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Report to the Bureau of Ocean and Energy Management

OIL SPILL OCCURRENCE RATES

for Alaska North Slope Crude & Refined Oil Spills

Nuka Research & Planning Group, LLC

October 2013

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
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ERRATA SHEET

Page	Location	Change
10	List of Tables	Addition of new Table 5.1. Renumbering all tables in Section 5.
11	Acronym List	Added acronyms for variables used in Appendix B and Section 5
49	Section 5.1.1, second paragraph	Added references to Table 5.1
49	Table 5.1	New table added to report to describe independent variables
55	Section 5.1.6, last paragraph, just under Figure 5.4	Changed text from "below" to "in Table 5.2"
56	Table number	Change Table 5.1 to Table 5.2
59	Table number	Change Table 5.2 to Table 5.3
63	Table number	Change Table 5.3 to Table 5.4
75	Appendix B	Added text explaining units of measure used in tables in Appendix B

EXECUTIVE SUMMARY

The analysis presented here uses data about onshore and nearshore crude and refined oil spills larger than one barrel from Alaska North Slope oil and gas infrastructure to develop statistically valid occurrence estimators. Nuka Research and Planning Group, LLC completed this study under Contract M11PC00021 to the Bureau of Ocean Energy Management (BOEM), Alaska Outer Continental Shelf Region.

The analysis is based on data compiled from seven datasets, all drawn from the Alaska North Slope. The final dataset of 1,577 spills larger than one barrel from June 1971 – September 2011 includes information about the number and volume of the spills, as well as the associated oil field, attributed cause, facility type, and petroleum substance spilled. More than 80% of the spills were between 1 – 10 bbl, while there were 10 spills larger than 500 bbl and two spills larger than 1,000 bbl.

For the development of occurrence estimators, a slightly smaller spill dataset was used. Data from before 1980 were removed due to uncertainties about their reliability (it is believed that reporting procedures changed significantly during the first decade of operations). Additionally, data from the first nine months of 2011 were excluded because the full year's data was not available, and annual spill rates that were being modeled.

Over the time frame beginning in 1980, spill numbers exhibit an annual cyclic behavior with the largest number of spills reported in the month of June and the smallest number in October. There is a significant, though not strong, relationship between the total number of spills occurring each month and total crude oil production volume each month. However, with the exception of the period in the early 1990s when few spills were reported, the trend in annual spill numbers roughly follows the trend in crude oil production.

A variety of regression models were applied to explore the most accurate predictive approaches that could be used to estimate the number of spills based on various production variables. The best model for predicting the total number of spills was a mixed effect model with fixed factors of oil production and pipe length and random effect of oil field. However, this model was based on data from a limited number of fields. A simple linear regression based solely on oil production was also found to be reasonably useful for estimating the number of spills across all fields.

A satisfactory regression model for predicting spill volume was not identified, due to the presence of a few outlier spills in the dataset.

Spills larger than 500 bbl are rare and appear to be random events with respect to oil production volume. The best approach to estimating their occurrence was a simple return rate that predicts between zero and two spills of more than 500 bbl will occur for every one billion barrels of production.

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ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
ARA	Alaska Risk Assessment
bbl	Barrel (42 gallons)
BOEM	Bureau of Ocean Energy Management
DaysProd	Number of Days of Production for the Month
DEC	Department of Environmental Conservation (Alaska)
DOI	U.S. Department of the Interior
EV	Everett Consulting
HC	Hart Crowser
Lat	Latitude
Lon	Longitude
MCF	Thousands of cubic feet
MMS	Minerals Management Service
N	Number of spills
NEPA	National Environmental Policy Act
Ngl	National Gas Liquids
NRC	National Response Center
N_tot	Total number of spills
N_crude	Total number of crude oil spills
N_med	Number of medium oil spills (Class C)
N_refined	Number of refined product spills
N_sm	Number of smallest oil spills (Class D)
OCS	Outer Continental Shelf
OSRA	Oil-Spill Risk Analysis
OTP	Oil transmission pipeline
ProdGas	Produced natural gas
ProdOil	Produced crude oil without Ngl
ProdOil_ngl	Produced crude oil including Ngl
ProdWater	Produced water
ProdWells	Number of Producing Wells
ProdYear	Years since field began production
PrtDate	Month-Year
TAP	Trans-Alaska Pipeline
TotLength	Total Length of Cross-Country Pipelines

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1 INTRODUCTION

1.1 Purpose and Scope

The analysis presented here uses available data about onshore and nearshore crude and refined oil spills from Alaska North Slope oil and gas infrastructure to develop statistically valid occurrence estimators for spills of various sizes greater than one barrel.

The original objectives of this analysis were to:

- Update and collate crude and refined oil spill records for the North Slope of Alaska;
- Provide general information about the nature of oil spills on the North Slope of Alaska;
- Apply statistical procedures to develop occurrence rates for crude and refined oil spills < 500 bbl;
- Apply statistical procedures to develop occurrence rates for crude and refined oil spills ≥ 500 bbl by pipeline and facility;
- Apply statistical procedures to develop occurrence rates for crude and refined oil spills ≥ 1,000 bbl; and
- Develop appropriate confidence interval estimates.

1.2 Background

This section describes previous, related work reviewed prior to the analysis conducted for this study.

