



ICAO

UNITING AVIATION

AIIG/1 Virtual Meeting

Event Risk Assessment Methodologies



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The main objective is to understand how to conduct Event Risk Classification for single events.



1. ARMS-Event Risk Classification (ERC)

Question 2

What was the effectiveness of the remaining barriers between this event and the most probable accident scenario?			
Effective	Limited	Minimal	Not effective
50	102	502	2500
10	21	101	500
2	4	20	100
1			

Question 1

If this event had escalated into an accident, what would have been the most probable outcome?	
Catastrophic Accident	Loss of aircraft or multiple fatalities (3 or more)
Major Accident	1 or 2 fatalities, multiple serious injuries, major damage to the aircraft
Minor Injuries or damage	Minor injuries, minor damage to aircraft
No accident outcome	No potential damage or injury could occur

Typical accident scenarios
Loss of control, mid air collision, uncontrollable fire on board, explosions, total structural failure of the aircraft, collision with terrain
High speed taxiway collision, major turbulence injuries
Pushback accident, minor weather damage
Any event which could not escalate into an accident, even if it may have operational consequences (e.g. diversion, delay, individual sickness)

2. European Risk Classification Scheme (ERCS)

Severity		Classification (ERCS Score)									
Potential Accident outcome	Score	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
Extreme catastrophic accident with the potential for significant number of fatalities (100+)	X	0,001	0,01	0,1	1	10	100	1000	10000	100000	1000000
		59	58	57	56	55	54	53	52	51	50
Significant accident with potential for fatalities and injuries (10-100)	S	0,0005	0,005	0,05	0,5	5	50	500	5000	50000	500000
Major accident with limited amount of fatalities (2-19), life changing injuries or destruction of the aircraft	M	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
		0,0001	0,001	0,01	0,1	1	10	100	1000	10000	100000
An accident involving a single fatality, life changing injury or substantial damage	I	I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
		0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000	10000
An accident involving minor and serious injury (not life changing) or minor aircraft damage	E	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
		0,000001	0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000
No likelihood of an accident	A	No implication to Safety									
Corresponding Barrier Score		9	8	7	6	5	4	3	2	1	0
Barrier Weight Sum		17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2	0
Probability of the Potential Accident Outcome											

1. ARMS-Event Risk Classification (ERC)

Question 2

What was the effectiveness of the remaining barriers between this event and the most probable accident scenario?			
Effective	Limited	Minimal	Not effective
50	102	502	2500
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Question 1

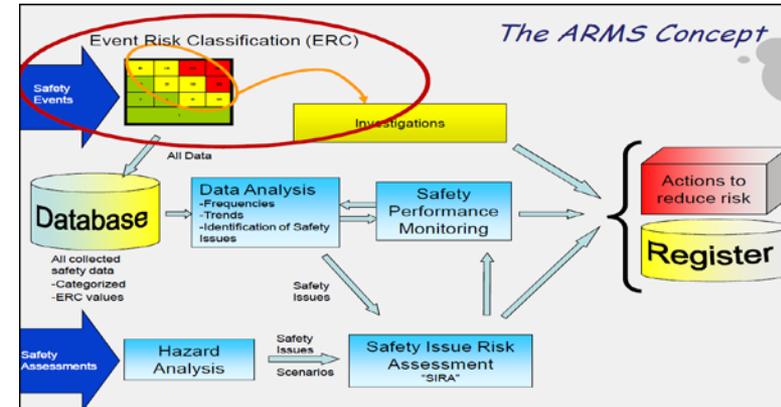
If this event had escalated into an accident, what would have been the most probable outcome?		Typical accident scenarios
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Major Accident	1 or 2 fatalities, multiple serious injuries, major damage to the aircraft	High speed taxiway collision, major turbulence injuries
Minor Injuries or damage	Minor injuries, minor damage to aircraft	Pushback accident, minor weather damage
No accident outcome	No potential damage or injury could occur	Any event which could not escalate into an accident, even if it may have operational consequences (e.g. diversion, delay, individual sickness)



Aviation Risk Management Solutions (ARMS) Methodology

- **Event Risk Classification: ERC**
- **Safety Issue Risk Assessment: SIRA**

- ❑ The ERC does **not replace a safety risk assessment**
- ❑ The ERC is based on the concept of "**Event-Based Risk level**", which represents an assessment of the risk level of this one event and not of the risk associated with all similar events
- ❑ The **aggregation** of individual event risks is an adequate means for **safety performance monitoring**



