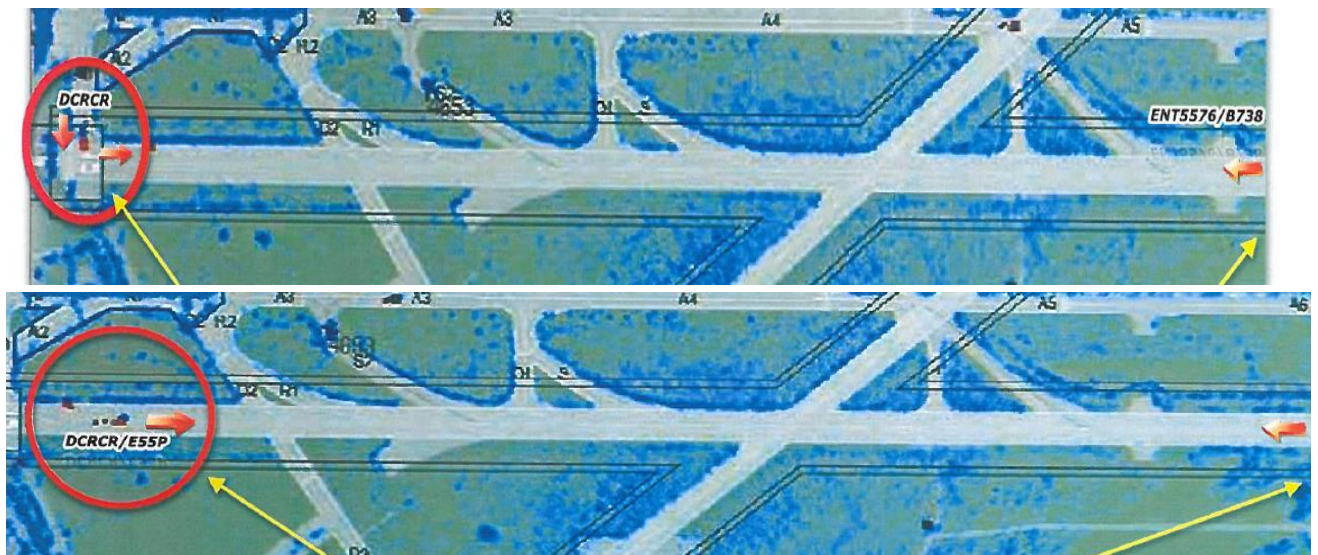
Time: 12:43:48 hrs - DCRCR crew informed that was still waiting for backtrack.

The Controller informed the FYJ007 crew: „*Ok, now, this is stopbar should be switched off, 007, backtrack, vacate N2*”.

The DCRCR crew read back the clearance addressed to FYJ007: *backtrack approved, vacating via N*”. This was not noticed by the Controller.

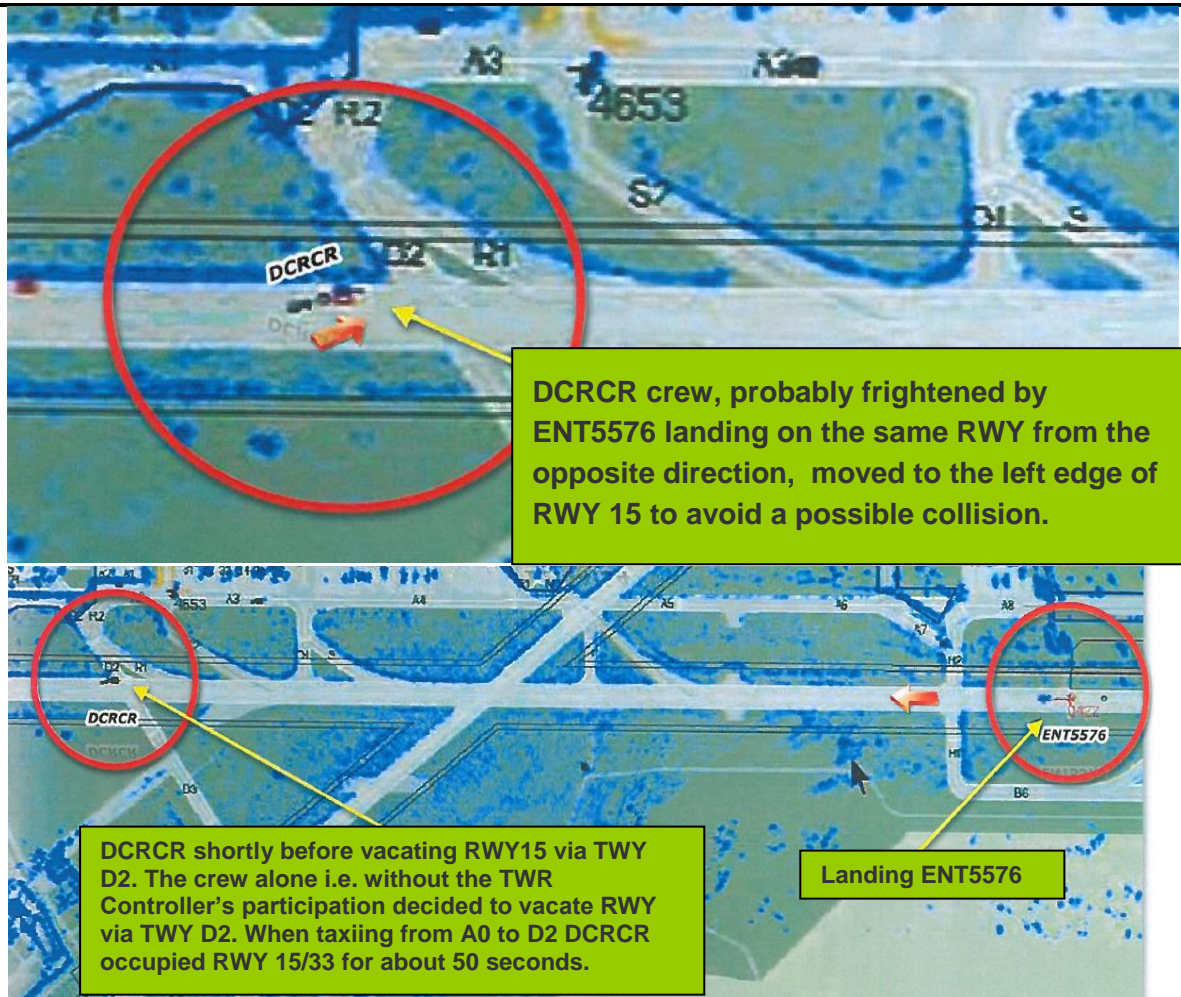
Time: 12:44:04 hrs – the ENT5576 crew reported on short approach. The Controller cleared the crew to land on RWY33;

