



International Civil Aviation Organization

# **SNOWTAM – The international Standard for runway condition reports**

Michael Hohm

Technical Officer, Aeronautical Information Management

ICAO Headquarters, Montreal

5<sup>th</sup> October 2011

ACPA International Winter Operations Conference

# Outline



- “Snow and planes don’t mix”
- International Standards and Recommended Practices
  - SNOWTAM definition
  - SNOWTAM requirements
  - AIP Snow Plan
  - Slush versus snow
  - Ice and standing water
  - SNOWTAM format, instructions and rules
- Evolution of ICAO requirements

# A gentle reminder...

A second consecutive European winter of discontent for some...



“Lessons must be learnt”

“Misery”



“Chaos”



# “Snow and planes don’t mix”

- ...or can they?
- e.g. Aéroports de Montréal (ADM) Pierre Elliot Trudeau International Airport
- Clearance of 11,000+ ft RWY in 10 minutes
- Annual snowfall approx 220 cms
- Average of 57 snow events per winter



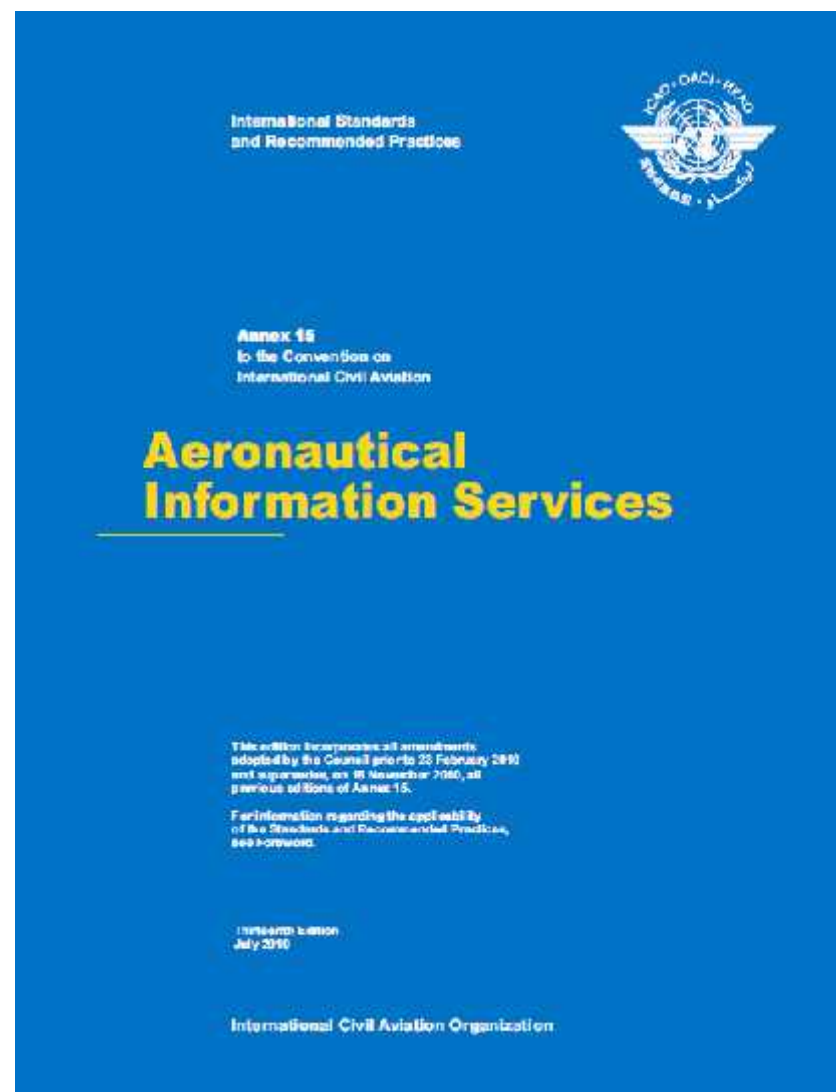
“In our 70 years of operation, Montreal-Trudeau has never had to close because of snow”  
(VP Airport Ops ADM, 2011)

