

AVIATION OPERATIONAL MEASURES FOR
FUEL AND EMISSIONS REDUCTION
WORKSHOP

Investing
in
Air Traffic Management

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NAV CANADA




Air Traffic Management Panel
Ottawa, 5-6 November 2002

Introduction



NAV CANADA



Who We Are
ATS Initiatives Affecting Fuel Burn
The Way Ahead
How to Reach Us

Who We Are



NAV CANADA


- Owner and operator of Canada's civil air navigation system since Nov. 1, '96
- Private, non-share capital corporation
- No government funding
- Stakeholder Board



Who We Are

The NAV CANADA logo is an oval shape with a blue gradient and a white border. The words "NAV CANADA" are written in white, uppercase letters across the center of the oval.

NAV CANADA

- 
- A photograph of an airplane on a runway, viewed through a curved window. The runway is covered in snow, and the sky is blue with some clouds. The airplane is a large commercial jet, and its tail is visible.
- Four Founding “Members”
 - Airlines
 - Business Aviation
 - Government
 - Employees
 - Each has Board representation

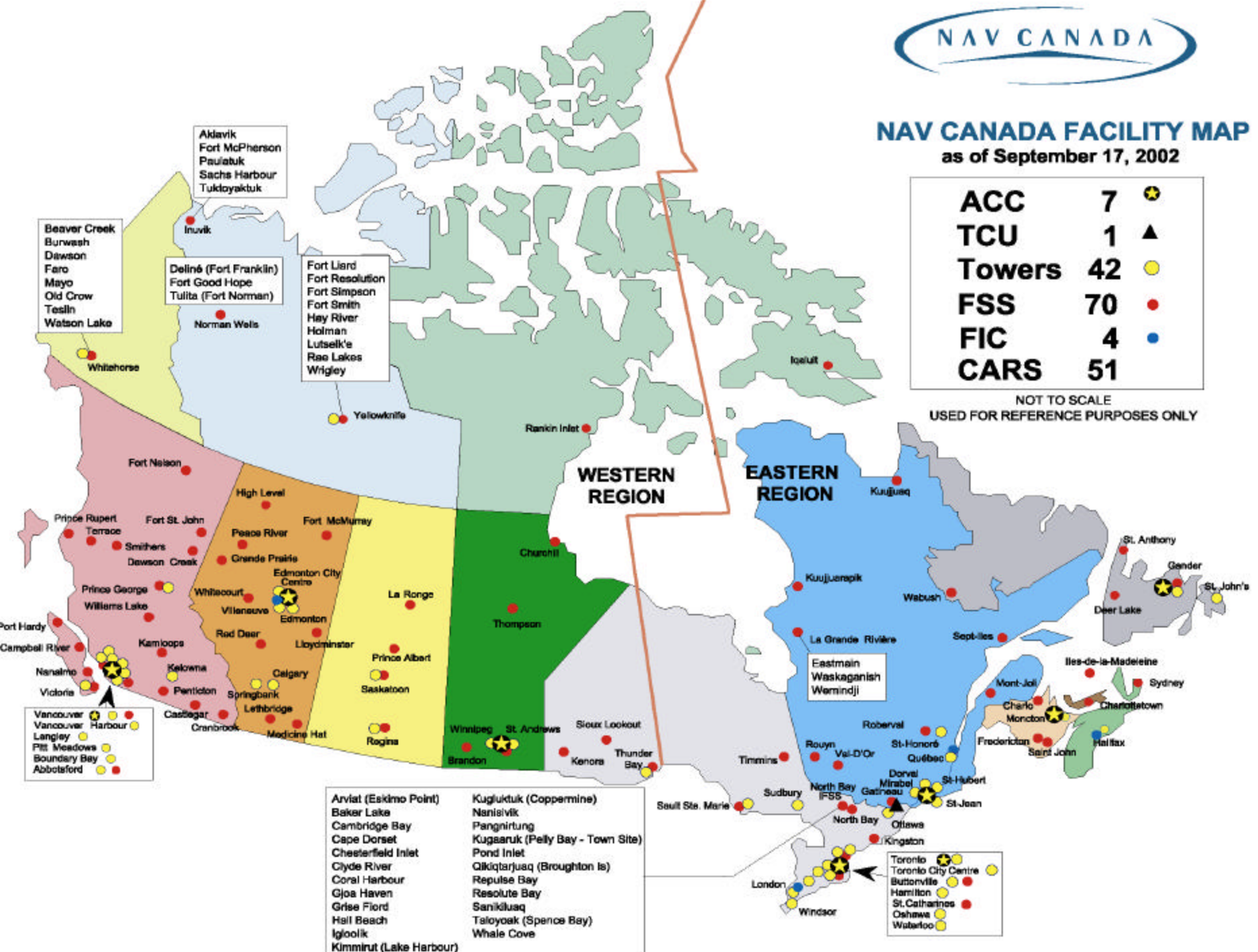


NAV CANADA FACILITY MAP

as of September 17, 2002

ACC	7	
TCU	1	
Towers	42	
FSS	70	
FIC	4	
CARS	51	

NOT TO SCALE
USED FOR REFERENCE PURPOSES ONLY



- Beaver Creek
- Burwash
- Dawson
- Faro
- Mayo
- Old Crow
- Teslin
- Watson Lake

- Dellin  (Fort Franklin)
- Fort Good Hope
- Tulita (Fort Norman)

- Fort Liard
- Fort Resolution
- Fort Simpson
- Fort Smith
- Hay River
- Holman
- Lutselk'e
- Rae Lakes
- Wrigley

