



FLIR Survey of Maternal Polar Bear (*Ursus Maritimus*) Denning Habitat



Winter 2012/2013

FINAL

Prepared for:



ConocoPhillips Alaska, Inc.
PO Box 100360
Anchorage, AK 99510

Prepared by:



Weston Solutions, Inc.
425 G Street, Suite 300
Anchorage, AK 99501

- This page intentionally left blank -

FLIR Survey of Maternal Polar Bear (*Ursus Maritimus*) Denning Habitat

Survey Conducted by ConocoPhillips Alaska, Inc.

Winter 2012/2013

Introduction

Between December 15 and December 18, 2012 ConocoPhillips Alaska, Inc. (CPAI) conducted Forward Looking Infrared (FLIR) surveys on the North Slope of Alaska around proposed activities planned for the winter of 2012/2013. The proposed activities included:

- Inspection of the North Staines River #1 Well;
- Operations in the vicinity of Oliktok Point and Kalubik Creek areas;
- Drill Site 3S Tiltmeter installation;
- Alpine oil field operations in the Colville River Delta and CD5 area; and
- Exploratory, and plug and abandonment projects in the NPR-A.

The FLIR surveys were conducted to identify the potential location of maternal polar bear dens in accordance with protocols developed by the United States Fish and Wildlife Service (USFWS). The specific survey areas to be flown were identified by the USFWS during a pre-flight meeting. This report summarizes the results of the surveys.

Methodology

The surveys were conducted using the Shared Services Twin Otter (DHC-6) equipped with a Star SAFIRE® III FLIR unit. Survey times, crews, and locations are shown in Table 1.

Surveys were flown between 400 and 1,000 feet above ground level depending on weather conditions. The crew used Global Positioning System coordinates, computer mapping software, and visual ground reference to navigate the drainages and bluffs. The survey coordinator interfaced with the pilots and the FLIR operator to capture clear images of the target areas. Repeated transects were flown to ensure adequate coverage.

Weather conditions for the surveys are shown on Table 2. The visibility was good during all surveys.

Survey Activities

Potential denning habitat (drainages, bluffs, and channels conducive to adequate snow drifting) were surveyed in anticipation of ice road construction and tundra travel. On December 15, 2012 the survey began around the North Staines River #1 pad (Figure 1). Next, areas around Oliktok Point (Figure 2), and the DS-3S tiltmeter project (Figure 3) were surveyed.

The December 16, 2012 survey focused on the Colville River Delta and northeastern NPR-A (Figure 4).

The final December 18, 2012 survey concentrated on routes and locations associated with exploratory, and plug and abandonment projects in the NPR-A (Figure 5).

Results

Heat signatures indicative of potential dens were not discovered in any of the survey areas. All video footage was reviewed after the flights for verification and released to USFWS.

Summary

FLIR technology, while a prudent methodology for assessing potential polar bear den locations, may not locate 100% of the dens in the survey area. With this in mind, work and travel should be done with caution in all areas following the guidelines outlined in *CPAI's Polar Bear Avoidance and Interaction Plan (January, 2012)*. USFWS will advise on any supplemental findings (e.g. locations of collared bear den locations) once they are obtained.

