

Global Reporting Format-GRF

A large white commercial airplane, likely a Boeing 747, is shown from a low angle, flying upwards and to the right. The aircraft is white with multiple rows of windows and emergency exits visible. The background is a bright blue sky filled with fluffy white clouds.

Elisha Omuya-

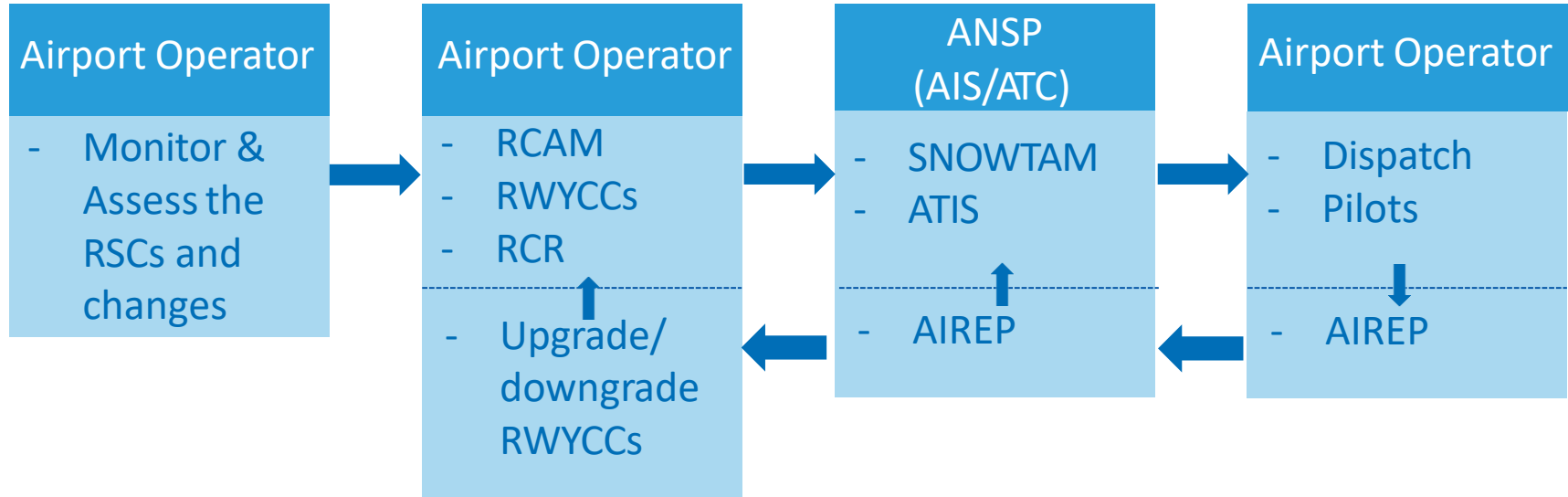
RO-AGA ICAO ESAF

Virtual 21/22 October.2020

GLOBAL Reporting Format

- ✓ GRF Information Flow
- ✓ Runway Condition Assessment Matrix
- ✓ Runway Condition Report
- ✓ Snowtam
- ✓ Upgrade and Downgrade
- ✓ Monitoring

GRF Information Flow



The runway condition assessment matrix (RCAM)

A matrix allowing the assessment of the runway condition code, using associated procedures, from a set of observed runway surface condition(s) and pilot report of braking action.