- Aklavik
- Fort McPherson
- Paulatuk
- Sachs Harbour
- Tuktoyaktuk

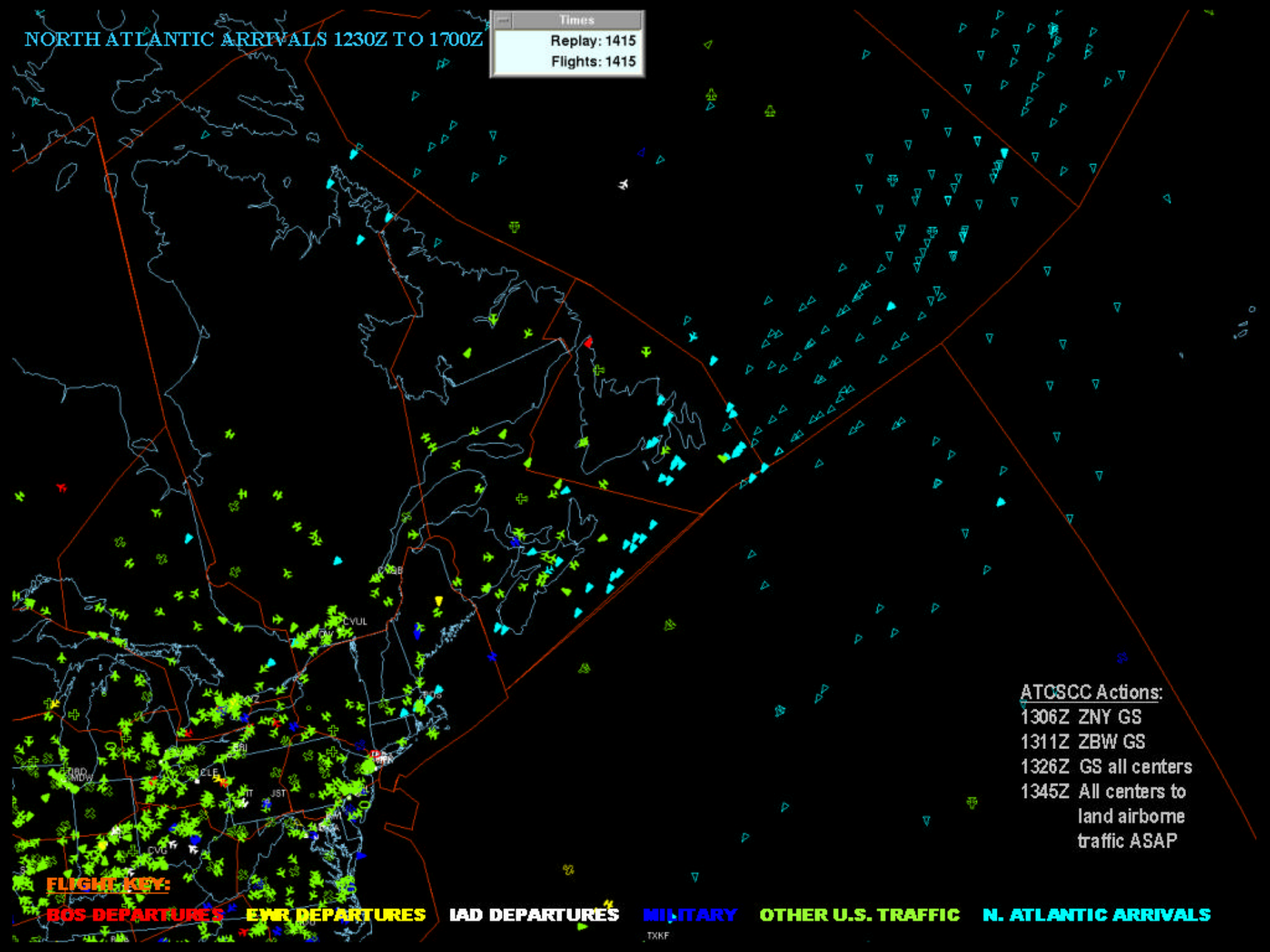
- Vancouver
- Vancouver Harbour
- Langley
- Pitt Meadows
- Boundary Bay
- Abbotsford

- Arviat (Esquima Point)
- Baker Lake
- Cambridge Bay
- Cape Dorset
- Chesterfield Inlet
- Clyde River
- Coral Harbour
- Gjoa Haven
- Grise Fjord
- Hail Beach
- Igloodik
- Kimminut (Lake Harbour)
- Kugluktuk (Coppermine)
- Nanisivik
- Pangnirtung
- Kugaaruk (Pelly Bay - Town Site)
- Pond Inlet
- Qikiqtarjuaq (Broughton Is)
- Repulse Bay
- Resolute Bay
- Sanikiluaq
- Taloyoak (Spence Bay)
- Whale Cove

- Toronto
- Toronto City Centre
- Buttonville
- Hamilton
- St. Catharines
- Oshawa
- Waterloo

NORTH ATLANTIC ARRIVALS 1230Z TO 1700Z

Times
Replay: 1415
Flights: 1415



ATOSCC Actions:
1306Z ZNY GS
1311Z ZBW GS
1326Z GS all centers
1345Z All centers to land airborne traffic ASAP

FLIGHT KEY:

- BOS DEPARTURES**
- EWR DEPARTURES**
- LAX DEPARTURES**
- MILITARY**
- OTHER U.S. TRAFFIC**
- N. ATLANTIC ARRIVALS**

Making the Connection

NAV CANADA

↑ Efficiency = ↓ Emissions

Development goals include:

- Increasing the ability to approve optimal altitudes and routes
- Improving arrival and departure efficiency
- Ensuring safety is the #1 priority

