

# Sun Angle Cloud Cover and the Aleutians

Experiences from  
Cold Bay, Alaska



# Cold Bay – Aeronautical Survey

## Brief time line

- March 16, 2010 – Notice to Proceed
- June 3, 2010 – Imagery Plan approved
- June 9, 2010 – Geodetic Control Data approved
- October 9, 2010 – Imagery collected
- Decision by Aerometric to re-acquire imagery due to issues with lens moisture and clouds in some flight lines.
- 2011 image acquisition season : airplane and crew on site in Cold Bay a total of 53 days, unable to collect data due to cloud cover and sun angle requirements.

# AC150/5300-17x requirements

- 17B requirements
  - 14 Clouds. “Clouds or cloud shadows must not appear on the imagery.”
  - 18 Sun angle “Do not collect imagery when the sun angle is less than 30 degrees above the horizon.”
- 17C requirements  
Chapter 8 Data Review and Acceptance
  - 8.1 a. (2) “Image Quality. Imagery must be clear, sharp, and evenly exposed across the format. The imagery must be free from clouds, cloud shadows, smoke, haze, scratches, and other blemishes interfering with the intended use of the imagery”

While 17C allows use of LIDAR, aerial imagery is still required

# Cold Bay - Cloud Cover

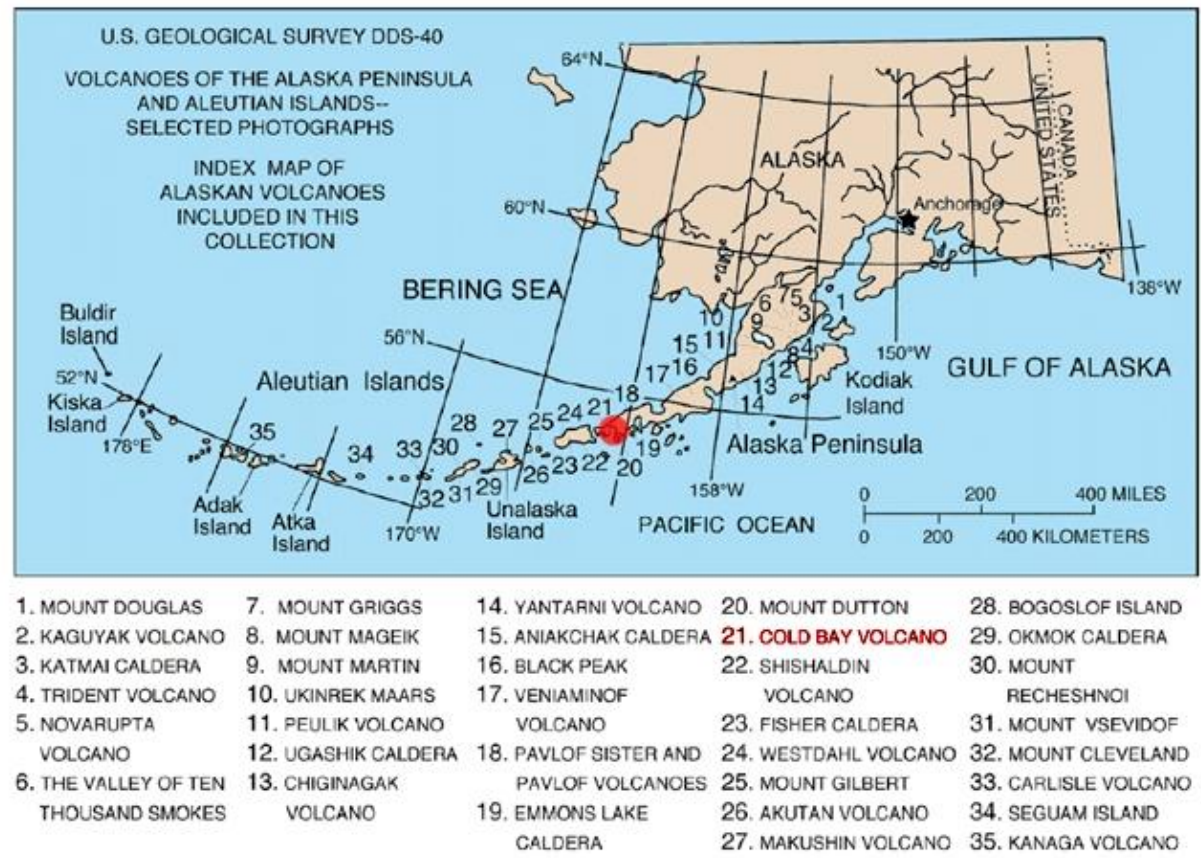
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
MEAN SKY COVER(tenths)													
Sunrise - Sunset	8.2	8.4	8.3	9	9.1	9.2	9.4	9.5	9.1	8.7	8.5	8.5	8.8

COLD BAY, ALASKA: NORMALS, MEANS, AND EXTREMES - Period of Record Monthly Climate Summary 3/2/1950 to 12/31/2009  
Western Regional Climate Center. <http://www.wrcc.dri.edu/cgi-bin/cliicl.pl?ak25624>.