| RUNWAY CONDITION ASSESSMENT MATRIX (RCAM) | | | |
|---|---|---|---------------------------------------|
| Assessment criteria | | Downgrade assessment criteria | |
| Runway condition code | Runway surface description | Aeroplane deceleration or directional control observation | Pilot report of runway braking action |
| 6 | • DRY | --- | --- |
| 5 | <ul style="list-style-type: none"> • FROST • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) <p><i>Up to and including 3 mm depth:</i></p> <ul style="list-style-type: none"> • SLUSH • DRY SNOW • WET SNOW | Braking deceleration is normal for the wheel braking effort applied AND directional control is normal. | GOOD |
| 4 | <ul style="list-style-type: none"> • <i>-15°C and lower outside air temperature:</i> • COMPACTED SNOW | Braking deceleration OR directional control is between Good and Medium | GOOD TO MEDIUM |
| 3 | <ul style="list-style-type: none"> • WET ("slippery wet" runway) • DRY SNOW or WET SNOW (any depth) ON TOP OF COMPACTED SNOW <p><i>More than 3 mm depth:</i></p> <ul style="list-style-type: none"> • DRY SNOW • WET SNOW <p><i>Higher than -15°C outside air temperature¹:</i></p> <ul style="list-style-type: none"> • COMPACTED SNOW | Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced. | MEDIUM |
| 2 | <ul style="list-style-type: none"> • <i>More than 3 mm depth of water or slush:</i> • STANDING WATER • SLUSH | Braking deceleration OR directional control is between Medium and Poor | MEDIUM TO POOR |
| 1 | • ICE ² | Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced. | POOR |
| 0 | <ul style="list-style-type: none"> • WET ICE ² • WATER ON TOP OF COMPACTED SNOW ² • DRY SNOW or WET SNOW ON TOP OF ICE ² | Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain. | LESS THAN POOR |

Using of RCAM

Airports operator need to assess and collect data on:

- The percentage of each runway third that is covered by contaminants
- The runway surface condition and type of contaminants
- The depth of the contaminants

Assessment criteria

| Assessment criteria | |
|-----------------------|---|
| Runway condition code | Runway surface description |
| 6 | <ul style="list-style-type: none"> • DRY |
| 5 | <ul style="list-style-type: none"> • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) |
| 4 | |
| 3 | <ul style="list-style-type: none"> • WET ("slippery wet" runway) |
| 2 | <p>More than 3 mm depth of water:</p> <ul style="list-style-type: none"> • STANDING WATER |
| 1 | |
| 0 | |

The two columns are used to determine the correct RWYCC

- *This column describes runway surface conditions and contaminants (least to most slippery) that are directly correlated to aeroplane takeoff and landing performance. Contaminants have different effects depending on their depth and outside air temperature.*
- *This column represents the RWYCC that is associated with the relevant runway surface description based on the type of contaminant on the runway, its depth and the outside air temperature.*

A RWYCC is reported to each third of the runway assessed. The direction for listing the runway thirds shall be in the direction as seen from the lower runway designation number

Downgrade assessment criteria

| Downgrade assessment criteria | |
|---|---------------------------------------|
| Aeroplane deceleration or directional control observation | Pilot report of runway braking action |
| --- | --- |
| Braking deceleration is normal for the wheel braking effort applied AND directional control is normal. | GOOD |
| Braking deceleration OR directional control is between Good and Medium. | GOOD TO MEDIUM |
| Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced. | MEDIUM |
| Braking deceleration OR directional control is between Medium and Poor. | MEDIUM TO POOR |
| Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced. | POOR |
| Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain. | LESS THAN POOR |

Provides the assessment criteria allowing the airport operator to further assess the runway and validate the RWYCC. It includes:

- *The column to be used by the pilot to rate the estimated aeroplane braking performance on a given contaminant and estimate a runway braking action category based on six descriptions*
- *A report of braking action on the runway by a pilot, providing other pilots with an indication of the degree/quality of expected braking*

The use of any available means of assessing runway slipperiness should be considered to support the decision for downgrading or upgrading RWYCC

Using of RCAM

The percentage of runway covered by contaminants

| <i>Assessed per cent</i> | <i>Reported per cent</i> |
|--------------------------|--------------------------|
| 10 – 25 | 25 |
| 26 – 50 | 50 |
| 51 – 75 | 75 |
| 76 – 100 | 100 |

- ❑ If 25 per cent or less area of a runway third is wet or covered by contaminant, a RWYCC 6 shall be reported.
- ❑ If the distribution of the contaminant is not uniform, the location of the area that is wet or covered by the contaminant is described in the plain language remarks part of the situational awareness section of the runway condition report.

