

**NDRVSM**

NAV CANADA

**RVSM  
NORTHERN CANADIAN  
AIRSPACE  
(NDRVSM)**

**CAR/SAM REGIONS  
RVSM SEMINAR 2**

**June 16-17, 2003**



# OVERVIEW

NAV CANADA

- NDRVSM implemented  
April 18, 2002
  - Airspace
  - Traffic
  - Communications
  - Surveillance
  - Operations issues
  - Efficiency gains
  - Feedback

# NDRVSM Airspace

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- From 57:00N to the North Pole
  - FL 290 - FL 410 inclusive
  - Exclusionary airspace
  - Adjacent airspace
    - North - transition to Russian airspace
    - East - NAT (RVSM -FL 290 - FL 410)
    - West - Anchorage (RVSM Transition airspace FL 290 - FL 410)
    - South - (Domestic RVSM Transition airspace- FL 290 - FL 410)

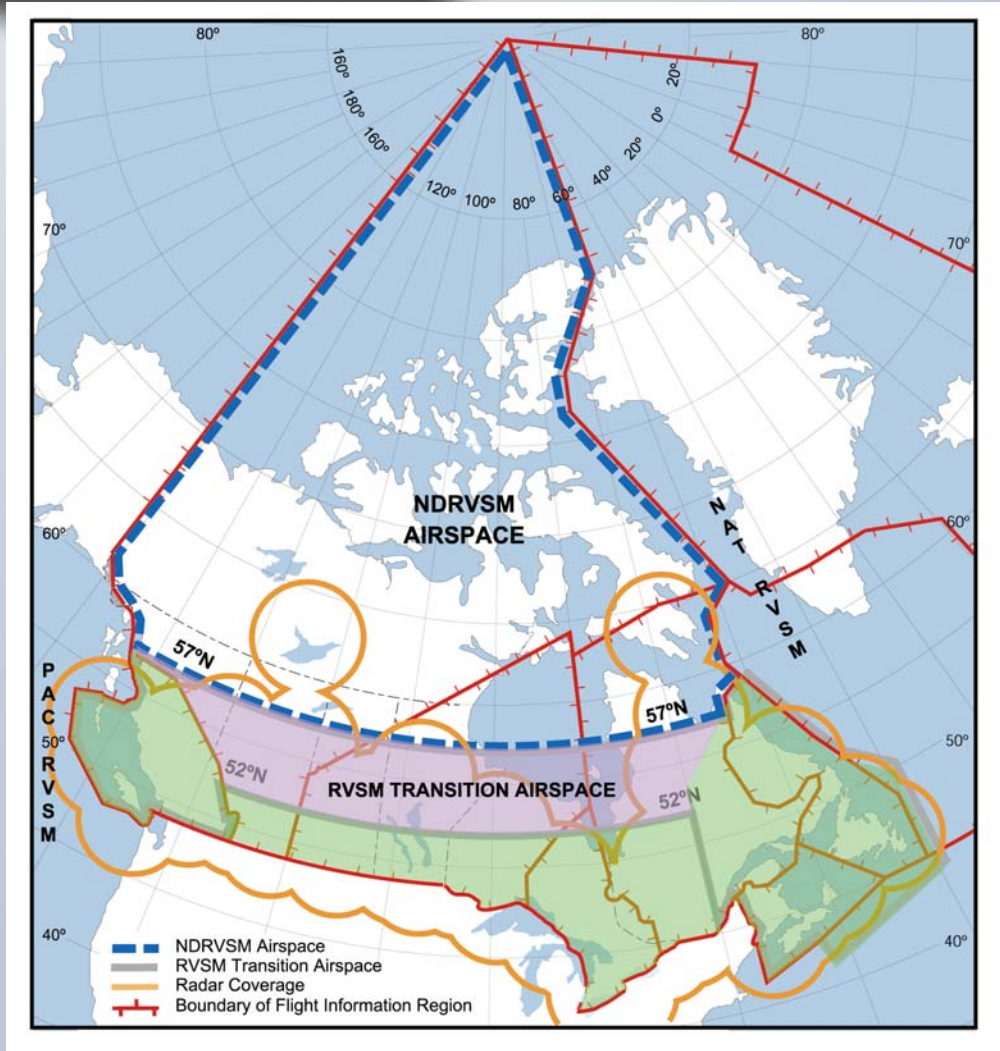
# NDRVSM

## Transition Airspace



- From 52:00N to 57:00N
  - FL 290 - FL 410 inclusive
  - Non-exclusionary airspace
    - RVSM certified - non-RVSM certified aircraft
  - Transition aircraft to/from NDRVSM
    - RVSM Flight levels not compatible with adjacent CVSM airspace
    - More complex than RVSM or CVSM airspace

# NDRVSM Airspace



# NDRVSM -Traffic



- Average of 330 flights per day
  - Commercial - 95%
  - General Aviation - 03%
  - Military - 02%
  - Origin-destination areas
    - NAT - 39%
    - Alaska - 33%
    - PAC - 18%
    - Domestic - 09%
    - Polar - 01%