1.2.1 Purpose of Oil Spill Occurrence Estimates

BOEM is charged with ensuring the environmentally and economically sound management of offshore resources on the U.S. Outer Continental Shelf (OCS). Estimates of occurrence rates for oil spills are useful for analyzing potential oil spill impacts and contingency planning. This analysis will provide BOEM with a tool based on Alaska-specific data to estimate oil spills from future onshore and nearshore oil and gas operations on the Alaska North Slope to inform environmental analyses of future project proposals required under the National Environmental Policy Act (NEPA).

The BOEM Alaska OCS Region Office oversees more than one billion acres on the OCS adjacent to more than 6,000 miles of Alaska coastline, which includes the North Slope coastlines of the Beaufort and Chukchi Seas. Currently, there are only eight producing wells in the Alaska OCS.

The vast majority of oil production from the Alaska North Slope has been from fields on state lands in the Central Arctic (Colville-Canning area).

1.2.2 Previous Studies

Previous studies developed methodologies for estimating oil spill occurrence rates for both offshore and onshore oil and gas exploration and development.

The U.S. Department of the Interior (DOI) developed the Oil-Spill Risk Analysis (OSRA) model in 1975 as a tool to evaluate offshore oil spill risks (Smith et al., 1982; LaBelle & Anderson, 1985). The model was used to develop probabilistic estimates of oil spill occurrence and contact. A realistic, objective methodology for estimating oil spill occurrence rates is required to apply the model.

Occurrence rate estimates for offshore oil spills were recently revised based on U.S. OCS platform and pipeline spill data, along with vessel spill data (Anderson et al., 2012). These spill rates are expressed and normalized in terms of the number of spills per volume of crude oil handled. The study estimated spill occurrence rates for spills greater than or equal to 1,000 barrels, although spills less than one barrel are also discussed. Anderson et al. (2012) utilized the same methodology as four previous independently peer-reviewed papers (Anderson & Labelle 2000, 1994, 1990; Lanfear & Amstutz, 1983).

Previous work collated oil industry data on crude and diesel spills of at least 100 bbl from the Alaska North Slope and Arctic Canada operations, verified spill information for spills of at least 500 bbl, and estimated provisional occurrence rates for use in the onshore Alaska North Slope and Beaufort Sea OCS (Hart Crowser Inc, 2000). Based on this prior study, BOEM extrapolated pipeline and facility occurrence rates for spills of at least 500 bbl from onshore oil spill experience to shallow coastal waters in the nearshore Beaufort Sea. However, the 2000 study found too few offshore spills of at least 1,000 bbl to be able to calculate occurrence rates for this size category. A 2010 report, based on follow-up work by the Minerals Management Services (MMS, the predecessor agency to BOEM and the Bureau of Safety and Environmental Enforcement), further explored the limits to statistically extrapolating the relatively small Gulf of Mexico spill dataset to estimate occurrence rates for the Alaska OCS (Eschenbach et al., 2010).

In 2010, the State of Alaska and industry completed a crude oil infrastructure risk assessment and spills analysis for Alaska's North Slope and Trans-Alaska Pipeline (TAP) spills. The State of Alaska's North Slope Spills Analysis covered only loss-of-integrity spills from Alaska's North Slope oil production infrastructure, including wells, flowlines, process centers and above ground storage tanks, and crude oil transmission lines (Robertson et al., 2010). The 2010 report, updated in

2013 by the State of Alaska, included a larger spill dataset than previous studies, and calculated spill rates for certain components of the Alaska North Slope crude oil transportation system (Robertson et. al., 2013).

1.2.3 Relationship of this Study to Previous Work

Most previous work on OCS historical platform and pipeline crude oil spill occurrence rates relies on data from the Gulf of Mexico and Pacific OCS (Anderson and LaBelle, 2000; Eschenbach et al., 2010), and does not include spills in State waters or on land. The BOEM Alaska OCS Region contracted this analysis to calculate onshore spill occurrence based on data from the Alaska North Slope and to include all spills greater than one barrel.

The analysis conducted for this report builds on previous work by collating Alaska North Slope oil spill datasets and conducting statistical analyses that consider oil spills of greater than one barrel that have been recorded from Alaska North Slope operations since 1971.[1] Since small spills occur more frequently and their inclusion in the occurrence estimator increases the accuracy of the prediction models.

1.3 Project Scope

This section describes the scope of the project in more detail, in terms of the geographic area and operations covered as well as the size and type of spills.

1.3.1 Alaska North Slope Operations

This analysis considers past spills from oil production, processing, storage, and transportation infrastructure on Alaska's North Slope. Figure 1.1 shows the location of the Alaska North Slope oil fields and associated pipelines, drill sites, oil transmission pipelines (OTP),[2] flowlines,[3] pump stations, and processing centers.

[1] As discussed in Section 2.2, the occurrence estimation models were built based on a database of spills from

[2] Alaska regulations define a transmission pipeline as "a pipeline through which crude oil moves in transportation, including line pipe, valves, and appurtenances connected to line pipe, pumping units, and fabricated assemblies associated with pumping units." This does not include "gathering lines, flow lines, or facility piping." See 18 AAC 75.990(134).