# International Standards and Recommended Practices (SARPS)



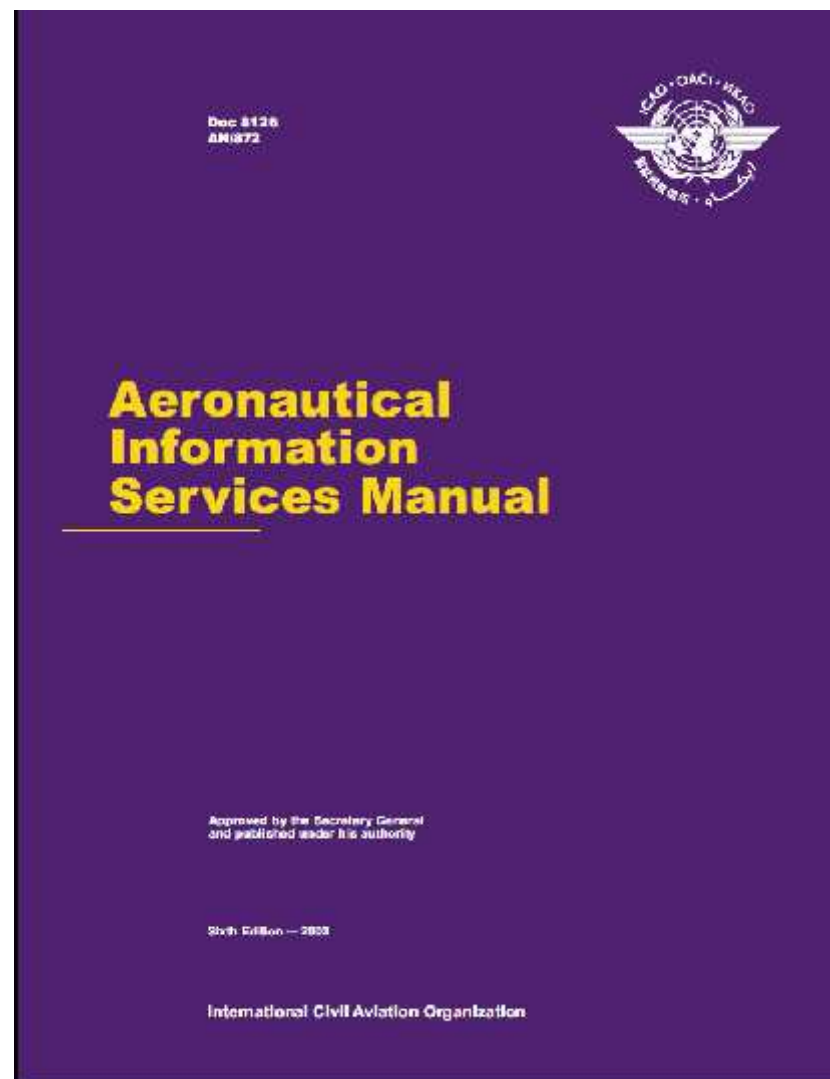
## Annex 15 to the Convention on International Civil Aviation

- Amendment 10 (late 1960s)
  - Adopted a definition and *pro-forma* for SNOWTAM
- Amendment 24 (early 1980s)
  - Revised SNOWTAM format
- Amendment 26 (late 1980s)
  - Changes to SNOWTAM format and guidance for its completion



# SNOWTAM provisions and guidance

- Annex 15 Appendix 2
  - Instructions for the completion of the SNOWTAM format
- Doc 8126
  - Guidance material, including SNOWTAM template, instructions for completion, and international distribution



## SNOWTAM *defined...*

- *SNOWTAM*. A special series **NOTAM** notifying the **presence or removal of hazardous conditions** due to **snow, ice, slush or standing water** associated with snow, slush and ice **on the movement area**, by means of a specific format.