TABLES

- This page intentionally left blank -

Table 1 Winter 2012-2013 CPAI Polar Bear Den FLIR Survey Details

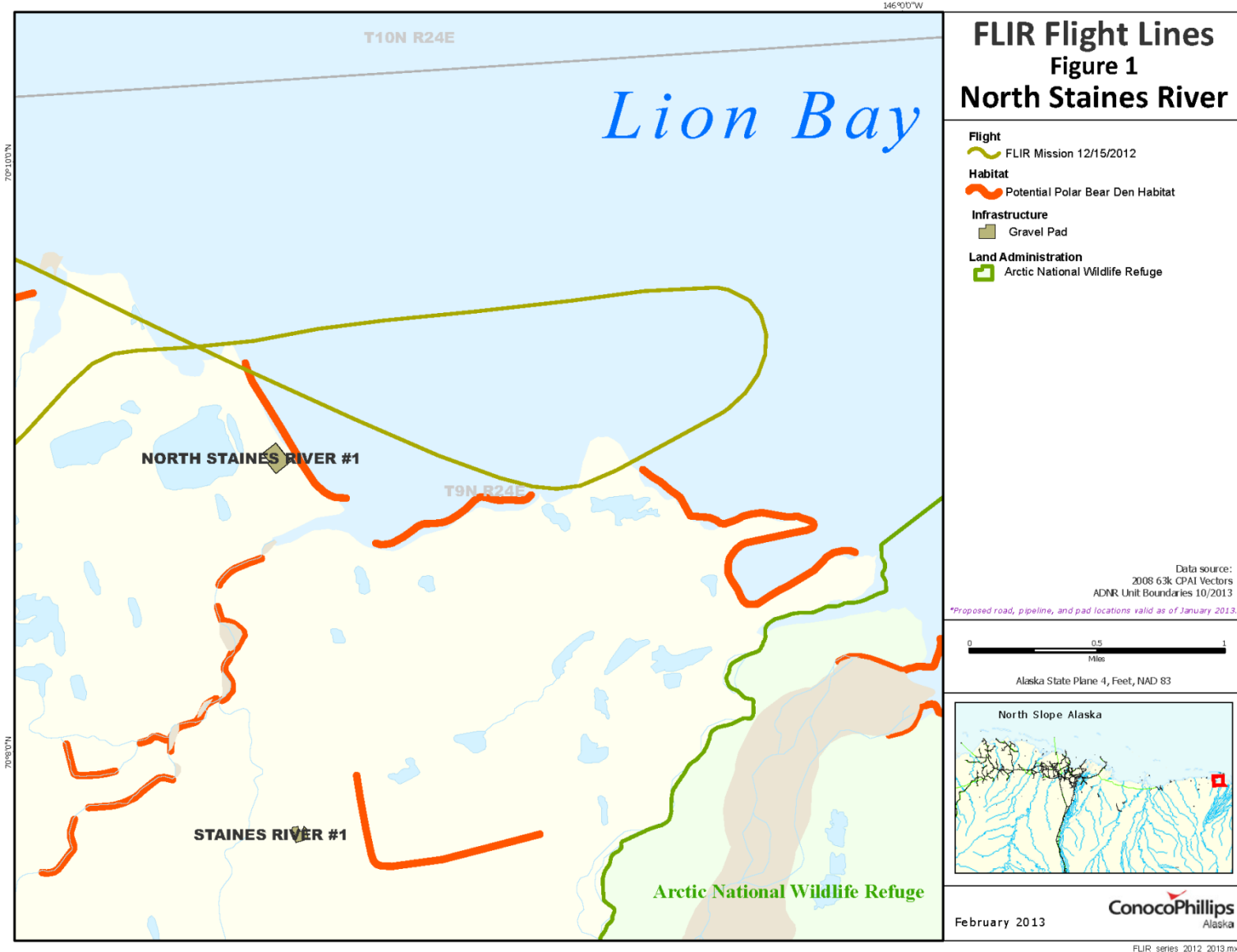
	Survey 1: December 15, 2012	Survey 2: December 16, 2012	Survey 3: December 18, 2012
Departed	16:30	19:15	19:30
Landed	20:20	21:00	22:05
Pilot	Mike Watson	Mike Watson	Mike Watson
Co-Pilot	Erica Bennett	Erica Bennett	Erica Bennett
FLIR Operator	Brian Nelson	Brian Nelson	Brian Nelson
Survey Coordinator	Justin Blank	Justin Blank	Justin Blank
Observer	-	-	Christopher Putnam (USFWS)
Area Surveyed	North Staines River #1, Oliktok Point and Kalubik Creek Area, DS-3S Tiltmeter project.	Colville River Delta, CD5 Area.	Routes and locations associated with exploratory and plug and abandonment projects in the NPR-A.