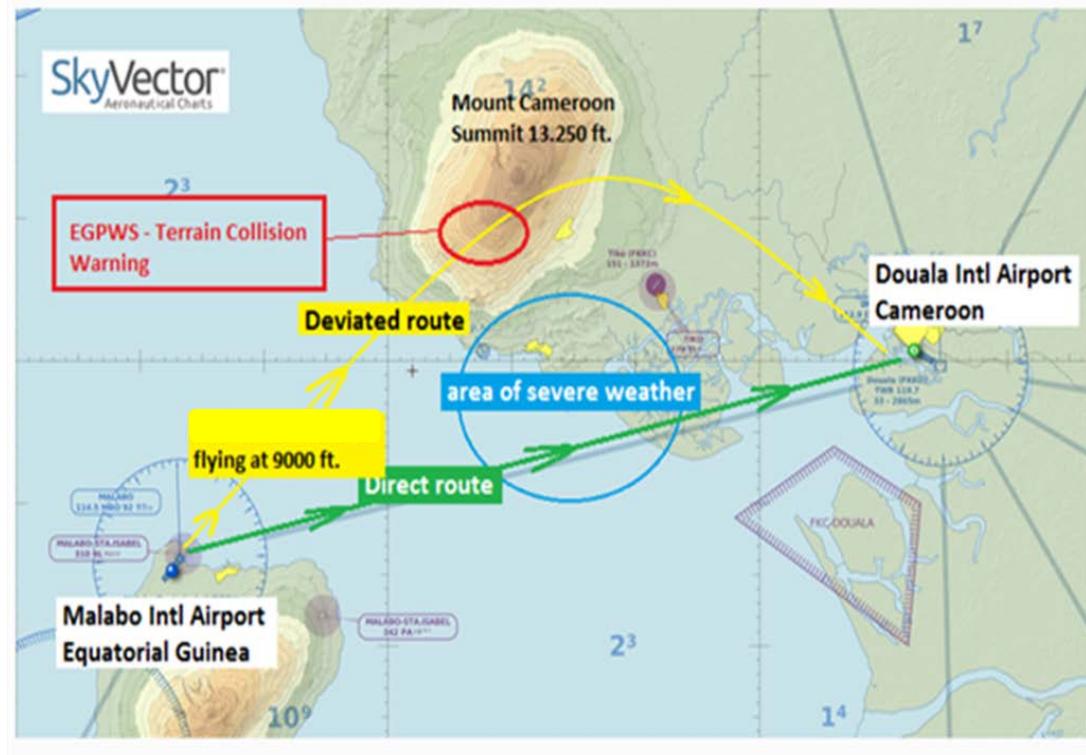


- Instead of assessing the risk of a similar event taking place in the future, the analyst should focus on **the remaining safety barriers**, which avoided the event resulting in the considered consequence
- ERC considers **only the likelihood of the remaining barriers, not the probability of the event itself or the overall probability** of the worst foreseeable outcome happening
- Even though the consideration of these safety barriers is still subjective to a certain extent, this **subjectivity can be reduced** by a good understanding of **the barriers present** in typical scenarios
- The **sum of all event risks** indicates the **"historic" amount of risk** which was taken

Step 1: ERC -Severity Question

If the experienced event had escalated in an accident outcome, how severe would the most credible accident scenario have been?

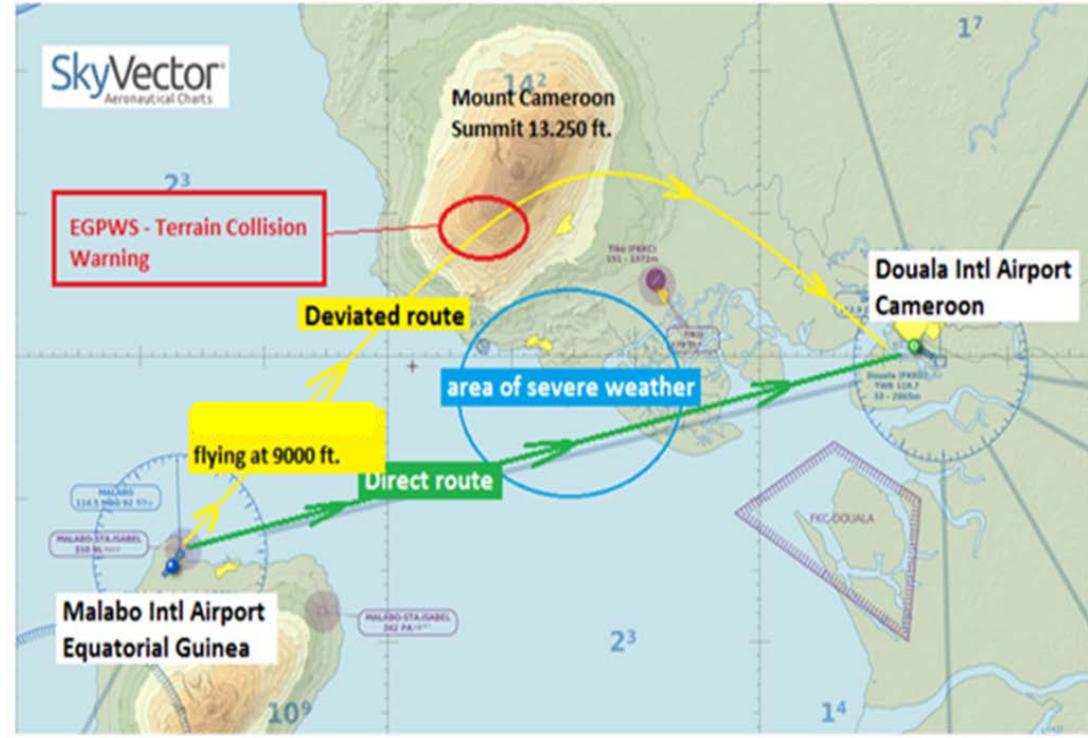
- The severity question has to be based on the **credible accident outcome** and not some intermediary point.