Using of RCAM

Runway surface conditions

– There are four runway surface conditions in the RCAM:

- Dry
- Wet
- Slippery wet
- Contaminated runway

Using of RCAM

Runway surface conditions

- Dry

- ☐ A runway is considered dry if its surface is free from visible moisture and not contaminated within the area intended to be used.

- ☐ **The RWYCC for a Dry Runway is 6**

- ☐ A dry surface must be reported only when there is a need to report conditions on one or more of the other thirds

- ☐ A dry surface will be report where the report is the last, final report that closes a period in which the runway was contaminated

Using of RCAM

Runway surface conditions

- Wet

- ☐ A runway is considered wet when it is covered by any visible dampness or water that is 3 mm or less in depth.

- ☐ **The RWYCC for a Wet Runway is 5**

- ☐ Wet runway assessments do not necessary require direct observation of all affected pavements surfaces

- ☐ Credible evidence of wet conditions such as receiving reports of rain at the airport , can be used as a rationale for assigning wet RWYCCs.

Using of RCAM

Runway surface conditions

- Slippery wet

- ☐ A wet runway may be slippery where the surface friction characteristics of a significant portion of the runway have been determined to be degraded.
- ☐ Some contributing factors that can create such conditions include rubber buildup, groove failures/wear or pavement micro/macro textures.
- ☐ **The RWYCC for a Slippery Wet Runway is 3**
- ☐ Methods to determine that a runway is slippery wet may include *a functional friction measurements, observation by aerodrome maintenance personnel, repeated reports by pilots and analysis of aeroplane stopping performance that indicates a substandard surface.*

Using of RCAM

Runway surface conditions

- Contaminated Runway

- Compacted snow

- Dry snow

- Frost

- Ice

- Slush

- Standing water

- Wet ice

- Wet snow

Using of RCAM

Runway surface conditions

- Contaminated Runway – Standing Water
 - ❑ Water of a depth **more than 3 mm** is defined as standing water
 - ❑ **The RWYCC for Slippery Water is 2**

Using of RCAM

Contaminant depth

- ❑ Contamination depth significantly affects aircraft takeoff and landing performance, including stopping capability
- ❑ Specifics contaminants with more than 3 mm have been found to significantly degrade aircraft takeoff and landing performance
- ❑ The airport operator shall report the distribution of contaminant on the total maintained portion of the runway for the following contaminant types only:
 - Standing Water more than 3 mm
 - Slush
 - Dry Snow
 - Wet Snow
 - Wet Snow or Dry Snow on top of Compacted Snow

Using of RCAM

Contaminant depth

- ❑ The depth is reported as a two or three-digit number representing the assessed depth in millimeters (mm) of the contaminant for each runway third
- ❑ The assessment is based upon an even distribution within the runway thirds as assessed by trained personnel
- ❑ If measurements are included as part of the assessment process, the reported values are still reported as assessed depths, as the trained personnel have placed their judgment upon the measured depths to be representative for the runway third
- ❑ Where contaminant depth is not being reported, operator should indicate that no information exists by entering NR

Runway Condition Report

Reporting

- ❑ A RWYCC is reported for each runway third in the format of n/n/n
- ❑ The percentage of the runway covered by contaminants, contaminant depth and contaminant type should also be reported for each runway third
- ❑ Runway thirds should reflect the entire usable pavement length of the runway, inclusive of displaced threshold
- ❑ The direction for listing the runway thirds should be in the direction as seen from the lower runway designation number



Runway Condition Report

- The RCR consists of two sections:
 - aeroplane take-off and landing performance calculations; and
 - situational awareness of the surface conditions on the runway, taxiways and aprons.