[3] Alaska regulations define flowline as, "piping and associated fittings, including all valves, elbows, joints, flanges, pumps, and flexible connectors containing liquid oil, located at a production facility, and that is installed or used for the purpose of transporting oil between a well pad or marine structure used for oil production and the interconnection point with a transmission pipeline; and includes all piping between interconnections, including multi-phase lines and process piping, except facility oil piping and transmission pipelines." See 18 AAC 990(173).

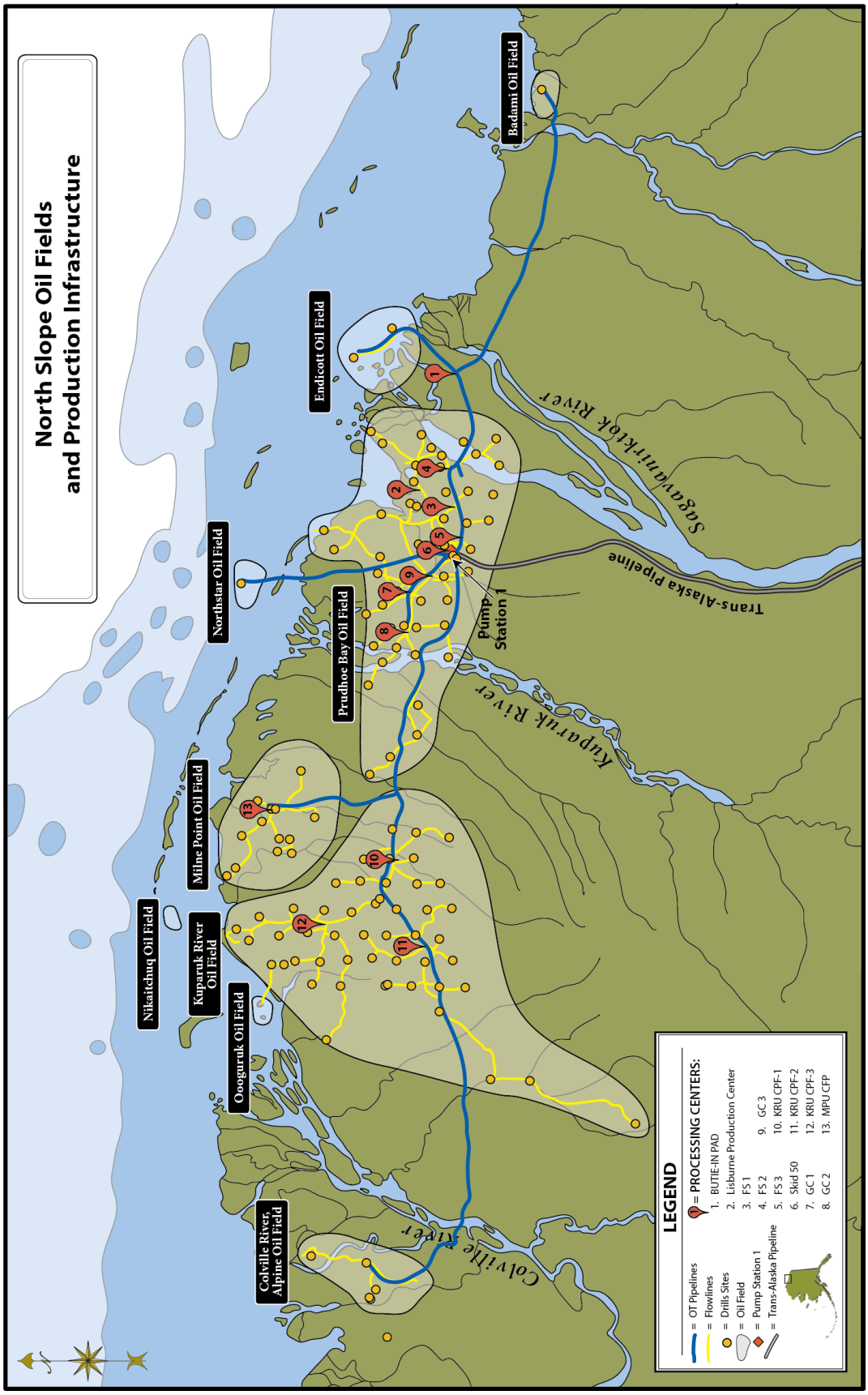

Figure 1.1 – Location of North Slope oil fields

Table 1.1 provides production information for each Alaska North Slope oil field, including start and (where applicable) end dates of production, ratio of oil and produced water, peak production rates, and length of associated oil transmission pipelines and flowlines.[4]

Table 1.1 – Summary of production information and miles of flowlines and oil transmission pipelines for North Slope oil fields