Step 2: ERC –Probability Question

What was the effectiveness of the remaining barriers between this event and the accident scenario? Effective / Limited / Minimal / Not Effective

- To assess **the remaining safety barriers**, consider both the **number and robustness of the remaining barriers** between this event and the accident scenario identified in Question 1.
- Barriers, which already failed **are ignored**





Not effective:

The accident occurred, or could only be prevented by either pure luck or exceptional skills

Minimal:

Some safety barriers were still in place, but their total effectiveness was minimal

Limited:

The effectiveness of the remaining safety barriers was limited. This is usually an abnormal situation, which is more demanding to manage, but with still a considerable remaining safety margin

Effective:

The safety margin was effective, typically consisting of several good safety barriers

Event Risk Classification (ERC)

Step 3:

Question 2

What was the effectiveness of the remaining barriers between this event and the most probable accident scenario?

Effective	Limited	Minimal	Not effective
50	102	502	2500
10	21	101	500
2	4	20	100
		1	

Question 1

If this event had escalated into an accident, what would have been the most probable outcome?

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Risk estimation

Typical accident scenarios
Loss of control, mid air collision, uncontrollable fire on board, explosions, total structural failure of the aircraft, collision with terrain
High speed taxiway collision, major turbulence injuries
Pushback accident, minor weather damage
Any event which could not escalate into an accident, even if it may have operational consequences (e.g. diversion, delay, individual sickness)



The ERC has two outputs:

The **first output** is the color of the matrix element, which indicates what should be done about the event

Red: The event can be considered to be a safety issue. An immediate in-depth investigation is due

Yellow: The event should be investigated and/or risk assessed in more depth

Green: Use for continuous improvement, flows into the safety database



→ Investigate immediately and take action.

→ Investigate or carry out further Risk Assessment

→ Use for continuous improvement (flows into the Database).

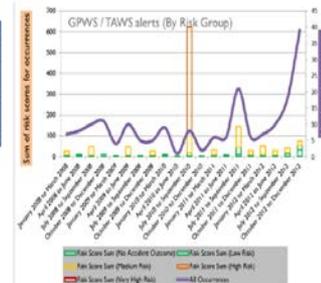
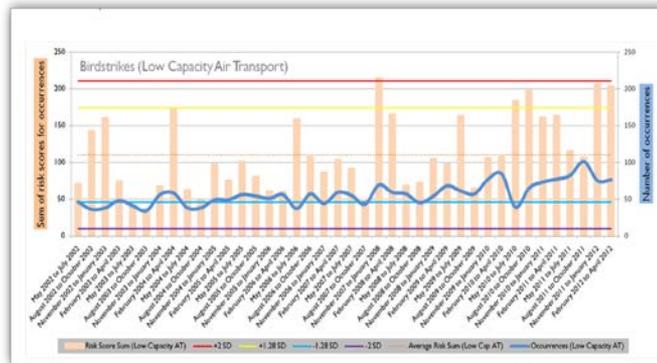
Recommended actions on the ERC results

The second output is the ERC risk index

- Provides a **quantitative relative risk value** for each event
- The risk index is an **estimated risk value**
 - Can be used to quantify risk
 - the resulting risk indices can be summed up to obtain the cumulative risk of a batch of events
 - Helps in identifying safety issues

In addition,

- **Rapid risk assessment** of aviation occurrences
- Identify **low frequency and high risk** occurrences
- Focus on proactive activities such as **trend monitoring** and **research investigation**