[Annex 15 Chapter 2]

# When it is required

A NOTAM shall be originated and issued concerning the following information:

(r) presence or removal of, or significant changes in, hazardous conditions due to snow, slush, ice, radioactive material, toxic chemicals, volcanic ash deposition or water on the movement area;

[Annex 15 paragraph 5.1.1.1]





# SNOWTAM Format Requirements

- Annex 15, Chapter 5 (NOTAM)
- 5.2.3 Information concerning **snow, slush, ice and standing water** on aerodrome/heliport pavements **shall**, when reported by means of a SNOWTAM, contain the information in the order shown in the SNOWTAM Format in Appendix 2.

# AIP – Snow Plan

Aeronautical Information Publication (AIP) Part 3 – Aerodromes (AD) includes a **Snow Plan** (AD 1.2.2)

- Brief description of general snow plan considerations for aerodromes/heliports available for public use at which snow conditions are normally liable to occur, including:

- Actions taken to maintain the usability of movement areas
- A description of the methods used for clearing snow, slush, ice and standing water, e.g. plowing, sweeping or blowing, and details of any chemical methods employed for clearing movement areas

# Clearing Capabilities and Priorities

## AIP Section 3 – Aerodromes....

### AD 2.7 SEASONAL AVAILABILITY — CLEARING

1	<i>Types of clearing equipment</i>	1 Snow Blower; 2 Snow Ploughs; 2 Scrapers; 1 Sand Spreader
2	<i>Clearance priorities</i>	1. RWY 09L/27R and associated TWY to Apron 2. RWY 09R/27L and TWY to Apron 3. Other TWY and ACFT stands
3	<i>Remarks</i>	Information on snow clearance published from November–April in NOTAM (SNOWTAM). See also the snow plan in section AD 1.2.2.

# Snow plan - AIC notification

The snow plan is supplemented by seasonal information in an AIC issued well in advance of the beginning of each winter and contains:

- List of aerodromes or heliports where snow clearance is expected to be performed;
- Information concerning any centre designated to coordinate information;
- SNOWTAM distribution lists;
- An indication, as necessary, of minor changes to the standing snow plan;
- A descriptive list of clearance equipment;
- A listing of what will be considered as the minimum critical snow bank to be reported at each aerodrome or heliport at which reporting will commence.

# Slush versus snow

- Slush
  - Water-saturated snow which with a heel-and-toe slap-down motion against the ground will be displaced with a spatter
    - Specific gravity: 0.5 up to 0.8
- Snow (on the ground)
  - a) Dry snow
    - Snow which can be blown if loose or, if compacted by hand, will fall apart again upon release
    - Specific gravity: Up to but not including 0.35

Here, specific gravity is the ratio of the density (mass of a unit volume) of the slush or snow to the density (mass of the same unit volume) of water.

# Slush versus snow (continued)

- Snow (on the ground)
  - b) Wet snow
    - Snow which, if compacted by hand, will stick together and tend to form a snowball
      - Specific gravity: 0.35 up to but not including 0.5
  - c) Compacted snow
    - Snow which has been compressed into a solid mass that resists further compression and will hold together or break up into lumps if picked up
      - Specific gravity: 0.5 and over

# Ice and standing water

- Combinations of ice, snow and/or standing water may, especially when rain, rain and snow, or snow is falling, produce substances with specific gravities in excess of 0.8.
- These substances, due to their high water/ice content, will have a transparent rather than a cloudy appearance and, at the higher specific gravities, will be readily distinguishable from slush.