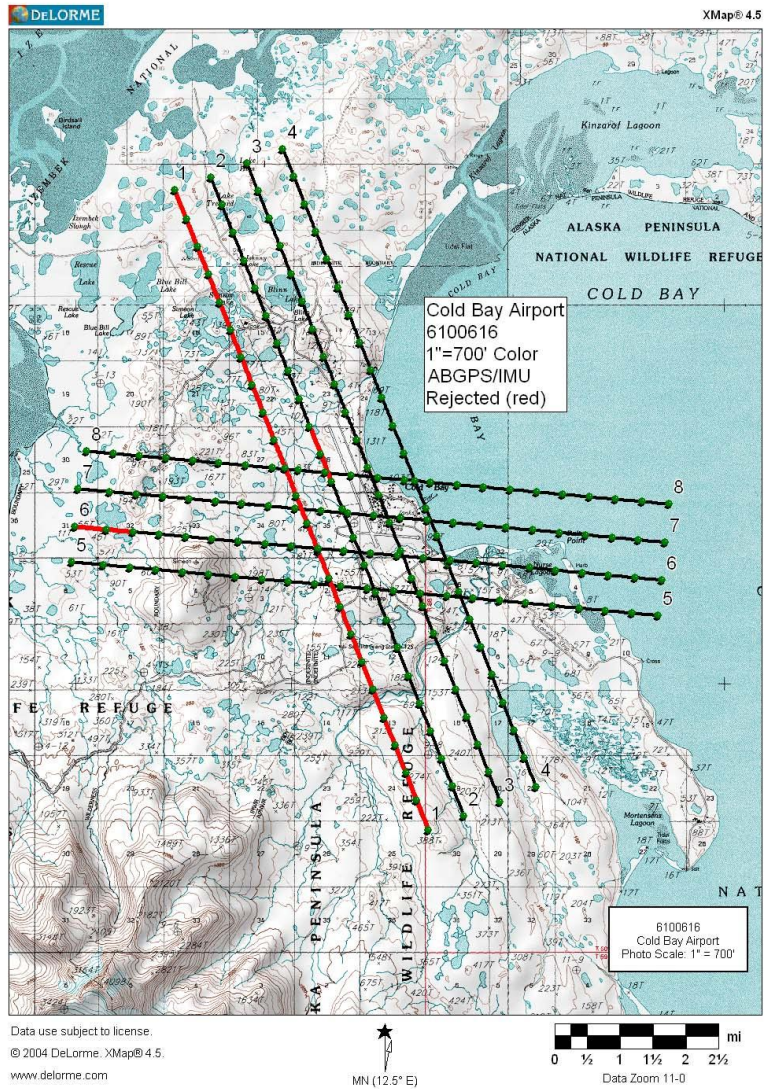


# Cold Bay - Location

Located in East Aleutians Borough  
Approximately 630 miles south west of Anchorage



# Troubled images

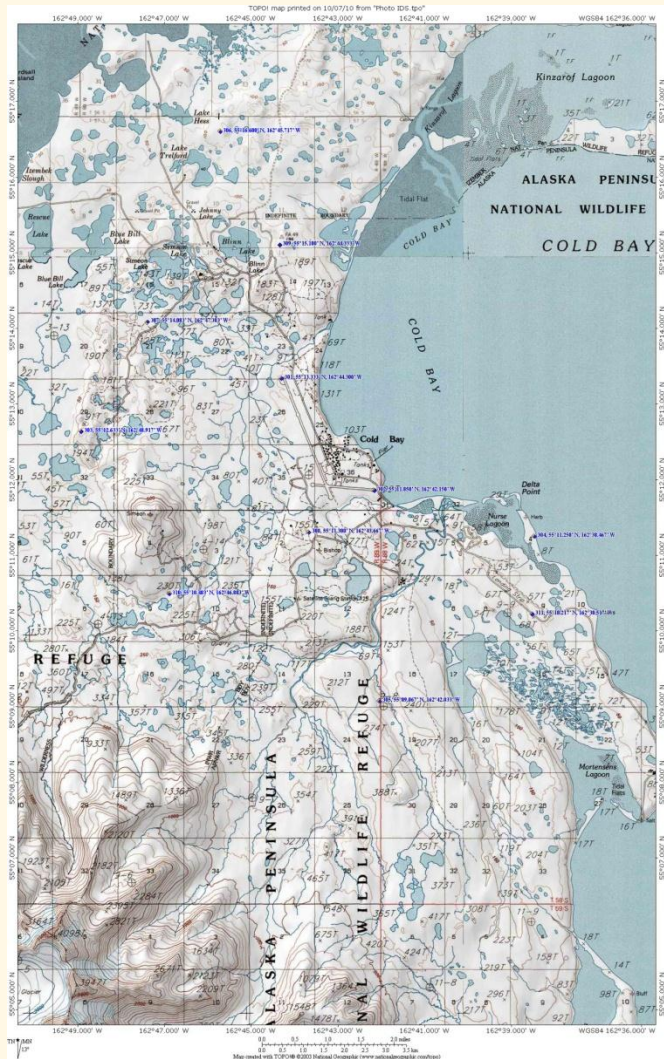


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# Additional Field Survey completed