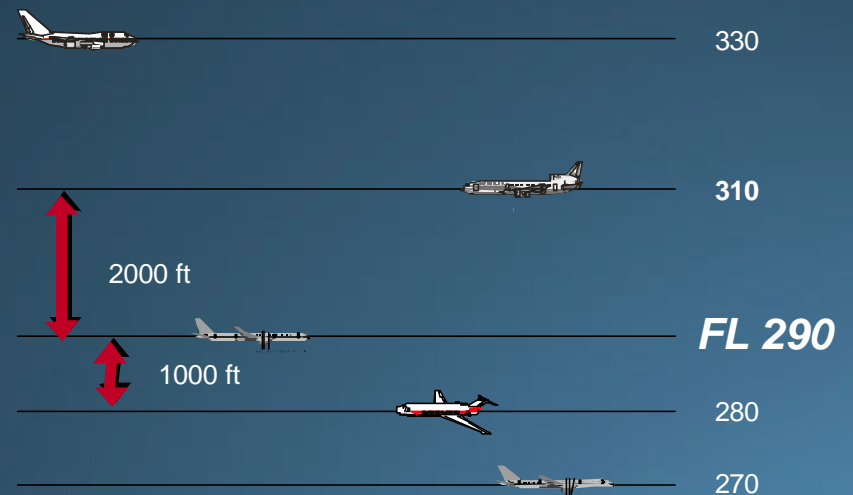
RVSM - Airspace Structure

RVSM

(1,000 ft FL290-410 incl.)



Conventional Vertical Separation Minimum (CVSM)
(2,000 ft above FL 290)



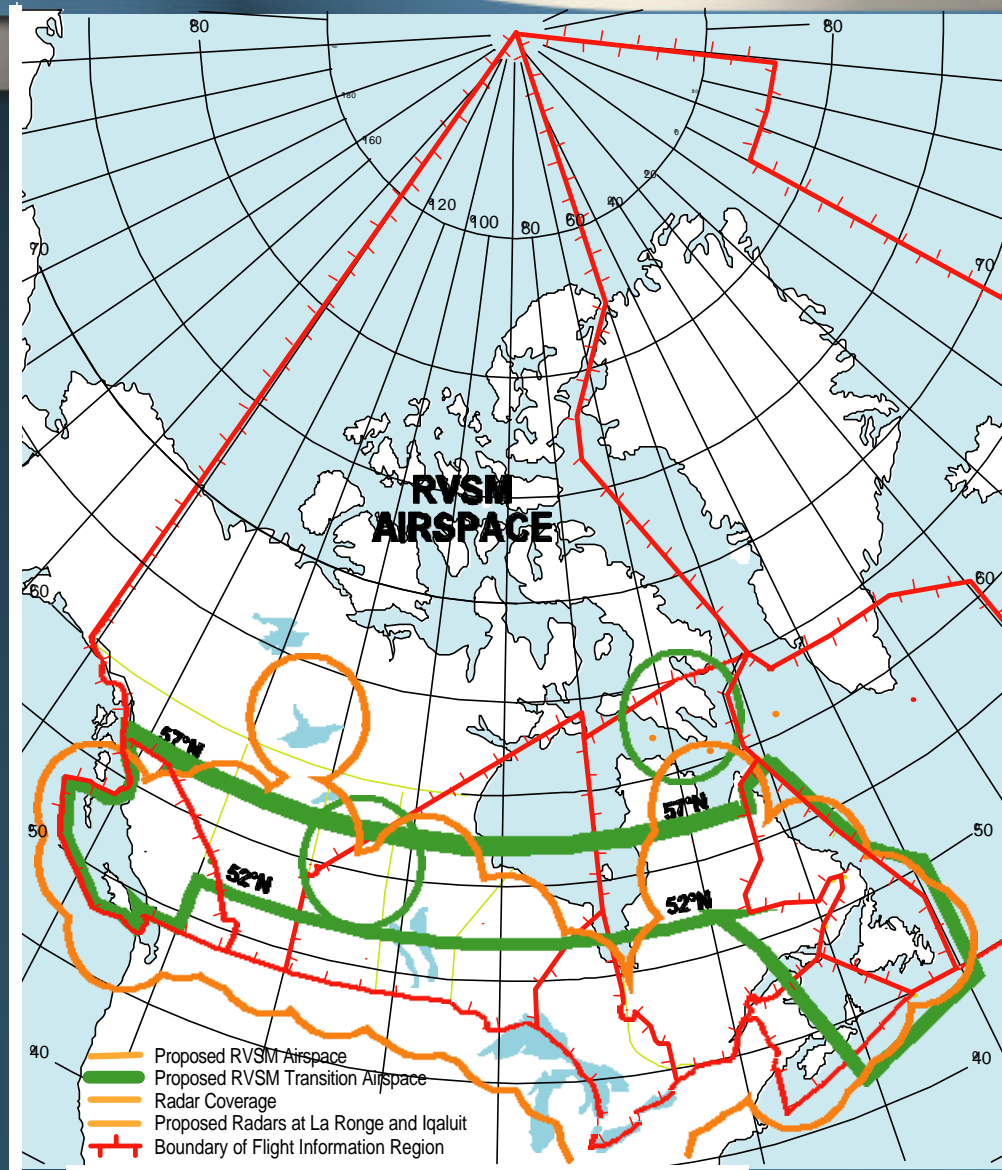
RVSM

NAV CANADA


North Atlantic RVSM
implemented 1997

Northern Airspace
FL 290-410
Effective
April 18, 2002

DRVSM implementation
scheduled for
2004 in tandem with U.S.