# NDRVSM Airspace Communications



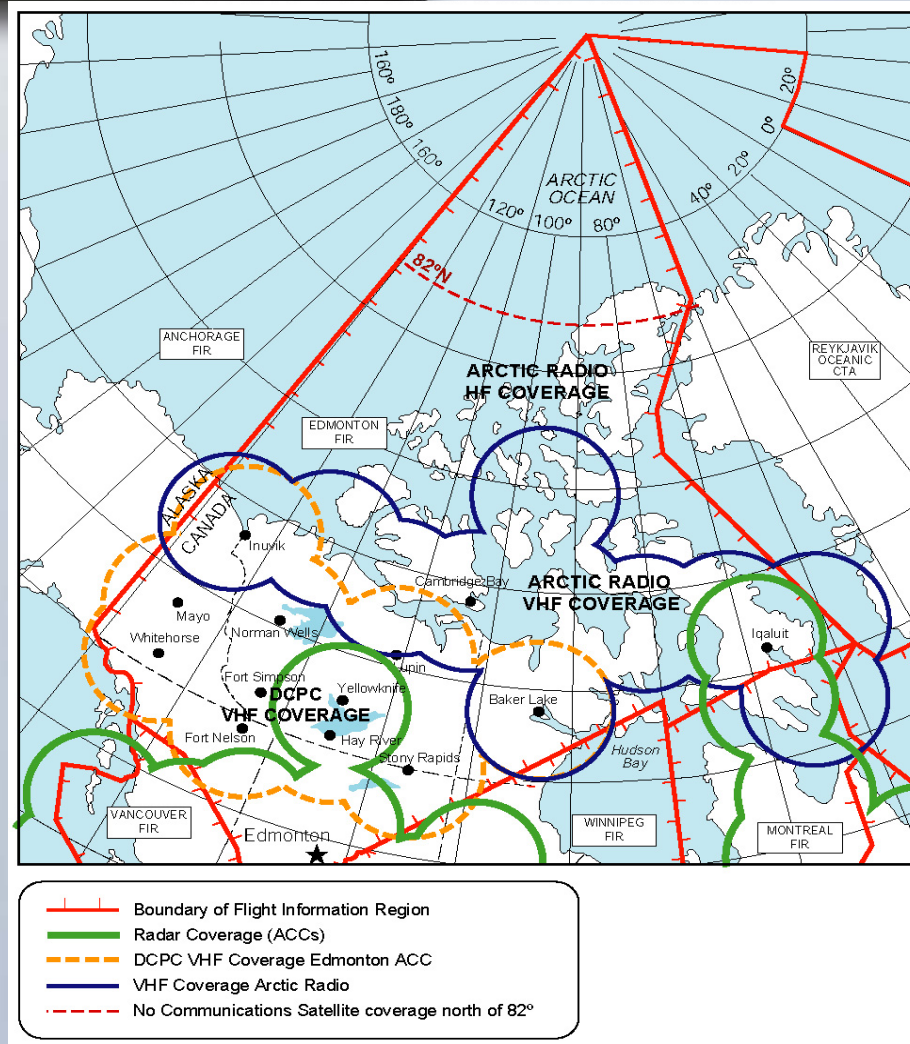
- Southern portion ( 57:00N - 70:00N)
  - DCPC- remoted VHF
    - Edmonton and Montreal ACCs
  - Arctic Radio ( Third Party Communications)
    - VHF (limited coverage)
- Northern portion ( Above 70:00N)
  - Arctic Radio
    - VHF ( limited coverage)
    - HF

# NDRVSM Airspace Surveillance



- Southern portion (57:00N - 70:00N)
  - Limited radar coverage
    - Edmonton and Montreal ACCs
  - Northern Airspace Display System (NSiT) - Edmonton ACC
- Northern portion (Above 70:00N)
  - NSiT
    - Projected tracks /conflict prediction
      - updated by aircraft position reports

# NDRVSM Airspace Communications-Surveillance



# Operations Issues Pre - NDRVSM



- Cruising altitudes not compatible with adjacent NAT RVSM airspace
  - ATC
    - NAT Traffic had to be compressed e.g. FLs 360, 340 and 320 to FLs 350/ 310
      - Transition in NAT airspace
    - During periods of poor HF communications aircraft entered airspace at incorrect (RVSM) flight levels

# Operations Issues

## Pre - NDRVSM



- Limited options to resolve conflicts at cross-over points
  - Descent to lower flight level (s)
    - e.g. FL 350 to FL 310
  - Tactical re-routes to maintain horizontal separation
  - Optimum profiles often not available to customers