| Aeroplane performance calculation section | |
|--|---|
| Information | Source |
| Aerodrome location indicator | ICAO Doc 7910, <i>Location Indicators</i> |
| Date and time of assessment | UTC time |
| Lower runway designation number | Actual runway (RWY) |
| RWYCC for each runway third | Assessment based upon RCAM and associated procedures |
| Per cent coverage contaminant for each runway third | Visual observation for each runway third |
| Depth of loose contaminant for each runway third | Visual observation assessed for each runway third, confirmed by measurements when appropriate |
| Condition description (contaminant type) for each runway third | Visual observation for each runway third |
| Width of runway to which the RWYCCs apply if less than published width | Visual observations while at the RWY and information from local procedures/snow plan |

| Situational awareness section | |
|---|---|
| Reduced runway length | NOTAM |
| Drifting snow on the runway | Visual observation while at RWY |
| Loose sand on the runway | Visual observation while at RWY |
| Chemical treatment on the runway | Known treatment application. Visual observation of residual chemicals on the runway |
| Snowbanks on the runway | Visual observations while at the RWY |
| Snowbanks on taxiway | Visual observations while at the taxiway (TWY) |
| Snowbanks adjacent to the runway penetrating level/profile set in the aerodrome snow plan | Visual observations while at the RWY confirmed by measurements when appropriate |
| Taxiway conditions | Visual observation, AIREP, reported by other aerodrome personnel, etc |
| Apron conditions | Visual observation, AIREP, reported by other aerodrome personnel, etc |
| State approved and published use of measured friction coefficient | Dependent upon the State set or agreed standard |
| Plain language remarks using only allowable characters in capital letters | Any additional operational significant information to be reported |

Runway Condition Report

Aeroplane performance calculation section

- ❑ **Aerodrome location indicator** (*mandatory*): four-letter ICAO location indicator in accordance with Doc 7910, *Location Indicators*.
 - Format: nnnn
 - Example: GOBD
- ❑ **Date and time of assessment** (*mandatory*): date and time (UTC) when the assessment was performed by the trained personnel.
 - Format: MMDDhhmm
 - Example: 09111357
- ❑ **Lower runway designation number** (*mandatory*): a two- or three-character number identifying the runway for which the assessment is carried out and reported.
 - Format: nn[L] or nn[C] or nn[R]
 - Example: 09L

Runway Condition Report

Aeroplane performance calculation section

- ❑ **Runway condition code for each runway third** (*mandatory*): a one-digit number identifying the RWYCC assessed for each runway third. The codes are reported in a three-character group separated by a “/” for each third. The direction for listing the runway thirds shall be in the direction as seen from the lower designation number.
 - Format: n/n/n
 - Example: 5/5/2

Runway Condition Report

Aeroplane performance calculation section

❑ **Per cent coverage contaminant for each runway third** (*conditional. not reported for one runway third if it is dry or covered with less than 10 per cent*): a number identifying the percentage coverage. The percentages are to be reported in an up-to-nine character group separated by a “/” for each runway third.

➤ **Format:** [n]nn/[n]nn/[n]nn

➤ **Example:** 25/50/100

NR/50/100 if contaminant coverage is less than 10% in the first third

With uneven distribution of the contaminants, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report. Where possible, a standardized text should be used.

Note.— When no information is to be reported, insert “NR” at its relevant position in the message to indicate to the user that no information exists (/NR/).

Runway Condition Report

Aeroplane performance calculation section

❑ **Depth of loose contaminant:** dry snow, wet snow, slush or **standing water for each runway third** (*Conditional, reported for STANDING WATER*): a two- or three-digit number representing the assessed depth (mm) of the contaminant for each runway third.

- **Format:** [n]nn/[n]nn/[n]nn
- **Examples:** 04/06/12 [STANDING WATER]

When the depth of the contaminants varies significantly within a runway third, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report.

Runway Condition Report

Aeroplane performance calculation section

- ❑ **Condition description for each runway third** (*mandatory*): to be reported in capital letters using terms specified in 2.9.5 of Annex 14, Volume I. The condition type is reported by any of the following condition type descriptions for each runway third and separated by an oblique stroke “/”. (DRY, STANDING WATER, WET, ...)
 - Format: nnnn/nnnn/nnnn
 - Example: WET/WET/WET
- ❑ **Width of runway to which the RWYCCs apply if less than published width** (*optional*): a the two-digit number representing the width of cleared runway in metres.
 - Format: nn
 - Example: 30

If the cleared runway width is not symmetrical along the centre line, additional information is to be given in the plain language remark part of the situational awareness section of the runway condition report

Runway Condition Report

Situational awareness section

All individual messages in the situational awareness section end with a full stop sign. This is to distinguish the message from subsequent message(s).