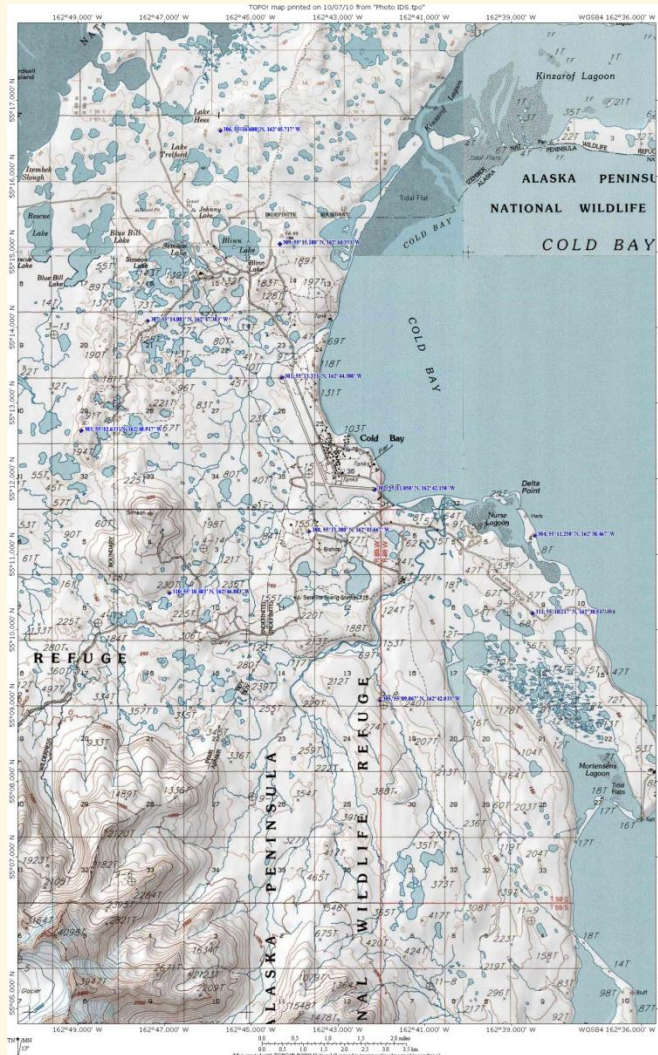
# Photo Control



17x requirement  
“The number and placement of the control points must be sufficient to geo-reference the imagery within the accuracy requirements necessary to meet the purpose of the project.”



# Photo Control – Partial Loss of Panels



How do we verify that we have “accuracy necessary to meet the purpose of the project”?

71 objects

Compared position between  
Photogrammetry and  
Field survey

Difference 0.2 to 6.9 ft.

Within 18B Ch. 5 accuracy req.

# Modification of Airport Design Standards

U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
AIRPORT IMPROVEMENT PROGRAM

## MODIFICATION OF AIRPORT DESIGN STANDARDS

<b>BACKGROUND</b>		
1. AIRPORT: <b>Cold Bay Airport</b>	2. LOCATION(CITY,STATE): <b>Cold Bay, Alaska</b>	3. LOC ID: <b>CDB</b>
4. EFFECTED RUNWAY/TAXIWAY: <b>14/32 and 8/26</b>	5. APPROACH (EACH RUNWAY): <input type="checkbox"/> PIR <input type="checkbox"/> NPI xx <input type="checkbox"/> xx VISUAL	6. AIRPORT REF. CODE (ARC): <b>B-II</b>
7. DESIGN AIRCRAFT (EACH RUNWAY/TAXIWAY): <b>14/32 and 8/26 Reference Code is B-II.</b>		
<b>MODIFICATION OF STANDARDS</b>		
8. TITLE OF STANDARD BEING MODIFIED (CITE REFERENCE DOCUMENT): <b>General Guidance and Specifications for Aeronautical Survey Airport Imagery Acquisition and submission to the National Geodetic Survey AC150/5300-17B</b>		
9. STANDARD/REQUIREMENT: <b>Section 14 Clouds "Clouds or cloud shadows must not appear on the imagery." Section 16. Well Defined images "Collect imagery to obtain well-defined images. Do not attempt imagery acquisition where the ground is obscured by haze, smoke, smog, dust, or falling snow, sleet, rain or other obscuring phenomena."</b>		
10. PROPOSED: <b>Acquired imagery showed cloud shadow or was partially obscured by condensation in locations shown on attached map. We propose to increase field survey to capture natural and manmade features in these areas.</b>		

# Cold Bay is not alone

How can we make aeronautical surveys more cost predictable?