Time: 12:44:08 hrs – the airport radar recording shows DCRCR airplane in the course of entering RWY15/33 from RWY 15 threshold via TWYA0 and taxiing towards RWY33 threshold (radar screen shots below);



Time: 12:44:15 hrs – the Controller was busy with coordination of taxiing conditions for Boeing787;

Time: 12:44:53 hrs - ENT5576 landed. At this moment DCRCR reached TWY D2 and vacated RWY via this taxiway.



There was a misunderstanding in the course of communication between the Controller and the crews of FYJ007 and DCRCR. When DCRCR crew informed that it was waiting for the backtrack clearance, the Controller issued the taxiing clearance for FYJ007 without specifying the RWY designation. This was confirmed by the DCRCR crew. The DCRCR crew probably could not hear the first part of the correspondence concerning STOP BAR, which was not installed on TWY A0. Lack of STOP BAR should have indicated to the DCRCR crew that the correspondence was not addressed to them. The erroneous confirmation by the DCRCR crew without specifying registration marks was not noticed by the Controller. As a result of the facts discussed above the DCRCR crew entered RWY15/33 and began taxiing toward RWY33 threshold. At the same time, in accordance with the received clearance the ENT5576 crew performed approach procedure and then landing. The DCRCR crew noticed the landing ENT5576 and preventively taxied from the center of the RWY to its left edge and alone decided to vacate the RWY via TWY D2. According to the ENT5576 crew statement, they did not notice the aircraft taxiing from RWY15 threshold because they were busy with observation of the weather conditions (thunderstorms).

Improper phraseology used by the Controller in his communication with the FYJ007 crew significantly contributed to the misunderstanding of the clearance, confirmed by DCRCR crew, but directed to another crew.

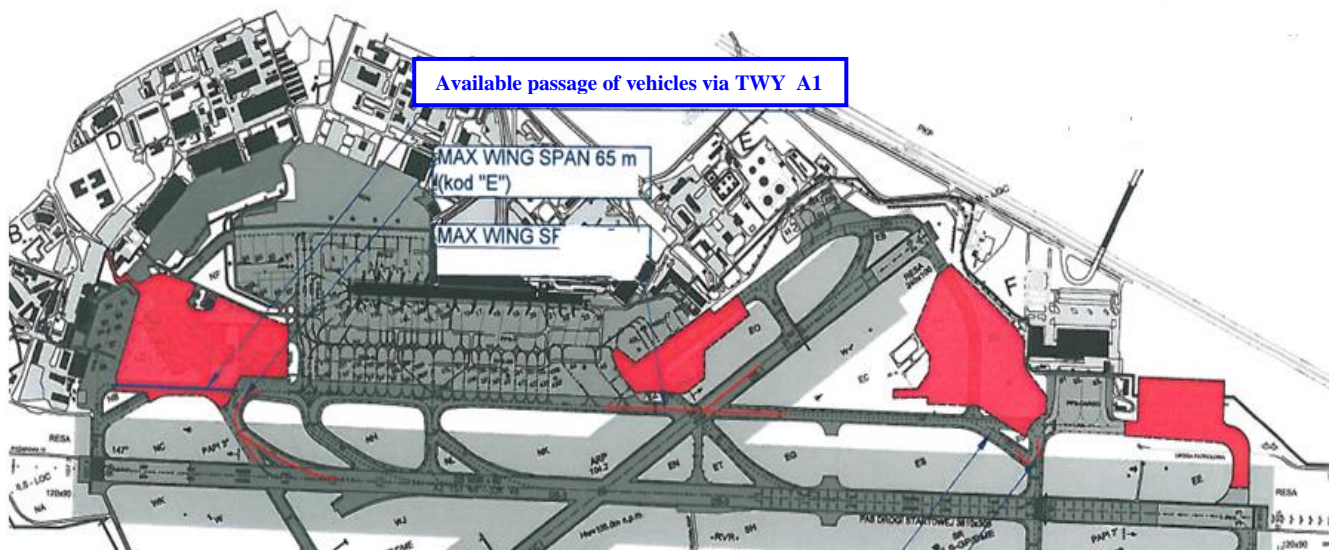
An important element of the incident was the Controller's failure to notice DCRCR taxiing on RWY 15/33 for about 50 seconds. The airplane created the risk of collision with ENT5576 landing on RWY 33.