Oil Field	First Month Production	Changes in Produced Water/ Oil Ratios over time	Peak production (date & level in bbl)	Total Miles of Flowlines	Total Miles of OTP	Total Combined Pipeline Miles
Badami (Last production Aug 2007)	Aug 1998	No produced water.	Sep 1998; 223,455 bbl	0	25	25
Colville River, Alpine	Nov 2000	Produced oil was always greater than produced water.	May 2007; 4,305,471 bbl	26	34	60
Endicott	Jul 1986	Produced water surpassed produced oil in Dec 1994; oil surpassed water in Feb 1995. Produced water has been greater than produced oil since April 1995.	Oct 1992; 3,703,032 bbl	8	26	34
Kuparuk River	Dec 1981	Produced water had a greater volume than oil starting in April 1992; volumes switched back and forth several times until December 1993. Produced water has been greater than produced oil since December 1993.	Dec 1992; 10,520,965 bbl	303	37	340
Milne Point	May 1985	From May 1985 through July 1985, only water was produced. Production ceased July 1985 and resumed November 1985, with oil exceeding water. Ratio has fluctuated over time. As of January 1997, produced water has exceeded produced oil.	Jul 1998; 1,825,669 bbl	35	11	46
Nikaitchuq	Jan. 2011	Only 7 months of production data. Produced water average about 13% of liquid production.	July 2011; 210,698 bbl	unknown	unknow n	unknown
Northstar	Oct 2001	Produced oil has always exceeded produced water.	Jan 2004; 2,439,547 bbl	0	17	17
Oooguruk	June 2008	Only 38 months of production data. Produced water averaged about 11% of liquid production, but increased to 40% during the last 12 months.	Sept 2010: 380,768 bbl	unknown	unknow n	unknown
Prudhoe Bay	Jan 1977	In Sept 1992, produced water surpassed produced oil.	Jan 1987; 51,847,411 bbl	438	29	467
Total Miles				**810**	**179**	**989**

[4] Oil production statistics were taken from data complied by the Alaska Oil and Gas Conservation Commission. Pipeline lengths were taken from data provided by Alaska North Slope oil field operators to the State of Alaska Department of Environmental Conservation.

1.3.2 Spill Sizes Used in Analysis

Section 2.1 describes the source and characteristics of the spill data compiled for this study. The study considers four size classes of spills, labeled A – D, ranging from larger than one barrel to spills larger than 1,000 bbl.

1.3.3 Date Ranges Used in Analysis

Production on the Alaska North Slope began in 1969. Datasets covering Alaska North Slope oil and gas infrastructure spills from June 1971 – September 2011 (40 years) were compiled for this study. Section 3 summarizes this complete dataset.

As discussed in Section 2, the final dataset used to analyze trends and develop the occurrence estimators was shortened to spills from January 1980 – December 2010 (30 years).

1.3.4 Spill Types

The dataset assembled for this analysis contains discharges of petroleum substances (hereafter spills), including crude oil and refined products, associated with the exploration, development, and production of oil and gas from the Alaska North Slope oil fields. Crude oil spills include spills of liquid petroleum produced directly from the oil and gas infrastructure.[5] Spills of crude oil combined with produced water are included in the dataset, but were only included for the purpose of determining the amount of crude oil contained in the mixture. In cases where a mixed substance was spilled, only the petroleum component was included. Refined products are spills of oil products used in the associated construction, operation and maintenance of the oil and gas infrastructure.

The dataset does *not* include spills associated with the Trans-Alaska Pipeline. It also does not include spills of other hazardous substances.

1.3.5 Spill Volume

The database contains minimum and maximum estimates of the volume of oil spilled. This was done to accommodate spill cases where source data contained multiple reported volumes or an estimated range of the amount spilled. The maximum volume reported was used for the analysis provided in this report.

[5] Natural gas liquids would be classified as crude; however, no natural gas liquid spills were reported.

2 METHODS AND ASSUMPTIONS

2.1 Oil Spill Data Collection and Collation

Seven historical datasets for petroleum spills from Alaska North Slope oil exploration and production infrastructure were collated to create a spill record dataset. The final dataset (Appendix A) contained 1,577 records for spills greater than one barrel occurring between June 1971 and September 2011. Table 2.1 summarizes the datasets that were combined.

Spill data from each of these datasets was uploaded to an online server in the original data scheme and structure. Subsequent screening, transformation, and mergers were accomplished using custom programming. The screening and merger process was used to select for records that fall within the scope of the study, merge duplicate records for the same spill event, and characterize the records to make them useful for further analysis. This method maintained the continuity between the original data sources and the final dataset.

Table 2.1 – Spill datasets collated for this analysis

Dataset ID	Dataset Name	Source	Number of Records	Spill Dates Included
ARA	Alaska Risk Assessment	Nuka Research and Planning Group, LLC	640	7/95 – 12/09
D1	DEC SPILLS Database	Alaska Department of Environmental Conservation	9,326	7/95 – 9/11
D2	DEC Old Spill Database	Alaska Department of Environmental Conservation	10,180	6/71 – 7/95
EV	Everett Consulting	BOEM	7,923	6/77 – 7/06
HC	Hart Crowser	BOEM	66	2/70 – 11/01
NRC1	National Response Center #1	BOEM	615	1/99 – 12/10
NRC2	National Response Center #2	National Response Center	97	1/90 – 12/98

2.1.1 Data Screening

Screening removed spills considered to be out of scope using three steps: (1) records were first screened within the original datasets, before being transferred to a common format; (2) once records were incorporated into the main dataset, they were screened again before records of the same spill from different datasets were merged; and (3) finally, a random sample of 50 spills from excluded records was examined to determine if in-scope spills had been mistakenly removed from the final dataset.