2. European Risk Classification Scheme (ERCS)

Severity		Classification (ERCS Score)										
Potential Accident outcome	Score											
Extreme catastrophic accident with the potential for significant number of fatalities (100+)	X		X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
Significant accident with potential for fatalities and injuries (20-100)	S		S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
Major accident with limited amount of fatalities (2-19), life changing injuries or destruction of the aircraft	M		M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
An accident involving a single fatality, life changing injury or substantial damage accident	I		I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
An accident involving minor and serious injury (not life changing) or minor aircraft damage	E		E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
No likelihood of an accident	A	No implication to Safety										
	Corresponding Barrier Score	9	8	7	6	5	4	3	2	1		0
	Barrier Weight	17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2		0
Probability of the Potential Accident Outcome												



- **ERCS methodology** applied for the assessment of the risk posed by an occurrence to civil aviation in the form of a **safety risk score**
- Address the **safety risk of an occurrence** and **not its actual outcome**
- The assessment of each occurrence is to determine the **worst likely accident outcome** that the occurrence might have led to, and **how close to that accident outcome** the occurrence was



ERCS follows core principles of the Event Risk Classification (ERC) method:

- a. **Event-based risk level assessment**
- b. Probability assessment based on the **effectiveness of the stopping and remaining barriers**
- c. Qualitative and quantitative **safety risk score of an occurrence** and not its actual outcome

Compared to ERC, ERCS introduces identification of the **key risk areas** (including a comparison of their risk levels) and **harmonized approach** for event severity and probability determination.

The ERCS consists of the following **two steps**:

- a. **STEP 1:** Determination of the values of the two variables: **severity** and **probability**.
- b. **STEP 2:** **Scoring of the safety risk** within the ERCS matrix based on the two determined values of variables.



STEP 1: Determination of the values of the two variables:

1. **Severity:** identification of the **worst likely accident outcome** that would have resulted if the occurrence under assessment had escalated into an accident

Q1 – Key Risk Area

Q1 – Potential for loss of life

2. **Probability:** identification of the **likelihood of the occurrence** under assessment to escalate into the worst likely accident outcome.

Q2 – Likelihood of escalation selected barriers



STEP 2: Scoring of the safety risk within the ERCS matrix based on the two determined values of variables.

1. Selecting **safety score**; and
2. Corresponding **numerical risk value** from ERCS matrix



1. Severity of the potential accident outcome

Q1 – Key Risk Area: Determination of the most likely **type of accident** that the occurrence under assessment could have escalated to the so called **key risk area**.

-  Airborne Collision
-  Aircraft Upset
-  Collision on Runway
-  Runway excursion
-  Fire, Smoke and Pressurization

-  Ground Damage
-  Obstacle Collision in Flight
-  Terrain Collision
-  Other injuries
-  Security



Q1 – Potential for loss of life: Determination of the potential loss of life category based on aircraft size and proximity to populated or high-risk areas.

More than 100 possible fatalities

- One large *certified ac with more than 100 potential pax on board*
- *Any equivalent size ac for cargo*

Between 20 to 100 possible fatalities

- One medium certified aircraft **with 20-100 potential pax** on board
- or equivalent size for cargo aircraft

Between 2 to 19 possible fatalities

- One small certified aircraft **with up to 19 potential pax** on board -
- or An equivalent size for cargo aircraft

1 possible fatality

any situation where a single fatality may be possible

0 possible fatalities

involves personal injuries only, regardless of the number of minor and serious injuries as long as there are no fatalities



Q1 – Potential for loss of life:

No likelihood of an accident	“A”
An accident involving minor and serious injury (not life changing) or minor aircraft damage	“E”
An accident involving a single fatality, life changing injury or substantial damage accident	“I”
Major accident with limited amount of fatalities, life changing injuries or destruction of the aircraft	“M”
Significant accident with potential for fatalities and injuries	“S”
Extreme catastrophic accident with the potential for significant number of fatalities.	“X”

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Airborne collision 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"



3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Aircraft Upset 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"

3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Collision on Runway 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"
	0 possible fatalities	"E"



3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Runway Excursion 	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"
	0 possible fatalities	"E"



The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Fire, smoke and pressurization 	More than 100 possible fatalities	“X”
	Between 20 to 100 possible fatalities	“S”
	Between 2 to 19 possible fatalities	“M”
	1 possible fatality	“I”

3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Ground Damage 	Between 2 to 19 possible fatalities	“M”
	1 possible fatality	“I”
	0 possible fatalities	“E”

3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Obstacle collision in flight 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"

3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Terrain collision 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"



3. Determination of severity score

The **severity score** be calculated **by combining the key risk area and the potential loss of life**

Key Risk Area	Category	Severity Score
Other injuries	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"
	0 possible fatalities	"E"



3. Determination of severity score

The **severity score** be calculated by combining the key risk area and the potential loss of life

Key Risk Area	Category	Severity Score
Security 	More than 100 possible fatalities	"X"
	Between 20 to 100 possible fatalities	"S"
	Between 2 to 19 possible fatalities	"M"
	1 possible fatality	"I"
	0 possible fatalities	"E"