# Operations Issues Post - NDRVSM



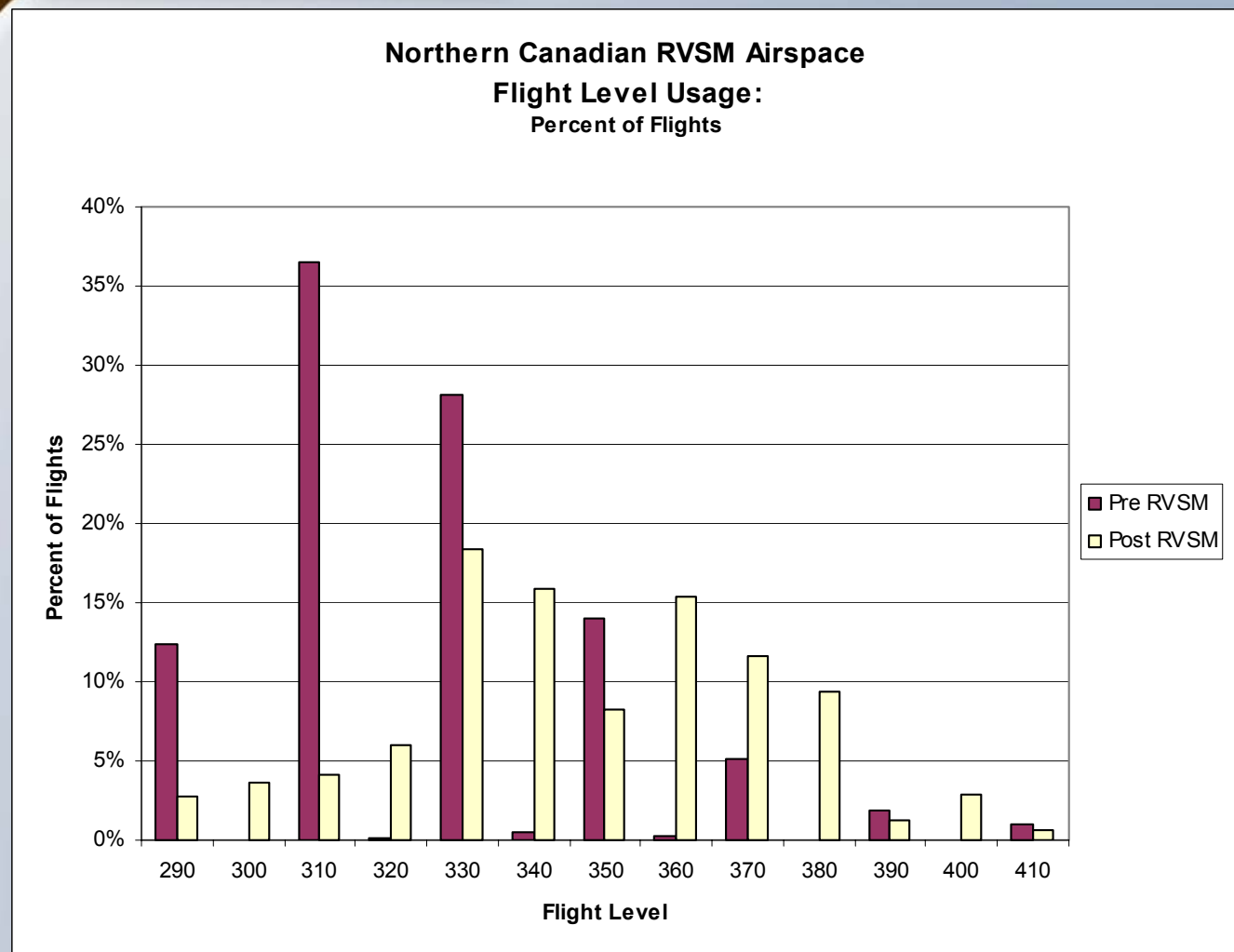
- Cruising altitudes compatible with adjacent NAT RVSM airspace
- ATC
  - Additional flight levels available to resolve conflicts at cross-over points
    - Aircraft rarely descended to lower level (s)
    - Fewer re-routes
  - During periods of poor HF communications aircraft will already be at RVSM flight levels

# Operations Issues Post - NDRVSM



- No change in communications / surveillance capability
- Separation Minima
  - No change in horizontal separation minima
  - 1,000ft. vertical separation throughout NDRVSM airspace
- Exemptions for non-RVSM certified aircraft
  - Separation between non-RVSM certified and all other aircraft - 2,000ft.

# Operations -Flight Level Utilization



# Operations Issues Post - NDRVSM



- RVSM Transition airspace
  - Mix of RVSM certified and non-RVSM certified aircraft
  - Use 1,000ft./ 2,000ft. vertical separation based on aircraft certification
  - RVSM flight levels not compatible with adjacent CVSM airspace
    - Added complexity at the interface
  - RVSM Transition airspace will be eliminated with SDRVSM- January 2005

# Efficiency Gains

NAV CANADA

- Customers
  - Estimated at \$ 14 million annually
    - fuel savings
  - More available flight levels
  - Reduced percentage of flights descended to resolve conflicts
  - Fewer re-routes in non-radar airspace
- Added flexibility for ATC

# Feedback



- Customers
  - Positive - realizing efficiency gains
- Adjacent states ( USA-Iceland)
  - Positive - simplified traffic management at common interface
- Internal - NAV CANADA
  - More flexibility for ATC
  - Fewer problems during periods of poor HF communications