Small spills were not reported consistently over time and were under-represented in earlier spill records, based on a preliminary examination of the data. Therefore, spills of one barrel or less were considered to be out of scope and therefore removed. Other criteria, such as spill source or location, were also used to eliminate out-of-scope spills. Table 2.2 defines the screening criteria for spills that are considered in-scope for this project.

Table 2.2 – Criteria for screening data as in- or out-of-scope

Spills Considered In-Scope	Spills Considered Out-of-Scope
• Spills from the North Slope Subarea of Alaska.[6] • Spills of crude oil or refined petroleum products. • Where spills are of a mixed substance type, such as crude oil and produced water, only the oil portion of the mixture will be considered. For spills of produced water and oil where the proportion of oil and water are not identified, the total volume of the mixture was recorded and the oil proportion was estimated during the analysis.[7] • Spills from the oil production infrastructure. • Spills from exploratory wells. • Spills from the support industry directly engaged in supporting the oil production infrastructure on the Alaska North Slope. • Spills greater than one barrel (42 gallons).	• Spills from the Trans-Alaska Pipeline beginning at the meter at Pump Station One. • Spills of any substance except crude oil, refined petroleum products, or produced water (e.g. sea water, hazardous substances, waste water, sewage). • Spills that occurred in the transportation industry on the Dalton Highway or south of the Alaska North Slope area. • Spills that occurred in any Alaska North Slope village or community, except Deadhorse. • Petroleum spills less than or equal to one barrel (42 gallons).

2.1.2 Collation of Oil Spill Datasets

The original oil spill datasets (Table 2.1) each had different data structures. The collation process involved transforming each dataset into a common format that would facilitate the merging of records from a single spill. In all cases, spill volumes were transformed into barrels. In some datasets, multiple variables from a single record were concatenated into a single variable. Table 3 presents the data scheme for the final dataset with notes about how these variables relate to the original datasets. The final dataset (Appendix A) consists of 1,577 records with each record representing a single spill event.

[6] The North Slope Subarea encompasses the boundaries of the North Slope Borough, including adjacent shorelines and State waters. Its seaward boundary is a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured.

[7] Crude oil and water mixtures were estimated by reviewing Alaska Department of Environmental Conservation case file records where available.

Table 2.3 – Data scheme for final North Slope spills dataset (see Table 2.1 for data codes referenced in the Notes section)

Variable Name	Type	Notes
Dataset ID	Text	Dataset identification associated with this record.
Row ID	Hexadecimal	A unique record identification assigned to every record in every dataset.
Source Record ID	Text	The record number identified from the source datasets. In a Nuka Research record this variable was a concatenation of the information from the original datasets.
Source Dataset	Text	The Dataset IDs of the source datasets.
Spill Date	Date mm/dd/yy	The date on which the spill occurred. If there were discrepancies among the source datasets, the Nuka Research record was manually edited based on the reviewer's best professional judgment given the records available for review.
Minimum Oil Quantity Released	Numeric xxxx.xx bbls	The lowest value of the amount released. If there were discrepancies among the source datasets, the Nuka Research record was manually edited based on the reviewer's best professional judgment given the records available for review.
Maximum Oil Quantity Released	Numeric xxxx.xx bbls	The highest value of the amount released. If there were discrepancies among the source datasets, the Nuka Research record was manually edited based on the reviewer's best professional judgment given the records available for review.
Produced Water Quantity Released	Numeric xxxx.xx bbls	The amount of produced water released in a mixed crude and produced water spill.
Total Quantity Released	Numeric xxxx.xx bbls	The total of the Maximum Oil Quantity Released and the Produced Water Quantity Released.
Quantity Unit	Text	Set to "bbl" for all records.
Substance Type	Categorical	Nuka Research records only. Each record was assigned to one of the following categories based on the information available on the substance type found in the source datasets: crude oil crude mixture produced water refined:diesel/heating oil refined:diesel mixture refined:gasoline refined:hydraulic refined:oil mud refined:other
Substance Type from Other	Text	A concatenation of information about substance type contained in the source datasets preceded by the code for the original Dataset ID.
Oil Field	Categorical	Nuka Research records only. Each record was assigned to one of the following 10 categories based on the information available on the location found in the source datasets: Badami Colville River, Alpine Endicott Kuparuk River Nikaitchuq North Star Oooguruk Prudhoe Bay Milne Point Unknown
Location From Other	Text	A concatenation of information about Location contained in the source datasets preceded by the code for the original Dataset ID.

Variable Name	Type	Notes
Facility Type	Categorical	Nuka Research records only. Each record was assigned to one of the following categories based on the information available on the facility type found in the source datasets: vehicle support pipeline unknown production exploration
Facility Type From Other	Text	A concatenation of information about Facility Type contained in the source datasets preceded by the code for the original Dataset ID.
Affected Media	Categorical	Nuka Research records only. Each record was assigned to one of the following eight categories based on the information available on the affected media found in the source datasets: land:containment land:gravel land:tundra land:unknown unknown water:frozen water:unfrozen water:unknown
Affected Media From Other	Text	A concatenation of information about Affected Media contained in the source datasets preceded by the code for the original Dataset ID.
Responsible Party From Other	Text	A concatenation of information about Responsible Party contained in the source datasets preceded by the code for the original Dataset ID.
Cause	Categorical	Nuka Research records only. Each record was assigned to one of the following 12 categories based on the information available on the cause found in the source datasets: human error: unknown human error: overfill human error: vehicle accident human error: other mechanical failure: unknown mechanical failure: corrosion mechanical failure: valve/seal mechanical failure: overpressure mechanical failure: other third party action acts of nature unknown
Cause From Other	Text	A concatenation of information about Cause contained in the source datasets preceded by the code for the original Dataset ID.
Notes From Other	Text	A concatenation of Notes contained in the source datasets preceded by the code for the original Dataset ID.
Lat From Other	Text	A concatenation of latitude coordinates contained in the source datasets preceded by the code for the original Dataset ID.
Lon From Other	Text	A concatenation of longitude coordinates contained in the source datasets preceded by the code for the original Dataset ID.