North American Route Program

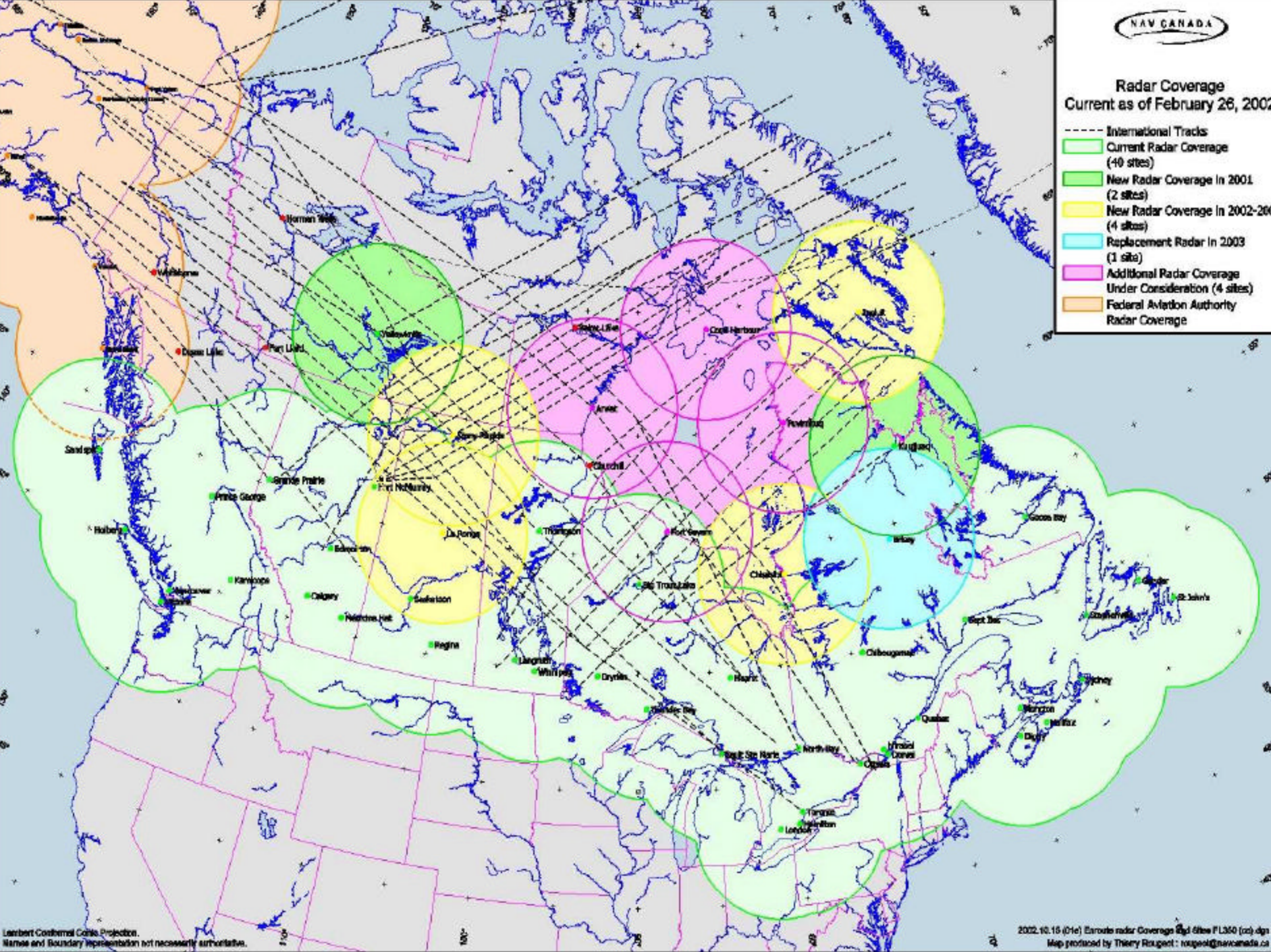
The logo for NAV CANADA, featuring the text "NAV CANADA" in white capital letters inside a blue oval with a white border.A close-up, black and white photograph of the cockpit of a commercial airplane, showing the windshield and the top of the fuselage.

Random routes throughout the
U.S., Canada, and Alaska

- Joint NAV CANADA/FAA initiative to harmonize random route operations
- Applies to operations FL290 and above
- Within conterminous U.S. and Canada