❑ **Reduced runway length:** This information is conditional when a NOTAM has been published with a new set of declared distances affecting the LDA.

- Format: Standardized fixed text
- RWY nn [L] or nn [C] or nn [R] LDA REDUCED TO[n]nnn
- Example: RWY 22L LDA REDUCED TO 1450.

❑ **Loose sand on the runway** *(optional)*:

- Format: RWY nn[L] or nn[C] or nn[R] LOOSE SAND
- Example: RWY 02R LOOSE SAND.

❑ **Chemical treatment on the runway** *(mandatory)*:

- Format: RWY nn[L] or nn[C] or nn[R] CHEMICALLY TREATED
- Example: RWY 06 CHEMICALLY TREATED.

Runway Condition Report

Situational awareness section

☐ **Taxiway conditions** *(optional)*:

- Format: TWY [nn]n POOR
- Example: TWY B POOR.

☐ **Apron conditions** *(optional)*:

- Format: APRON [nnnn] POOR
- Example: APRON NORTH POOR.

☐ **State-approved and published use of measured friction coefficient** *(optional)*:

- Format: [State set format and associated procedures]
- Example: [Function of State set format and associated procedures].

Runway Condition Report

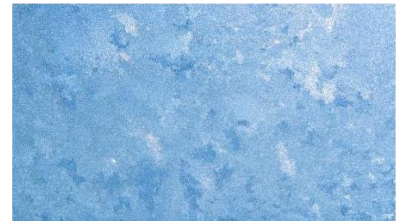
Situational awareness section

❑ **Plain language remarks using only allowable characters in capital letters**
(*optional*):

- Format: Combination of allowable characters where use of full stop « . » marks the end of the message.
- Allowable characters:
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
0 1 2 3 4 5 6 7 8 9
/ [oblique stroke] “.” [period]“ ” [space]

Changes in SNOWTAM Definition

SNOWTAM. A special series NOTAM given in a standard format providing a surface condition report notifying the presence or removal cessation of hazardous conditions due to snow, ice, slush, frost, or standing water or water associated with snow, slush and, ice, or frost on the movement area, by means of a specific format.





ICAO CAPACITY & EFFICIENCY

| | | | | | | | | | | | | |
|---------------|---------------------------|--------------------------|--|--|--|--|--|--|--|--|--|----|
| (COM heading) | (PRIORITY INDICATOR) | (ADDRESSES) | | | | | | | | | | <≡ |
| | (DATE AND TIME OF FILING) | (ORIGINATOR'S INDICATOR) | | | | | | | | | | <≡ |

GG EADBZQZX EADNZQZX EADSZQZX
070645 EADDYNYX

| | | | | | | | | | | | | | | | | | |
|-----------------------|-----------------------|---|---|---|--|--|--|----------------------|------------------------|--|--|--|--|--|--|------------------|----|
| (Abbreviated heading) | (SWAA* SERIAL NUMBER) | | | | | | | (LOCATION INDICATOR) | DATE/TIME OF ASSESMENT | | | | | | | (OPTIONAL GROUP) | <≡ |
| | S | W | * | * | | | | | | | | | | | | | |

SWEA0149

EADD

02170055

| | | |
|-----------|-----------------|----|
| SNOWTAM → | (Serial number) | <≡ |
|-----------|-----------------|----|