2.1.3 Spill Size Classes

For the purposes of this study, spills were initially categorized into five classes to cover the range of sizes and the frequency of occurrence in each class, though Class E spills were immediately excluded as out-of-scope:

- Class A: Spills > 1,000 bbl
- Class B: Spills > 200 bbl and ≤ 1,000 bbl
- Class C: Spills > 10 bbl and ≤ 200 bbl
- Class D: Spills > 1 bbl and ≤ 10 bbl
- Class E: Spills ≤ 1 bbl (out-of-scope)

Spills equal to or less than one barrel (Class E) were not included in the analysis because of the high variability in reporting over time. This variability was noted in a preliminary screening of records from the Alaska Department of Environmental Conservation spill data, which is the most complete dataset.

2.2 Spill Records and Years Included in Final Dataset

The final oil spill dataset from June 1971 – September 2011 included 1,577 spills larger than one barrel.

Upon review, data for spills during the 1970s appeared less reliable than subsequent years. While the first production data for Prudhoe Bay occurred in April 1969, the first reported spill in the complete database did not occur until more than two years later (June 1971). The June 1971 spill was one of only two Class A spills (1,071 bbl). The first small spills were not reported until 1972, and reporting of small spills continued to be rare through most of the 1970s. This was believed to be attributable to variations in early reporting procedures. Oil field professionals have noted that spill reporting procedures had been standardized by 1980.

The analyzed dataset contained a total of 1,492 spills occurring between January 1, 1980 and December 31, 2010 with a 'max released' volume greater than one barrel. (A total of 71 spills were excluded due to the elimination of data from the 1970s and 14 spills were excluded from the partial year of 2011.)

2.3 Exposure Variable Data

Data on crude oil production by month was compiled from the Alaska Oil and Gas Conservation Commission's records and combined into a workbook with a separate spreadsheet for each of the 9 distinct producing oil fields on the Alaska North Slope listed in Table 1.1. Data for each month includes barrels of oil produced, barrels of water produced, barrels of natural gas liquid produced, million cubic feet of gas produced, and number of producing wells. These data, which are included in Appendix

B, were used as independent variables for developing spill occurrence estimators.

Data on pipeline mileage were derived from the final report of the Alaska North Slope Spills Analysis conducted by Nuka Research for the Alaska Department of Environmental Conservation (Robertson, et. al. 2010). These data did not contain pipeline mileage for the Nikaitchuq and Oooguruk oil fields and no other estimates were readily available.

3 SUMMARY OF HISTORICAL SPILL OCCURRENCE DATA (1971 – 2011)

This section presents spill data from June 1971 – September 2011 by the number of spills, spill volume, oil field, and cause, examining each of these factors as related to the spill size categories A – D.

3.1 Total Number and Volume of Spills Over Time

The final oil spill dataset from June 1971 – September 2011 included 1,577 spills larger than one barrel, totaling 32,600 bbl of oil spilled from the Alaska North Slope oil and gas infrastructure, not including TAPS, during the 40 year record.[8] More than 80% of the spills were between 1 – 10 bbl. The largest spill in the dataset was a 5,054 bbl GC-2 pipeline release from Prudhoe Bay in March 2006. The next largest spill, and the only other spill over 1,000 bbl, came from a Prudhoe Bay vehicle collision with a pillow tank in June 1971.

Figure 3.1 presents a time series plot of the number of spills per month recorded over the years from June 1971 – September 2011. Monthly production volumes have been overlaid on the plot. This figure shows the relatively low number of spills per month in the 1970s and the high variability of spills per month throughout the data. Trends are discussed in Section 4.

[8] This total volume was about 12.5% of the 260,000 bbl spilled by the *T/V Exxon Valdez* in 1989.