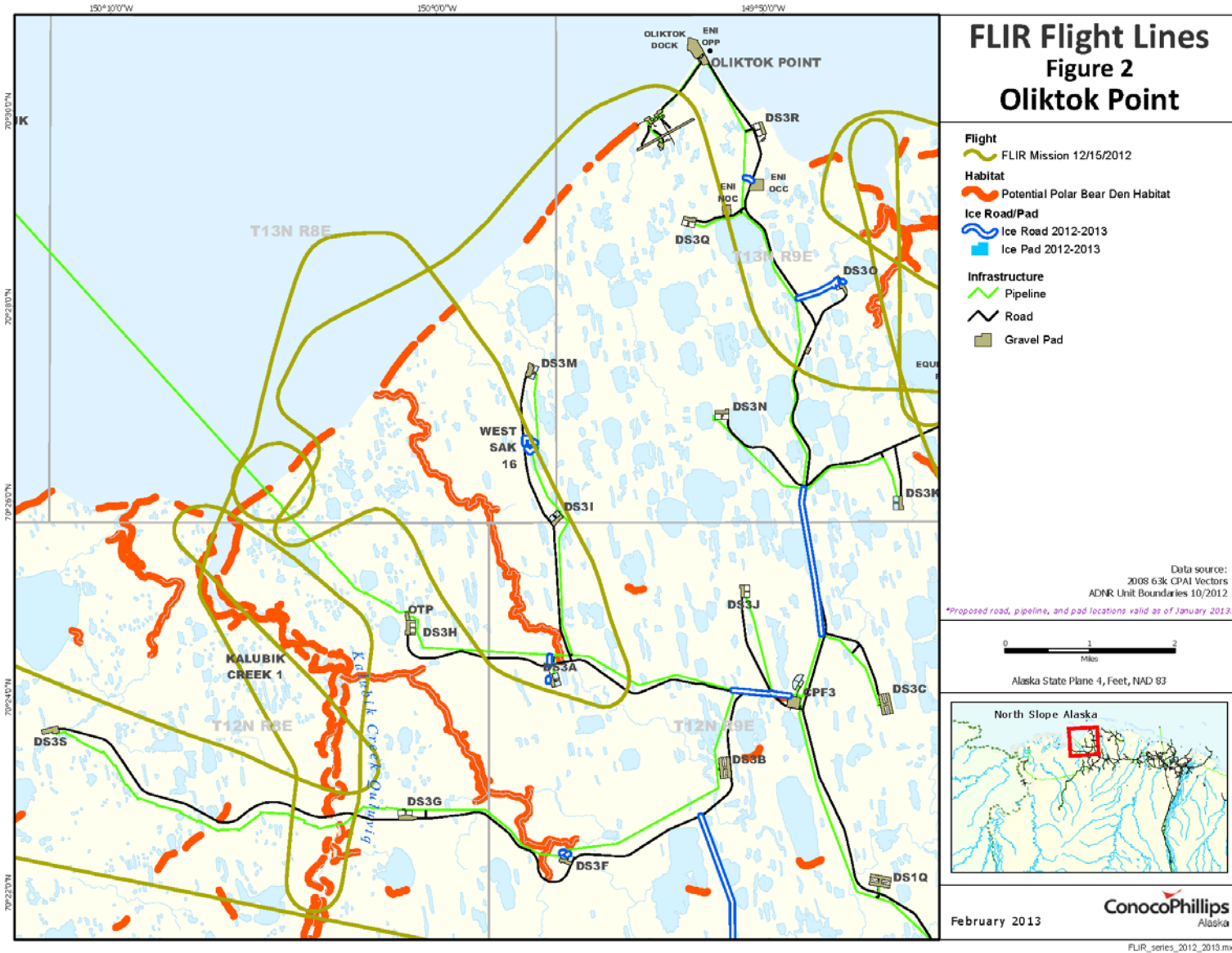
Table 2 Weather Conditions

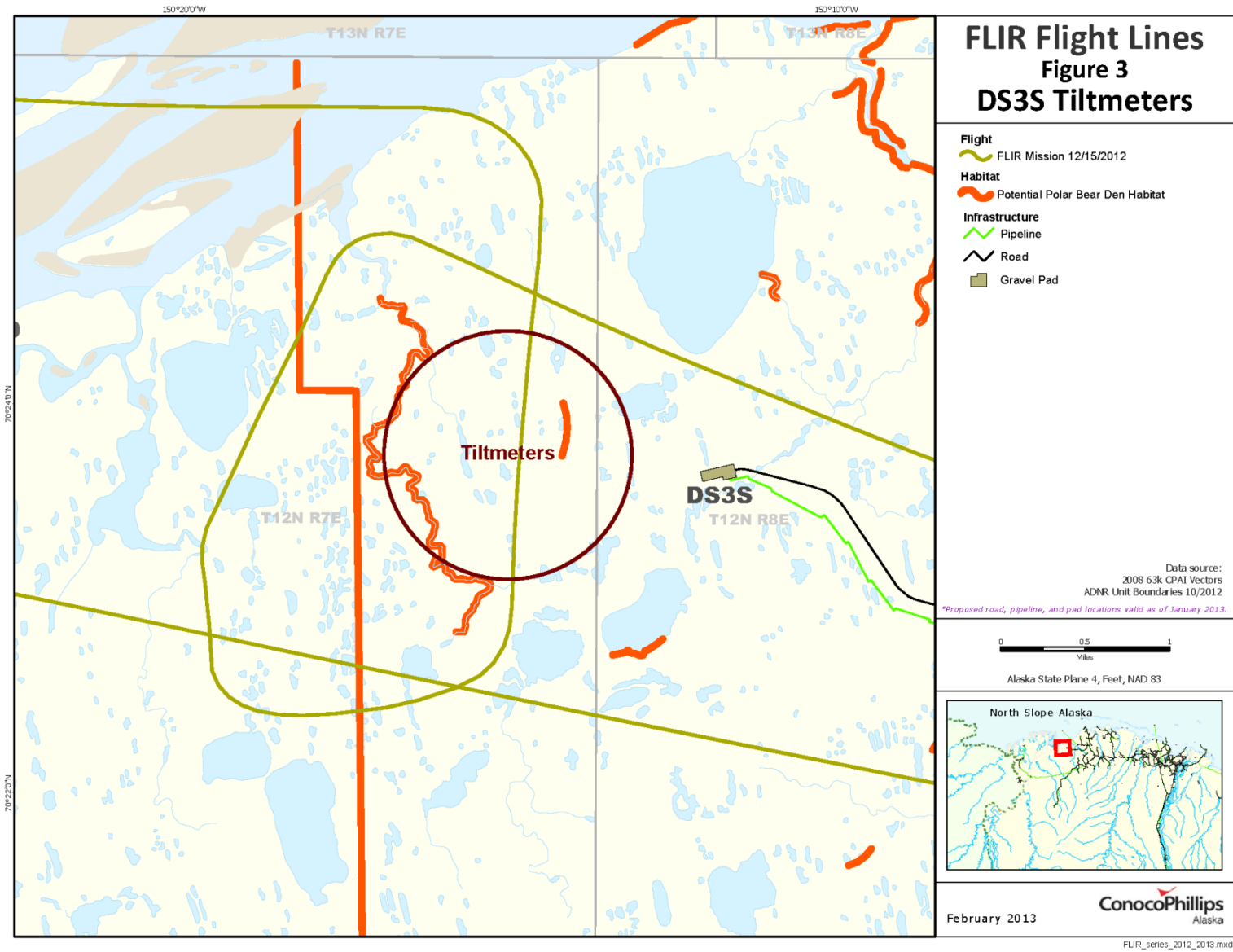
	December 15, 2012	December 16, 2012	December 18, 2012
Alpine Weather Conditions			
Time of Observation	16:49	16:48	17:51
Wind Direction (magnetic)	090	250	250
Wind Speed (knots)	10	4	15
Visibility (miles)	10	10	10
Cloud Cover	Few @ 12000 ft.	Few @ 3200 ft., Scattered @ 6000 ft., Broken @ 11000	Scattered @ 7000 ft.
Temp (Celsius)	-37	-29	-25
Dew Point (Celsius)	-41	-32	-28
Altimeter	29.72	29.69	29.75
Notes	-	-	Low drifting snow
Deadhorse Weather Conditions			
Time of Observation	16:53	18:53	19:53
Wind Direction (magnetic)	10	230	270
Wind Speed (knots)	7	8	21
Visibility (miles)	3	10	3
Cloud Cover	Clear	Broken @ 8000 ft., Broken @ 10000 ft.	Overcast @ 6500 ft.
Temp (Celsius)	-39	-33	-23
Dew Point (Celsius)	Missing Data	-36	-26
Altimeter	29.74	29.71	29.80
Notes	Mist	-	Mist