Q2 – Likelihood of escalation selected barriers: ERCS barrier model

Stopping barrier is barrier prevented event to escalate into an accident (if exists)

- Assess **the effectiveness** (that is the number and the strength) **of the barriers** in the safety system
- which were **remaining between the actual occurrence and the worst likely accident outcome**



Ultimately, the ERCS barrier model determines **how close the occurrence** under assessment has been to the potential accident.

b. The ERCS barrier model consists of 8 barriers, ordered in a logical sequence





b. The ERCS barrier model consists of 8 barriers, ordered in a logical sequence and weighted

Barrier #	Barrier	Barrier weight
1	Aircraft, equipment and infrastructure design , includes maintenance and correction, operation support, the prevention of problems related to technical factors	5
2	Tactical planning ; includes organizational and individual planning prior to the flight	2
3	Regulations, procedures, processes ; includes effective, understandable and available regulations, procedures and processes	3
4	Situational awareness and action ; includes human vigilance for operational threats which ensures identification of hazards and effective action to prevent an accident	2



b. The ERCS barrier model consists of 8 barriers, ordered in a logical sequence and weighted

Barrier #	Barrier	Barrier weight
5	Warning systems operation and action ; that could prevent an accident and which are fit for purpose, functioning, operational and are complied with	3
6	Late recovery from potential accident situation	1
7	Protections when an event has occurred, the level of the outcome is mitigated or prevents the escalation of the occurrence by intangible barriers or providence	1
8	Low energy occurrence (ground damage, excursions, injuries) 'Not applicable' for all other key risk areas'	1



Effectiveness of the remaining barriers

Stopped:

if the barrier prevented the accident from occurring

Remaining Known:

if it is known whether the barrier remained between the occurrence under assessment and the potential accident outcome

Remaining Assumed:

if it is assumed that the barrier remained between the occurrence under assessment and the potential accident outcome

Failed known:

If it is known that the barrier has failed

Failed Assumed:

if it is assumed that the barrier have failed even if insufficient or no information is available to determine this

Not Applicable:

if the barrier is not relevant to the occurrence under assessment



Step 1:

- To identify which of the **barriers (1-8) stopped the occurrence from escalating** into the potential accident outcome (referred to as the 'stopping barrier').
- **Barriers placed before stopping barrier should not be considered** in the calculation because they do not prevent accident causation.



Step 2:

- To identify the **effectiveness of the remaining barriers**. The **remaining barriers** are those barriers placed **between the stopping barrier and the potential accident outcome**.
- The barriers which are placed before the stopping barrier not to be considered to have contributed to the prevention of the accident outcome and consequently those barriers not to be scored as **'Stopped'** or **'Remaining'**





The probability of the potential accident outcome is the numerical value resulting of:

Step 1:

- **Barrier weight sum** and **corresponding barrier score** are calculated by **summing barrier weights for all barriers** classified as **Stopped, Remaining Know** and **Remaining Assumed**
- The **'Failed'** and **'Not Applicable'** barriers **not to be counted for the final score**, as those barriers could not have prevented the accident.
- The resulting barrier weight sum is a **numerical value between 0 and 18**



The probability of the potential accident outcome is the numerical value resulting of:

Step 2:

- The **barrier weight sum** corresponds to a **barrier score between 0 and 9**, covering the full range between **strong** and **weak remaining barriers**

Barrier weight sum

Corresponding barrier score

0 No barriers left. Worst likely accident outcome realized.

0

1-2	1
3-4	2
5-6	3
7-8	4
9-10	5
11-12	6
13-14	7
15-16	8
17-18	9



The **safety risk score** is a **two-digit value**:

- The **first digit** corresponds to the **alphabetic value** resulting from the **calculation of the severity of the occurrence** (severity score **A to X**); and
- The second digit represents the **numerical value** from the **calculation of the corresponding score of the occurrence** (**0 to 9**).

ERCS matrix

Severity		Classification (ERCS Score)									
Potential Accident outcome	Score										
Extreme catastrophic accident with the potential for significant number of fatalities (100+)	X	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
Significant accident with potential for fatalities and injuries (20-100)	S	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
Major accident with limited amount of fatalities (2-19), life changing injuries or destruction of the aircraft	M	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
An accident involving a single fatality, life changing injury or substantial damage accident	I	I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
An accident involving minor and serious injury (not life changing) or minor aircraft damage	E	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
No likelihood of an accident	A	No implication to Safety									
	Corresponding Barrier Score	9	8	7	6	5	4	3	2	1	0
	Barrier Weight	17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2	0
		Probability of the Potential Accident Outcome									