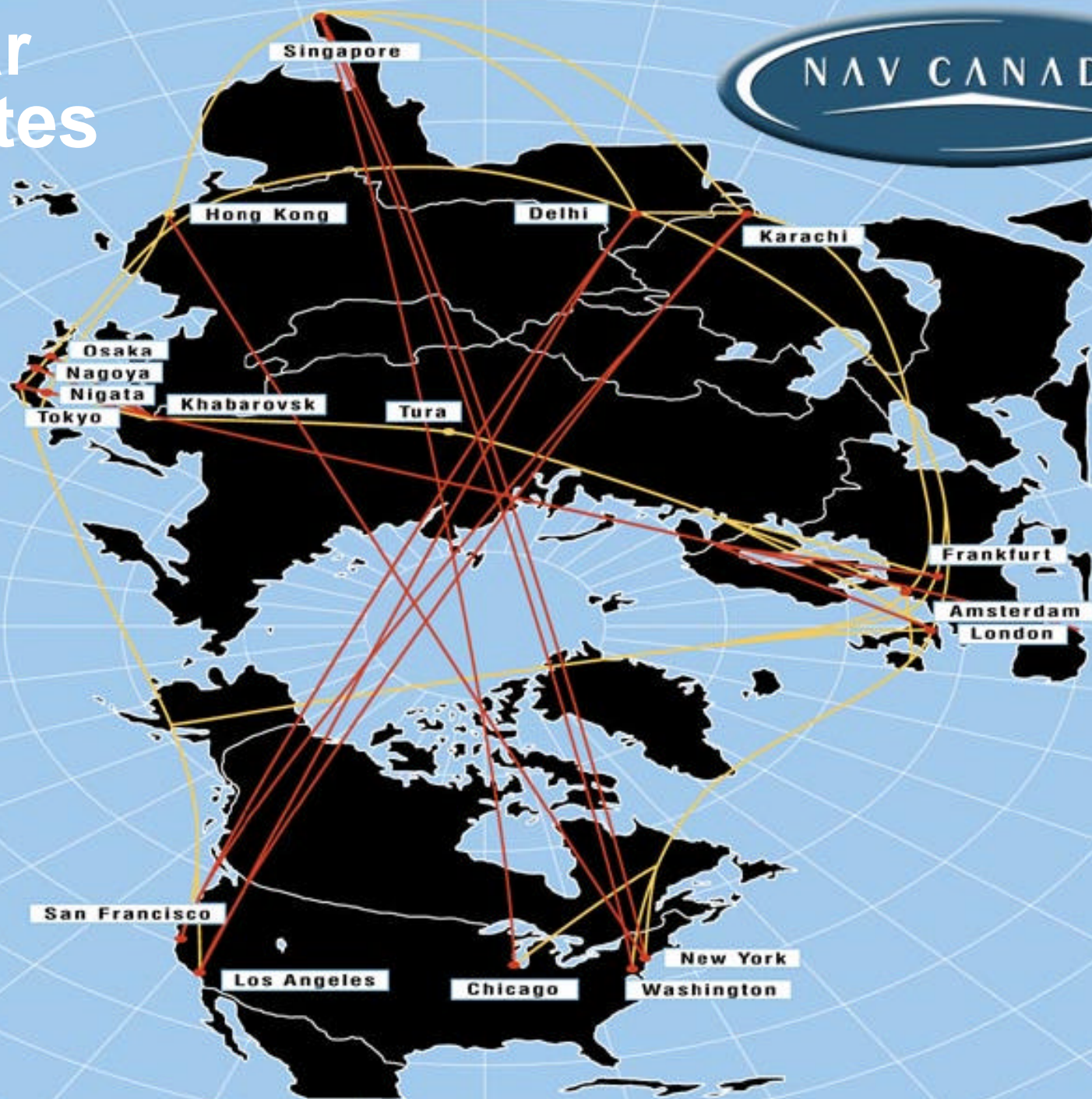
Radar Coverage Current as of February 26, 2002

- International Tracks
- Current Radar Coverage (40 sites)
- New Radar Coverage in 2001 (2 sites)
- New Radar Coverage in 2002-2003 (4 sites)
- Replacement Radar in 2003 (1 site)
- Additional Radar Coverage Under Consideration (4 sites)
- Federal Aviation Authority Radar Coverage

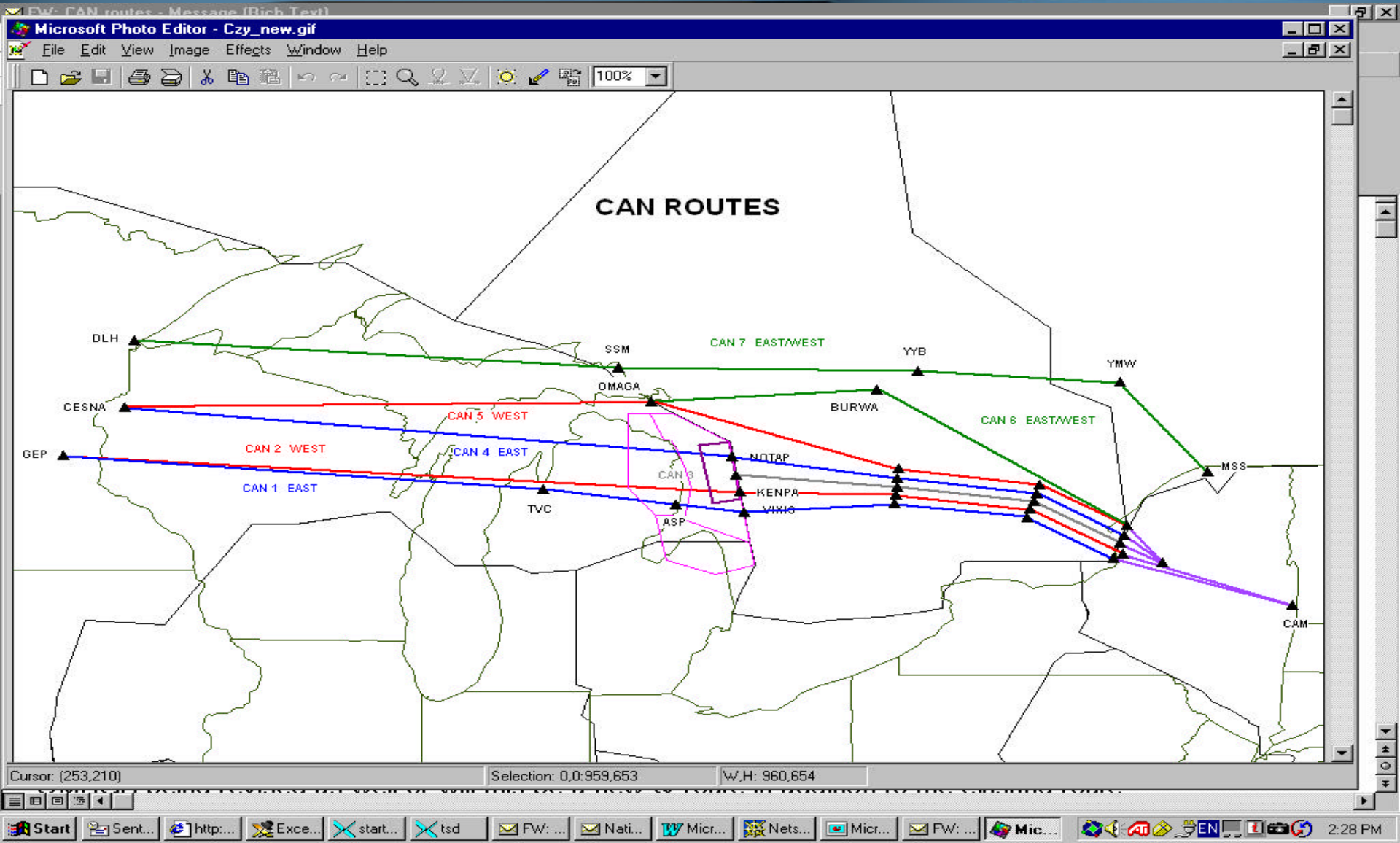


Lambert Conformal Conic Projection.
Name and Boundary Representation not necessarily authoritative.