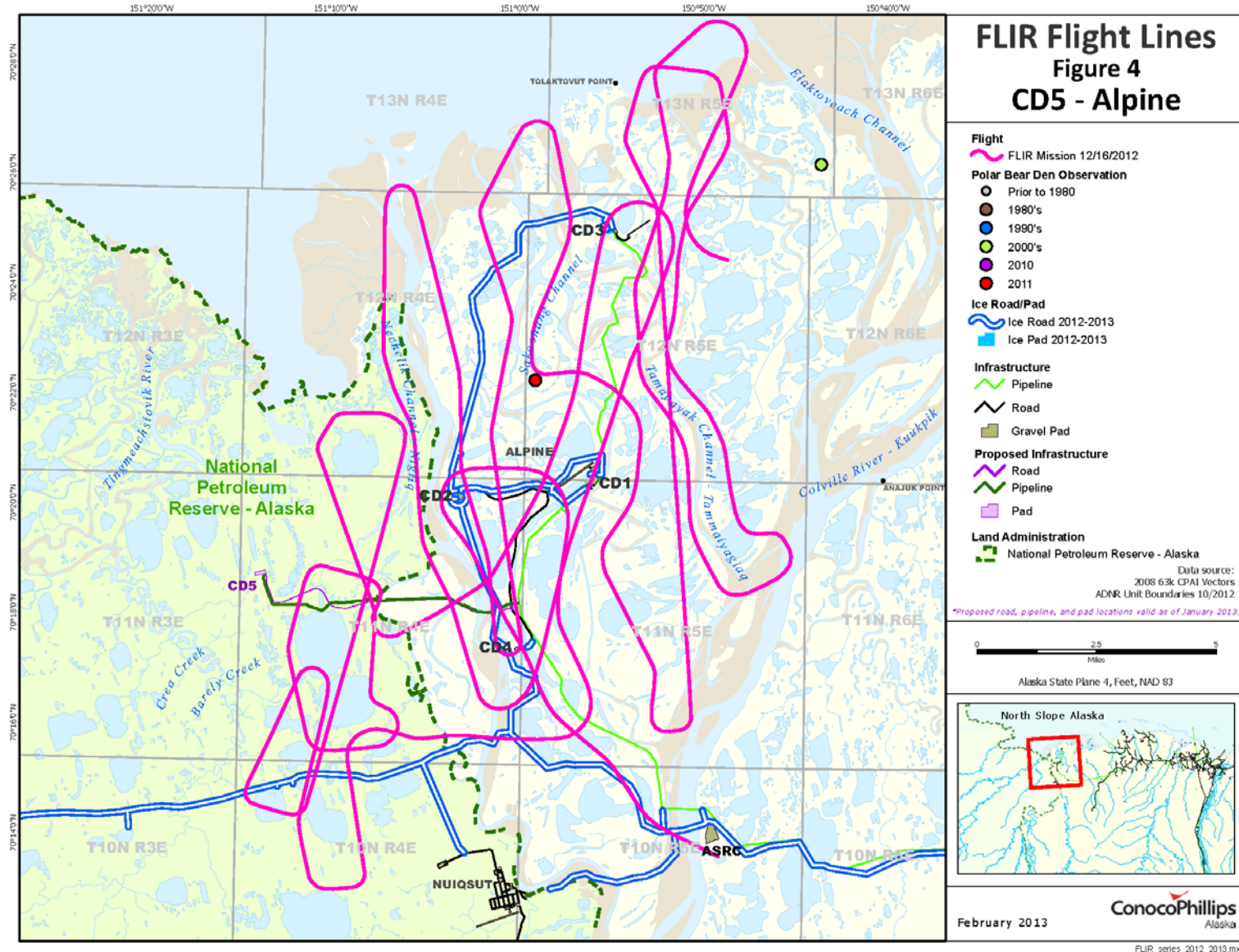
FIGURES

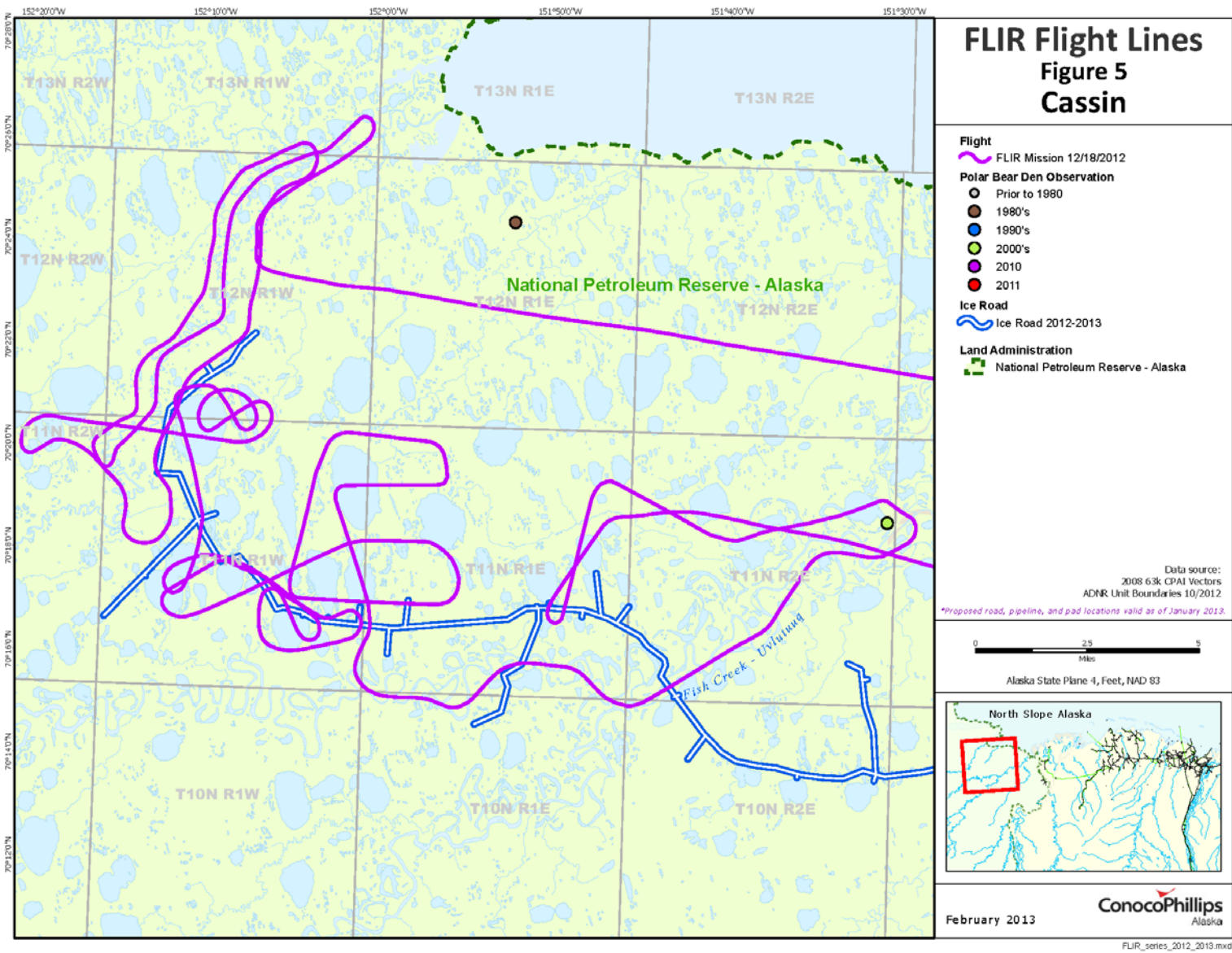
- This page intentionally left blank -











- This page intentionally left blank -