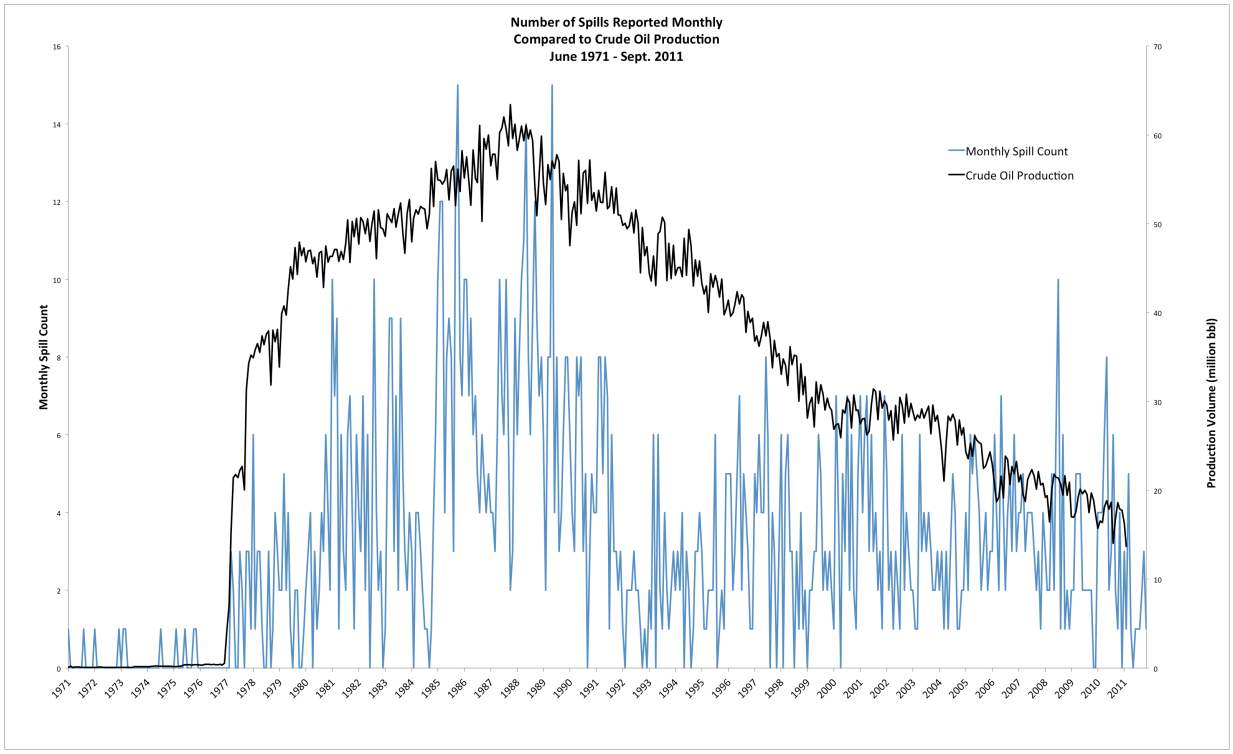

Figure 3.1 – Monthly total number of spills recorded compared to crude oil production (June 1971 – September 2011)

3.2 Overview of Recorded Spills

This section summarizes oil spill occurrence for all spill sizes greater than one barrel, using the complete data set from June 1971 – September 2011. It presents the spill data based on oil field, cause, facility type, and substance spilled, including a breakdown by size class.

The mean value for 'Max Released' (highest estimated release volume) was 20.7 bbl of oil. However, because there were many small spills and a few very large spills, the mean value does not describe a typical or probable spill. The mean was highly influenced by the March 2006 GC-2 pipeline spill at Prudhoe Bay. Removal of this single largest spill reduces the mean spill volume to 17.5 bbl. The median spill size was three barrels for pipeline and facilities combined.[9] It is believed that this number gives a more valid representation of the expected spill volume. Figure 3.2 and Table 3.1 characterize the final data set by variable.

[9] Fifty percent of the spills were larger and 50% of the spills were smaller than this value.