Polar Routes



U.S. Offloads



Pre-Departure Clearance

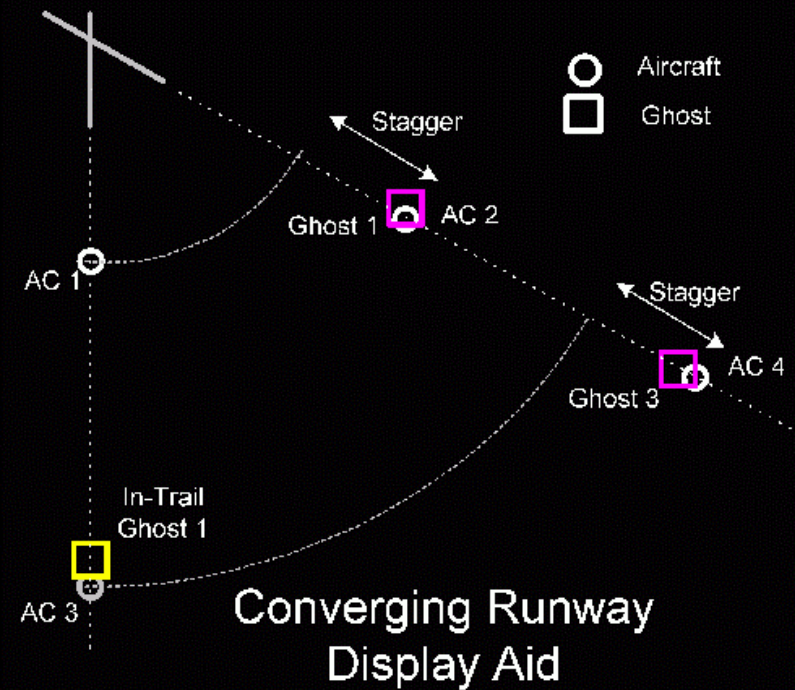
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- Delivery from tower to cockpit via data link
- Reduces frequency congestion
- Supports increased departure efficiencies