SNOWTAM

0149

| Aeroplane performance calculation section | | | |
|--|---|----|-------|
| (AERODROME LOCATION INDICATOR) | M | A) | <= |
| (DATE/TIME OF ASSESSMENT <i>(Time of completion of assessment in UTC)</i>) | M | B) | → |
| (LOWER RUNWAY DESIGNATION NUMBER) | M | C) | → |
| (RUNWAY CONDITION CODE (RWYCC) ON EACH -RUNWAY THIRD) <i>(From Runway Condition Assessment Matrix (RCAM) 0, 1, 2, 3, 4, 5 or 6)</i> | M | D) | / / → |
| (PER CENT COVERAGE CONTAMINANT FOR EACH RUNWAY THIRD) | C | E) | / / → |
| (DEPTH (mm) OF LOOSE CONTAMINANT FOR EACH RUNWAY THIRD) | C | F) | / / → |
| (CONDITION DESCRIPTION OVER TOTAL RUNWAY LENGTH) <i>(Observed on each runway third, starting from threshold having the lower runway designation number)</i> | M | G) | / / |
| COMPACTED SNOW DRY DRY SNOW DRY SNOW ON TOP OF COMPACTED SNOW DRY SNOW ON TOP OF ICE FROST ICE SLUSH STANDING WATER WATER ON TOP OF COMPACTED SNOW WET WET ICE WET SNOW WET SNOW ON TOP OF COMPACTED SNOW WET SNOW ON TOP OF ICE | | | → |
| (WIDTH OF RUNWAY TO WHICH THE RUNWAY CONDITION CODES APPLY, IF LESS THAN PUBLISHED WIDTH) | O | H) | <= |

HKJK 02170225 09C 3/2/1 75/100/100
 06/12/12 WET/SNOW/SNOW 35

■ Upgrading/Downgrading RWYCC

- Can be made when all other observations, experience and local knowledge indicate to trained aerodrome personnel that the primary assignment of the RWYCC does not reflect the prevailing conditions accurately.
- Examples of aspects to be considered in assessing the runway slipperiness for the downgrade process:
 - prevailing weather conditions (stable sub-freezing temperature, dynamic conditions, active precipitation)
 - observations (information and source);
 - Measurements (friction measurements, vehicle behavior, shoe scraping)
 - experience (local knowledge); and
 - AIREPs.

■ Upgrading/Downgrading RWYCC

- An assigned RWYCC 5, 4, 3 or 2 shall not be upgraded.
- An assigned RWYCC 1 or 0 can be upgraded using the following procedures and shall not be permitted to go beyond a RWYCC 3
 - if a properly operated and calibrated State-approved measuring device and all other observations support a higher RWYCC as judged by trained personnel;
 - the decision to upgrade RWYCC 1 or 0 cannot be based upon one assessment method alone. All available means of assessing runway slipperiness are to be used to support the decision;
 - when RWYCC 1 or 0 is upgraded, the runway surface is assessed frequently during the period the higher RWYCC is in effect to ensure that the runway surface condition does not deteriorate below the assigned code; and
 - d) variables that may be considered in the assessment that may affect the runway surface condition, include but are not limited to any precipitation conditions, changing temperatures, effects of wind, frequency of runway in use and type of aeroplane using the runway.

■ Upgrading/Downgrading RWYCC

- Where available, the pilot reports of runway braking action should be taken into consideration as part of the ongoing monitoring process, using the following principle:
 - a) a pilot report of runway braking action is taken into consideration for downgrading purposes; and
 - b) a pilot report of runway braking action can be used for upgrading purposes only if it is used in combination with other information qualifying for upgrading.
- Two consecutive pilot reports of runway braking action of POOR shall trigger an assessment if an RWYCC of 2 or better has been reported.
- When one pilot has reported a runway braking action of **LESS THAN POOR**, the information shall be disseminated, a new assessment shall be made and the suspension of operations on that runway shall be considered.

■ Monitoring

The airport operator should develop monitoring procedures which may include:

- Monitoring pavement physical conditions including contaminants types and depths
- Monitoring air traffic and pilot communications as it related to pilot reports of the portion of the runway used.
- Monitoring wheather patterns
- Increased self-inspections (reducing intervals between inspections)

■ Final closing RCR

A final “closing” shall be made stating that RCR the runway is no longer contaminated :

- When the runway is no longer contaminated
- When there is less 10% coverage, by any form of visible moisture (in frozen, liquid or damp state)
- Example: when the runway surface has dried up to such an extent that there is less than 10% visible moisture left, the final RCR to be issued would be:
6/6/6 NR/NR/NR NR/NR/NR DRY/DRY/DRY



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok



THANK YOU