ERCS Scores

<i>Colour</i>	ERCS score	<i>Meaning</i>
RED	X0, X1, X2, S0, S1, S2, M0, M1, I0	High risk. Occurrences with the highest risk.
Yellow	X3, X4, S3, S4, M2, M3, I1, I2, E0, E1	Elevated risk. Occurrences with intermediate risk
GREEN	X5 to X9, S5 to S9, M4 to M9, I3 to I9, E2 to E9.	Low risk occurrences

Recommended Actions

<i>Colour</i>	<i>ERCS score</i>	<i>Meaning</i>	<i>Recommended Action: Adapted from J. Mickel proposed actions</i>
RED	X0, X1, X2, S0, S1, S2, M0, M1, I0	High risk. Occurrences with the highest risk.	<ol style="list-style-type: none"> 1. Investigate immediately and take action if required 2. FDM Team: Check ASR or request trusted pilot, consider event for quarterly report 3. Safety Assurance Team: Update or add hazard in hazard registry, consider or update operational risk assessment, presentation in Safety Review Board (SRB) 4. Safety Promotion: Publication in Safety Bulletin is recommended, presentation for seminars and pilot meetings is recommended
Yellow	X3, X4, S3, S4, M2, M3, I1, I2, E0, E1	Elevated risk. Occurrences with intermediate risk	<ol style="list-style-type: none"> 1. Investigation candidate 2. Recommended actions (2, 3, 4) to be considered 3. Safety assurance team: May be used for Safety Performance Indicators (SPIs)
Green	X5 to X9, S5 to S9, M4 to M9, I3 to I9, E2 to E9.	Low risk occurrences	<ol style="list-style-type: none"> 1. Flows into the database and use for continuous improvement 2. Provide data for in-depth analysis on safety related occurrences 3. Safety Assurance team: Monitor

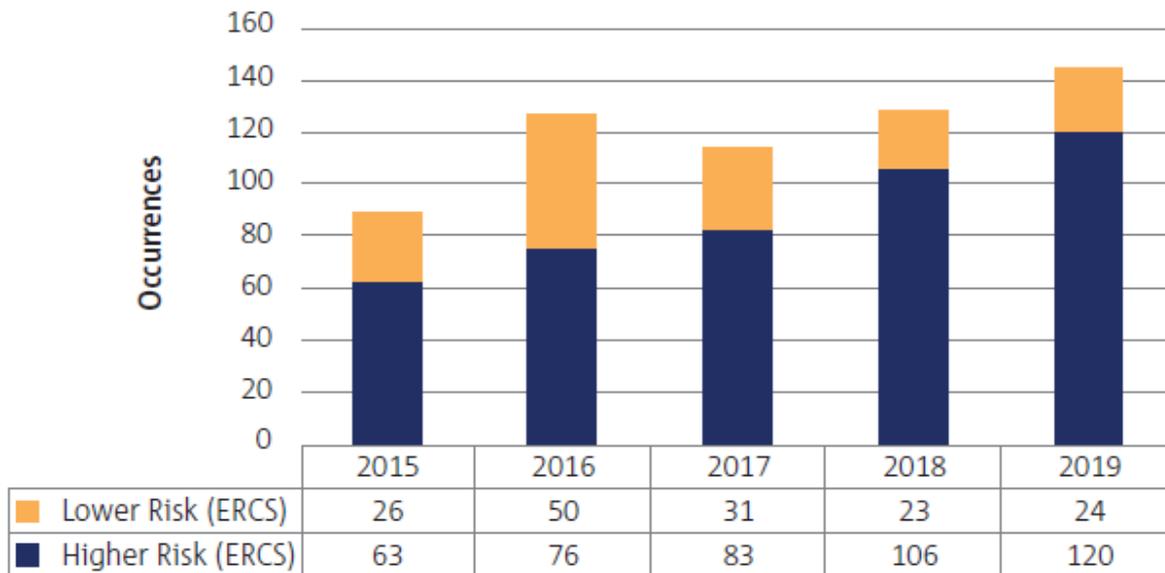
Each ERCS score is assigned a **corresponding numerical value** of risk magnitude to facilitate **the aggregation** and **numerical analysis** of multiple occurrences

ERCS Score	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
Corresponding numerical value	0,001	0,01	0,1	1	10	100	1000	10000	100000	1000000
ERCS Score	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
Corresponding numerical value	0,0005	0,005	0,05	0,5	5	50	500	5000	50000	500000
ERCS Score	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
Corresponding numerical value	0,0001	0,001	0,01	0,1	1	10	100	1000	10000	100000
ERCS Score	I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
Corresponding numerical value	0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000	10000
ERCS Score	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
Corresponding numerical value	0,000001	0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000

Both column 10 and the row A in the matrix bear the value 0 as the corresponding numerical value