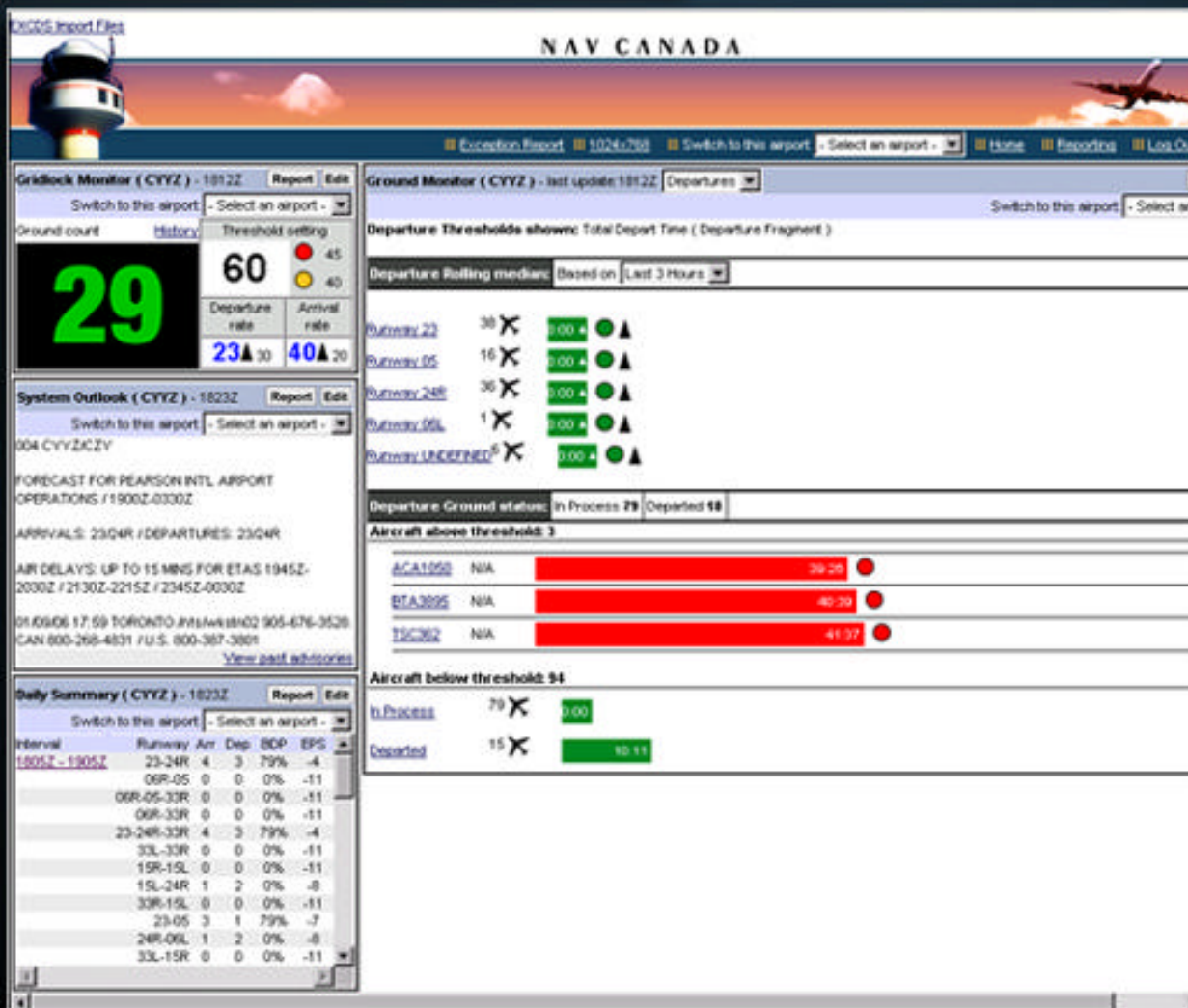
CRDA

NAV CANADA



- Increases runway arrival rate at major airports
- More precise landings on converging runways
- Merges multiple traffic streams
- Eliminates safety problem
- Endorsed by pilots, unions as “the” solution to LAHSO

Measuring Performance: AAPM

NAV CANADA

Exception Report | 1024x768 | Switch to this airport - Select an airport - | Home | Reporting | Log Out

Gridlock Monitor (CYYZ) - 1812Z Report Edit

Switch to this airport - Select an airport -

Ground count: **29** Threshold setting: **60**

Departure rate: **23** Arrival rate: **40**

System Outlook (CYYZ) - 1823Z Report Edit

Switch to this airport - Select an airport -

004 CYYZCZY

FORECAST FOR PEARSON INTL AIRPORT OPERATIONS / 1900Z-0300Z

ARRIVALS: 2304R / DEPARTURES: 2304R

AIR DELAYS: UP TO 15 MINS FOR ETAS 1945Z-2000Z / 2130Z-2215Z / 2345Z-0000Z

010906 17:59 TORONTO INTL ARRIVAL 905-676-3528 CAN 800-268-4831 / U.S. 800-387-3801

[View past activities](#)

Ground Monitor (CYYZ) - last update 1812Z Departures

Switch to this airport - Select an airport -

Departure Thresholds shown: Total Depart Time (Departure Fragment)

Departure Rolling median: Based on Last 3 Hours

Runway	Count	Time	Status
Runway 23	38	0:00	▲
Runway 05	16	0:00	▲
Runway 24R	36	0:00	▲
Runway 06L	1	0:00	▲
Runway UNDETERMINED	0	0:00	▲

Departure Ground status: In Process **29** / Departed **18**

Aircraft above threshold: 3

Aircraft	Status	Time
ACA1058	N/A	39:26
BTA3095	N/A	40:39
TSC362	N/A	41:07

Aircraft below threshold: 94

Status	Count	Time
In Process	70	0:00
Departed	15	10:11

Daily Summary (CYYZ) - 1823Z Report Edit

Switch to this airport - Select an airport -

Interval	Runway	Arr	Dep	BDP	EPS
1805Z - 1905Z	23-24R	4	3	79%	-4
	06R-05	0	0	0%	-11
	06R-05-33R	0	0	0%	-11
	06R-33R	0	0	0%	-11
	23-24R-33R	4	3	79%	-4
	33L-33R	0	0	0%	-11
	15R-15L	0	0	0%	-11
	15L-24R	1	2	0%	-8
	33R-15L	0	0	0%	-11
	23-05	3	1	79%	-7
	24R-06L	1	2	0%	-8
	33L-15R	0	0	0%	-11



Advisories

(YYZ) - 2002/01/15 11:30z [Report](#)
 Switch to this airport: [Go](#)
 CYYZ/CZY OPERATIONS FORECAST 1200Z-
 1200Z
 ADVISORIES: 23/24R / DEPARTURES: 23/24R AIR
 DELAYS: UP TO 10 MINS FOR ETAS 1840Z-1920Z
 2002/01/15 11:30 TORONTO .Infs/wkstn02 905-676-3528.
 800-268-4831 / U.S. 800-387-3801
[View past advisories](#)

Block Monitor

(YYZ) - 2002/01/15 13:46z [Report](#) [Edit](#)
 Block Count [History](#) Threshold setting

 100 90
 80
 Departure Rate [Arrival Rate](#)
 90 60 42 60

Summary

(YYZ) - 2002/01/15 13:46z [Report](#)

Runway	Arr	Dep	BDP	EPS
23	8	20	93%	+17
24R	14	17	71%	+20
23	8	12	36%	+9
06L	0	1	6%	-10
24R	13	12	50%	+14
15L	6	0	50%	-5
23	4	20	64%	+13
24R	0	6	14%	-5

AAPM Status [EDIT](#)

Zulu: 2002/1/15 13:56:07z **Local Time:** 2002/1/15 8:56:08z
 Last Status Message Updated: 2002/01/10 16:37z
[The Manuals and Release notes can be found in the documents section of the portal.](#)

Ground Monitor

(YYZ) - 2002/01/15 13:46z [Departures](#) [Show Legend](#) [Report](#) [Edit](#)
 Departure Rolling median: Based on [Last Hour](#)

Runway	Aircraft	4:25	7:26	0:00	4:01	11:45
Runway 23	22					
Runway 24R	18					

Departure Ground status: In Process **22** | Departed **18** | Line Up Count **5**

Aircraft above threshold: 6

JEL105	UNDF	0:01				43:57
ACA600	208	7:43	1:32	12:36		14:19
COA1673	UNDF	0:01				32:26
GGN984	296					15:15
ACA702	237	10:00	1:24	9:05	3:14	8:47
ACA440	225	6:48	1:21	9:17	3:38	5:49