At that moment the Controller's attention was focused upon the airplanes cleared to taxi for takeoff from RWY29, i.e. upon the opposite area of the aerodrome. The coordination of taxi conditions for Boeing 787 took a lot of time, because due to the size of the aircraft during its taxiing on TWY H1 the ILS glide path signal was disturbed. That required precise arrangements with APP to change the type of approach (detailed description of the problem is contained in the documents related to the investigation - SCAAI reference No: 579/14).

On the basis of radio communication recording it can be concluded that the Controller was not aware that ENT5576 landed on the runway occupied by DCRCR until the DCRCR crew informed him about alleged clearance to taxi on RWY 15/33. It can be also assumed that specifying the registration marks by DCRCR crew during confirmation of the clearance could have allowed the Controller to realize that the correspondence: *"backtrack approved, vacating via N"* was confirmed by another crew.

2.2. EPWA aerodrome

Active RWYs 11/29 and 15/33 were used by the airplanes taxiing for takeoff. It was necessary due to the closure of TWY A1, E1 and E2 up to TWY N.



An important factor affecting the occurrence of the incident was the failure to impose some restrictions on the number of aviation operations due to the fact that TWYs and aerodrome surfaces important for the ground movement were closed.

The closed TWYs necessitated additional actions of TWR and APP personnel to coordinate taxiing of departing and arriving aircraft on RWYs. At EPWA, in accordance with the applicable principles, restrictions are introduced only in the case of unavailability of one of the runways.

Another factor possibly affecting the occurrence of the incident was the lack of STOP BAR lighting on TWY A0, which might worsen STOP BAR visibility.

A complex design of EPWA aerodrome requires increased attention of the personnel of air traffic services, pilots and drivers. In particular, in the case of severe weather conditions and/or in the course of construction works, the complexity of the aerodrome may cause stressful situations for air traffic controllers and lead to misinterpretation of information and clearances received by pilots and drivers.

The aerodrome design mentioned above and the runway incursions which have occurred indicate the need to implement A-SMGCS at EPWA as soon as possible.

The Commission was informed that the works related to implementation of A-SMGCS on EPWA have been launched in 2007. Until the day of releasing of this Report A-SMGCS has not been installed at EPWA aerodrome.

2.3. Evacuation action

Not applicable.

3. CONCLUSIONS.

3.1. Commission findings.

1. The Controller possessed the required ratings to perform flight duties.
2. The airplanes flight crews possessed the required documents to perform flight operations.
3. The airplanes possessed the required documents to perform aviation operations.
4. In the course of the occurrence the two-way communication with the flight crews was maintained.
5. Thunderstorms in the area of the aerodrome caused additional workload for the TWR and APP personnel.
6. Improper phraseology was used by the Controller and DCRCR crew.
7. Lack of A-SMGCS on the aerodrome on the day of the occurrence.
8. No restrictions on the number of aviation operations on the aerodrome due to the closure of TWY A1, E1 and E2 up to TWY N and the need to use RWYs 11/29 and 15/33 for taxiing.
9. Lack of STOP BAR lighting on TWY A0 short of RWY 15/33.

3.2. Causes of the serious incident:

1. The use of improper phraseology by the Controller and DCRCR crew.
2. The clearance for taxiing (addressed to another crew) erroneously received by the DCRCR crew.
3. The Controller's failure to notice RWY 15 incursion (from the threshold to TWY D2) by DCRCR.

Contributing factors:

1. Impediments to ground movement due to the closure of TWY A1, E1 and E2 up to N.
2. Lack of STOP BAR lighting.
3. Meteorological conditions: thunderstorms.

4. SAFETY RECOMMENDATION.

Civil Aviation Authority, Polish Air Navigation Services Agency, Airport Management:

In order to improve the level of safety of aviation operations at EPWA, due to its complex design the and the runway incursions which have taken place on the aerodrome, the Commission recommends to implement A-SMGCS as soon as possible.

THE END

SCAAI Investigator-in-Charge:

.....*signature on the original Report*.....

(Stamp and signature of the Investigator-in-Charge)