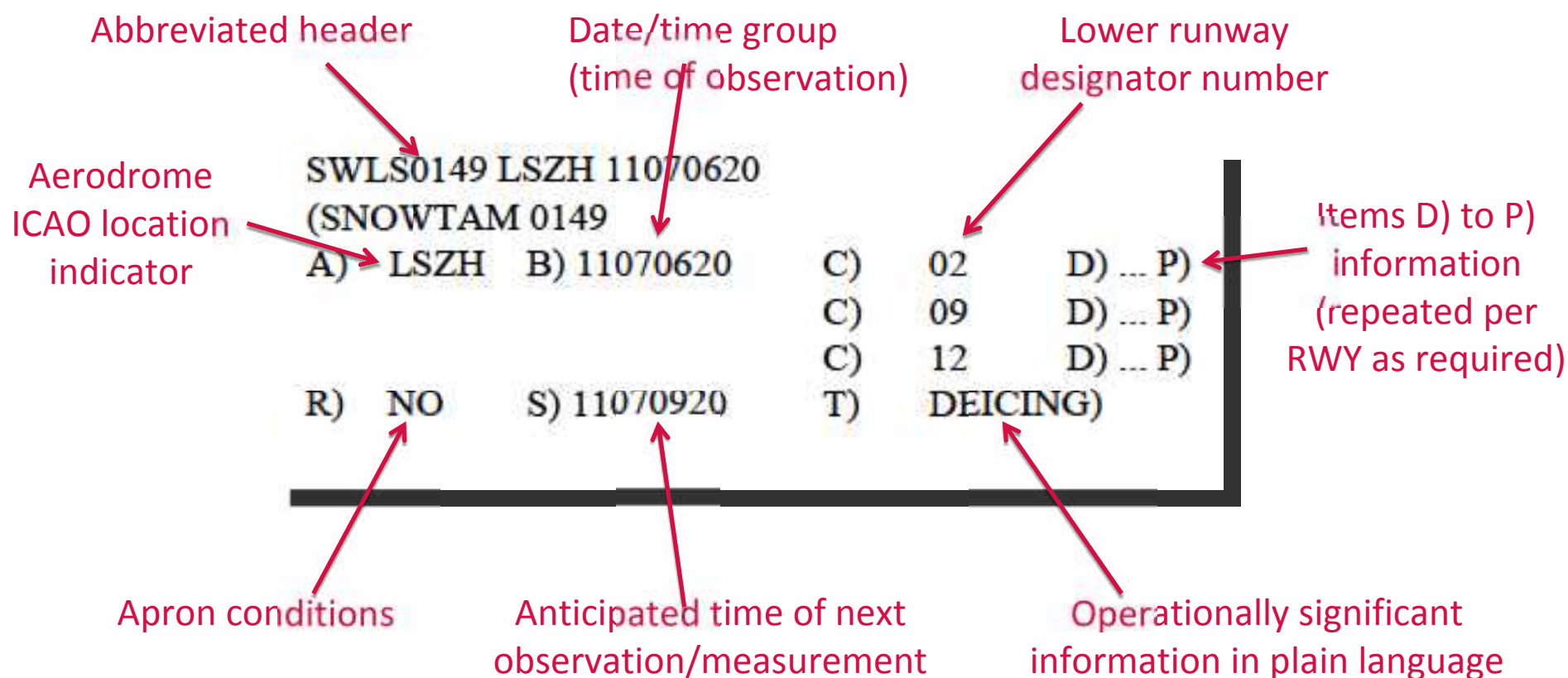
# SNOWTAM format and instructions

## APPENDIX 2. SNOWTAM FORMAT (see Chapter 3, 3.2.3)

(ICOM message)	(PRIORITY INDICATOR)	(ADDRESS)	***
(DATE AND TIME OF FILING)	(ORIGINATOR INDICATOR)		***
(Abbreviated heading)	(DATA SERIAL NUMBER)	(LOCATION INDICATOR)	(DATE TIME OF OBSERVATION)
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	00
01	02	03	04
05	06	07	08
09	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36



# Example SNOWTAM





## Some SNOWTAM rules

- At aerodromes with more than one runway, **all runways** are reported in one SNOWTAM, with the lowest runway number first
- Only **items with information** and their indicator are included
- **Metric units** must be used and the unit of measurement not reported
- The **maximum validity** of SNOWTAM is **24 hours**

## Some SNOWTAM rules (continued)

- New SNOWTAM must be issued whenever there is a **significant change** in conditions
- A 'significant change' includes but is not limited to:
  - Change in the coefficient of friction
  - Changes in depth of deposit
  - Change in the available length or width of a runway
- See Annex 15 Appendix 2 for full details and significant change thresholds

# Evolving changes....

- Aerodrome Panel (AP/2, October 2010)
  - Developed proposal for amendment to the SNOWTAM format and the accompanying instructions for completion in Annex 15
- AOSWG/FTF
- AIS-AIMSG

# Nothing is certain except death, taxes...

## ....and WINTER



Thank you