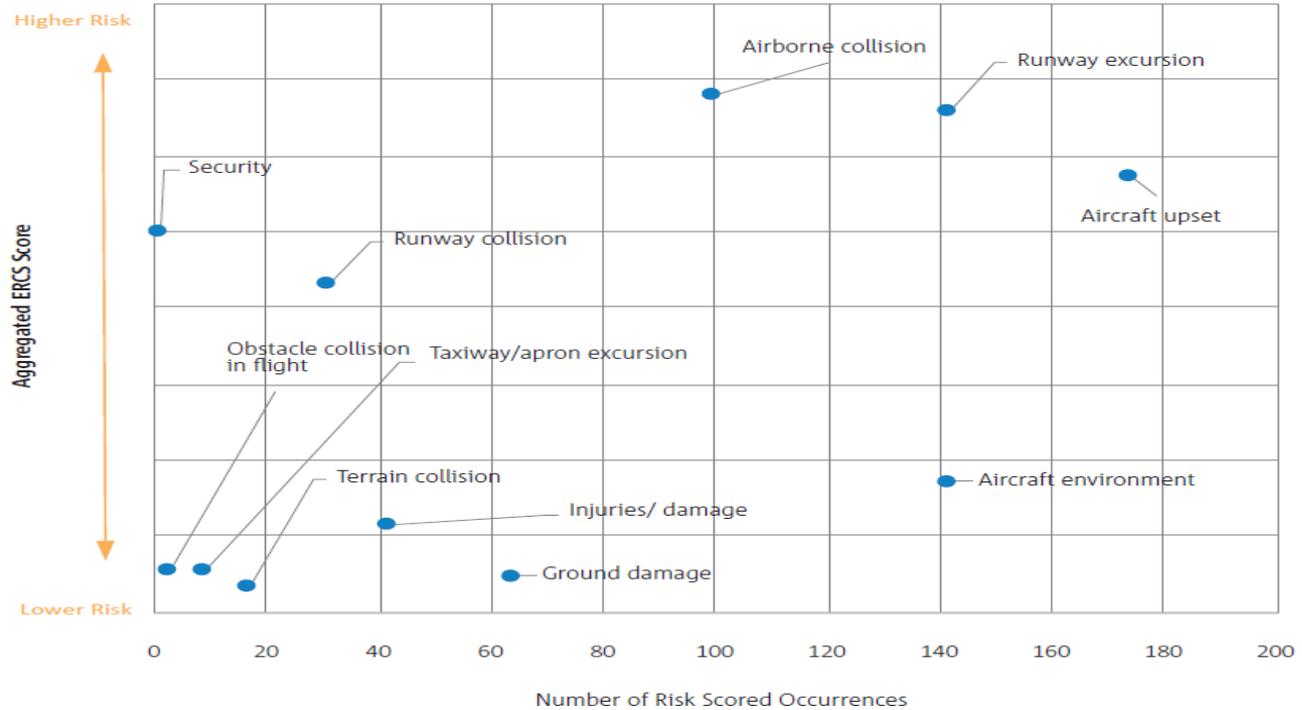


ERCS higher and lower risk occurrences per year





Key risk areas by aggregated ERCS score and number of risk-scored occurrences





Safety Risk Portfolio

SAFETY ISSUE	KEY RISK AREAS (ERCS)										
	AIRBORNE COLLISION	RUNWAY EXCURSION	AIRCRAFT UPSET	SECURITY	RUNWAY COLLISION	AIRCRAFT ENVIRONMENT	INJURIES / DAMAGE	TAXIWAY/ APRON EXCURSION	OBSTACLE COLLISION IN FLIGHT	GROUND DAMAGE	TERRAIN COLLISION
State of wellbeing and fit for duties		O	O	O							O
Handling of technical failures	O	X	X		O	X		O			O
Crew resource management	O	O	O		O	O			O	O	
Monitoring of flight parameters and automation modes	O	O	X								O
Flight planning and preparation	O	O	X			O	O			O	