Aircraft below threshold: 34

In Process	18	5:44	10:32	7:56	9:11
Departed	16	4:18	6:48	0:00	4:00

RNAV STARS

NAV CANADA

- 37 published RNAV STARS in use today
 - Edmonton, Calgary, Winnipeg, Toronto, Ottawa, Montreal Dorval, Halifax, St. John's
- Development
 - RNAV STARS to be developed for other airports
 - testing is ongoing at Vancouver
 - publication by Fall 2002

RNAV SIDS

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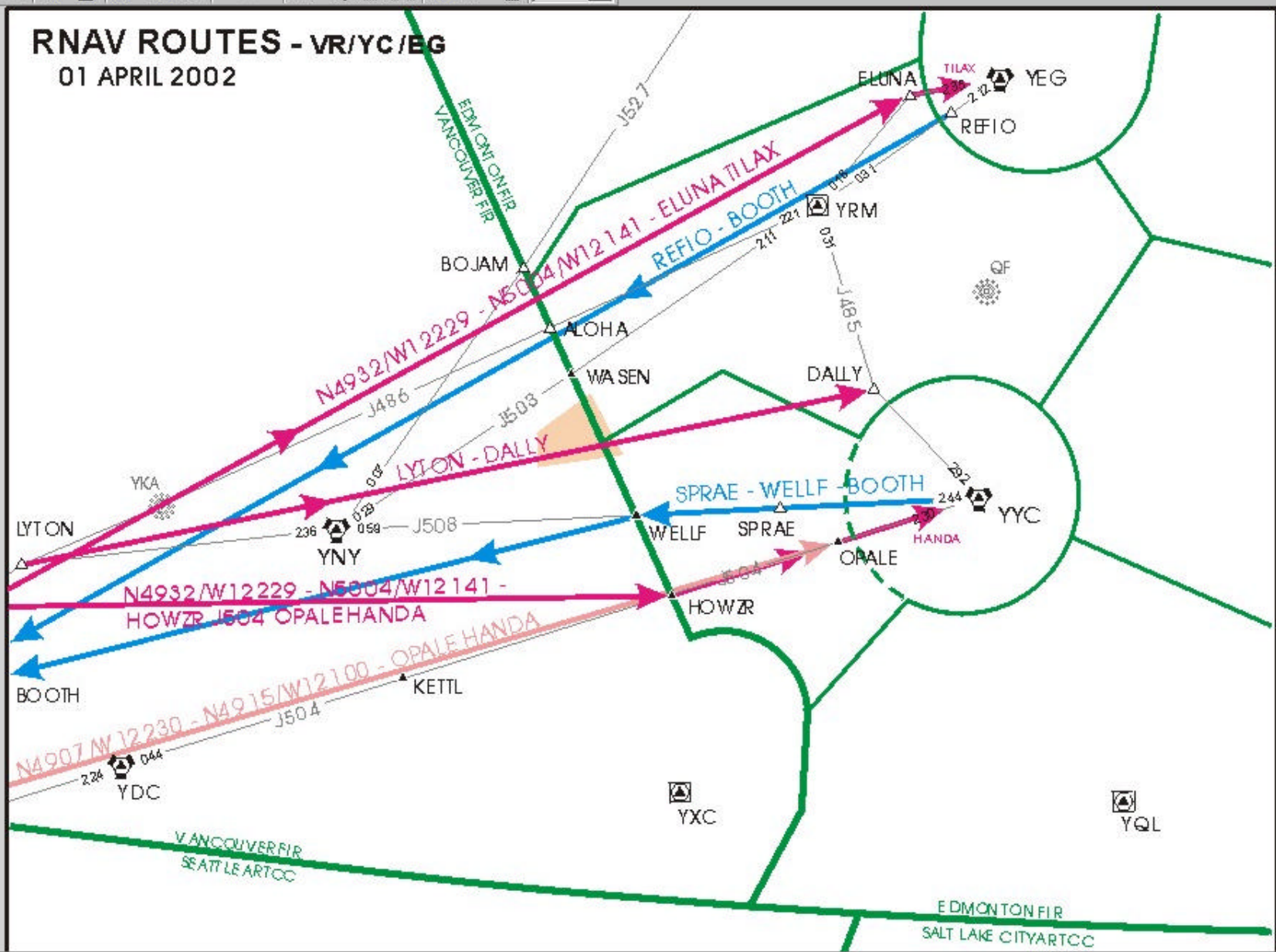
- RNAV SIDs being tested in Ottawa
- RNAV SIDs being developed for Montreal, Toronto and Calgary





RNAV ROUTES - VR/YC/EG


01 APRIL 2002



The Way Ahead

The NAV CANADA logo is an oval-shaped emblem with a blue background and white text. The words "NAV CANADA" are written in a serif font, with "NAV" on the left and "CANADA" on the right. A white swoosh underline is positioned below the text. The logo is set against a light blue background that appears to be part of a larger graphic design.


NAV CANADA

- 
- A photograph showing a sunset over a landscape. The sun is low on the horizon, creating a bright orange and yellow glow that transitions into a purple and blue sky. The foreground shows a dark, silhouetted landscape with a prominent white structure, possibly a bridge or a large building, extending into the distance.
- Despite the industry downturn, investment is essential to deliver safe and efficient air navigation services
 - Close to \$ 1 billion in new systems and technology since 1996
 - We will continue to invest in our future and that of the aviation industry

How to Contact Us



NAV CANADA

- 
- www.navcanada.ca
 - Customer Service:
1-800-876-4693-4
service@navcanada.ca

AVIATION OPERATIONAL MEASURES FOR FUEL AND EMISSIONS REDUCTION WORKSHOP



Thank You



Air Traffic Management Panel
Ottawa, 5-6 November 2002