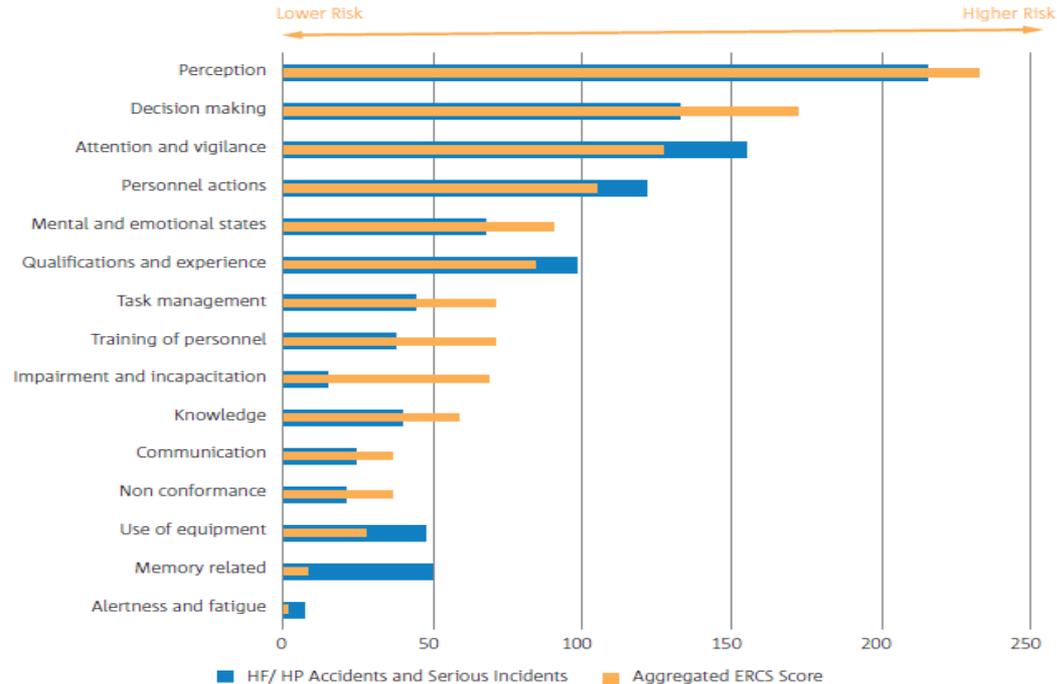
X = stronger contributor to the key risk area
 O = weaker contributor to the key risk area.

Priority 1
 Priority 2
 Priority 3
 Priority 4



What are we achieving?

Detailed human factors and human performance event codes by aggregated ERCS score and numbers of accidents and serious incidents



ARMS-Event Risk Classification (ERC)

- Providing two risk attributes (qualitative risk level; and quantitative risk magnitude); and
- An appropriate probability assessment approach for a single, historical event

Question 2				Question 1		Typical accident scenarios
What was the effectiveness of the remaining barriers between this event and the most probable accident scenario?				If this event had escalated into an accident, what would have been the most probable outcome?		
Effective	Limited	Minimal	Not effective			
50	102	502	2500	Catastrophic Accident	Loss of aircraft or multiple fatalities (3 or more)	Loss of control, mid air collision, uncontrollable fire on board, explosions, total structural failure of the aircraft, collision with terrain
10	21	101	500	Major Accident	1 or 2 fatalities, multiple serious injuries, major damage to the aircraft	High speed taxiway collision, major turbulence injuries
2	4	20	100	Minor injuries or damage	Minor injuries, minor damage to aircraft	Pushback accident, minor weather damage
1				No accident outcome	No potential damage or injury could occur	Any event which could not escalate into an accident, even if it may have operational consequences (e.g. diversion, delay, individual sickness)

European Risk Classification Schema (ERCS)

- In addition to all advantages of Event Risk Classification (ERC), it provides **identification of the key risk areas**; and
- Harmonized methodology, which is **less bias-prone** for event severity and probability assessment

Severity		Classification (ERCS Score)									
Potential Accident outcome	Score										
Extreme catastrophic accident with the potential for significant number of fatalities (100+)	X	X9	X8	X7	X6	X5	X4	X3	X2	X1	X0
		0,001	0,01	0,1	1	10	100	1000	10000	100000	1000000
Significant accident with potential for fatalities and injuries (20-100)	S	S9	S8	S7	S6	S5	S4	S3	S2	S1	S0
		0,0005	0,005	0,05	0,5	5	50	500	5000	50000	500000
Major accident with limited amount of fatalities (2-19), life changing injuries or destruction of the aircraft	M	M9	M8	M7	M6	M5	M4	M3	M2	M1	M0
		0,0001	0,001	0,01	0,1	1	10	100	1000	10000	100000
An accident involving a single fatality, life changing injury or substantial damage	I	I9	I8	I7	I6	I5	I4	I3	I2	I1	I0
		0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000	10000
An accident involving minor and serious injury (not life changing) or minor aircraft damage	E	E9	E8	E7	E6	E5	E4	E3	E2	E1	E0
		0,000001	0,00001	0,0001	0,001	0,01	0,1	1	10	100	1000
No likelihood of an accident	A	No implication to Safety									
	Corresponding Barrier Score	9	8	7	6	5	4	3	2	1	0
	Barrier Weight Sum	17-18	15-16	13-14	11-12	9-10	7-8	5-6	3-4	1-2	0
		Probability of the Potential Accident Outcome									