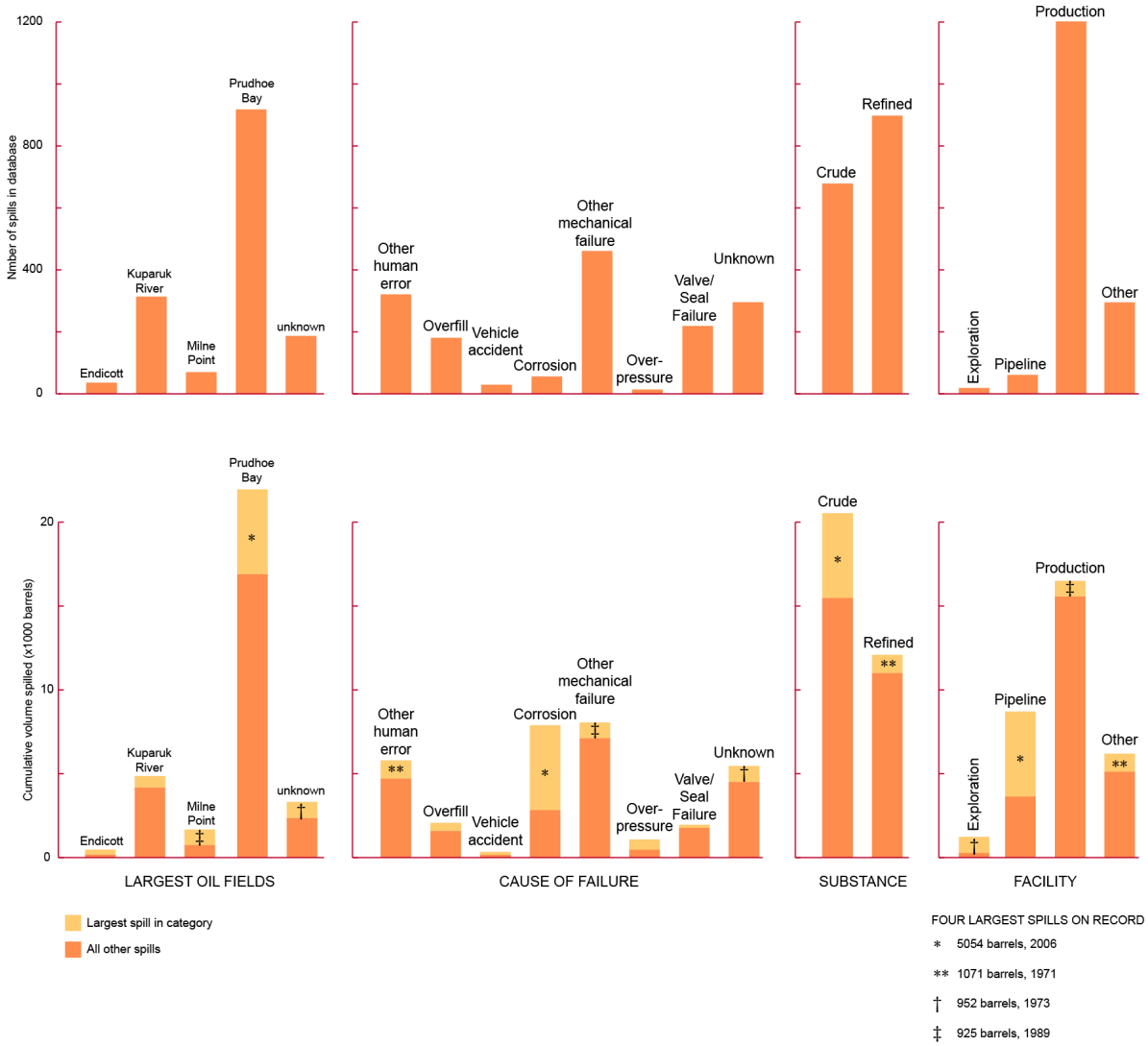

Figure 3.2 – Characterization of Alaska North Slope spill data (June 1971 – September 2011)

Table 3.1 contains summary statistics for the June 1971 – September 2011 spill data broken out by field, facility type, cause, and substance. The statistics include number of spills, cumulative volume spilled, average volume spilled, size of the maximum spill, and percentage of the total volume accounted for by the maximum spill. The maximum spill, the 5053 bbl GC-2 spill, occurring in 2006, accounted for 15.5% of the total volume spilled.

Table 3.1 – Spill data summary by field, facility type, cause, and substance for Alaska North Slope spills larger than one barrel (June 1971 – September 2011)

	Number	Total Volume bbl	Mean bbl	Max bbl	Max as % Total
Field					
Badami	10	136.3	13.6	109.0	80.0%
Colville River, Alpine	19	102.7	5.4	20.0	19.5%
Endicott	36	468.9	13.0	287.1	61.2%
Kuparuk River	315	4,865.6	15.4	675.0	13.9%
Milne Point	73	1676.9	23.0	925.0	55.2%
Nikaitchuq	4	9.4	2.4	4.8	50.5%
North Star	13	91.1	7.0	46.0	50.5%
Oooguruk	6	15.2	2.5	6.2	40.6%
Prudhoe Bay	910	21,920.3	24.1	5,053.6	23.1%
Unknown	191	3,331.8	17.4	952.4	28.6%
Facility					
Exploration	19	1,227.1	64.6	952.4	77.6%
Pipeline	61	8,703.6	142.7	5,053.6	58.1%
Production	1,202	16,499.5	13.7	925.0	5.6%
Support	120	3,556.8	29.6	476.2	13.4%
Vehicle	66	1,510.5	22.9	1,071.4	70.9%
Unknown	109	1,120.6	10.3	142.9	12.7%
Cause					
Human Error: Other	247	5,020.8	20.3	1,071.4	21.3%
Human Error: Overfill	181	2,069.1	11.4	476.2	23.0%
Human Error: Unknown	74	766.4	10.4	168.0	21.9%
Human Error: Vehicle Accidents	29	332.1	11.5	165.0	49.7%
Mechanical Failure: Corrosion	56	7,886.9	140.8	5,053.6	64.1%
Mechanical Failure: Other	461	8,054.0	17.5	925.0	11.5%
Mechanical Failure: Overpressure	14	1,073.1	76.6	607.1	56.6%
Mechanical Failure: Unknown	49	640.0	13.1	238.1	37.2%
Mechanical Failure: Valve/Seal	219	1,955.3	8.9	181.0	9.3%
Unknown	247	4,820.6	19.5	952.4	19.8%
Substance					
Crude	679	20,532.1	30.2	5,053.6	24.6%
Refined	898	12,085.9	13.5	1,071.4	8.9%
All Data	**1,577**	**32,618.1**	**20.7**	**5,053.6**	**15.5%**

3.2.1 Summary Spill Data by Size Class

Special consideration was also given to the differences among the different spill sizes. We choose to investigate these differences for four size classes (Classes A, B, C, and D) to understand whether small spills have different characteristics than large spills. The historical data for each size class is presented for each oil field, attributed cause, facility type, and substance spilled.

Figure 3.4 shows the *number* of Alaska North Slope spills by size class and Figure 3.5 shows the *cumulative volume* of Alaska North Slope spills by size class.

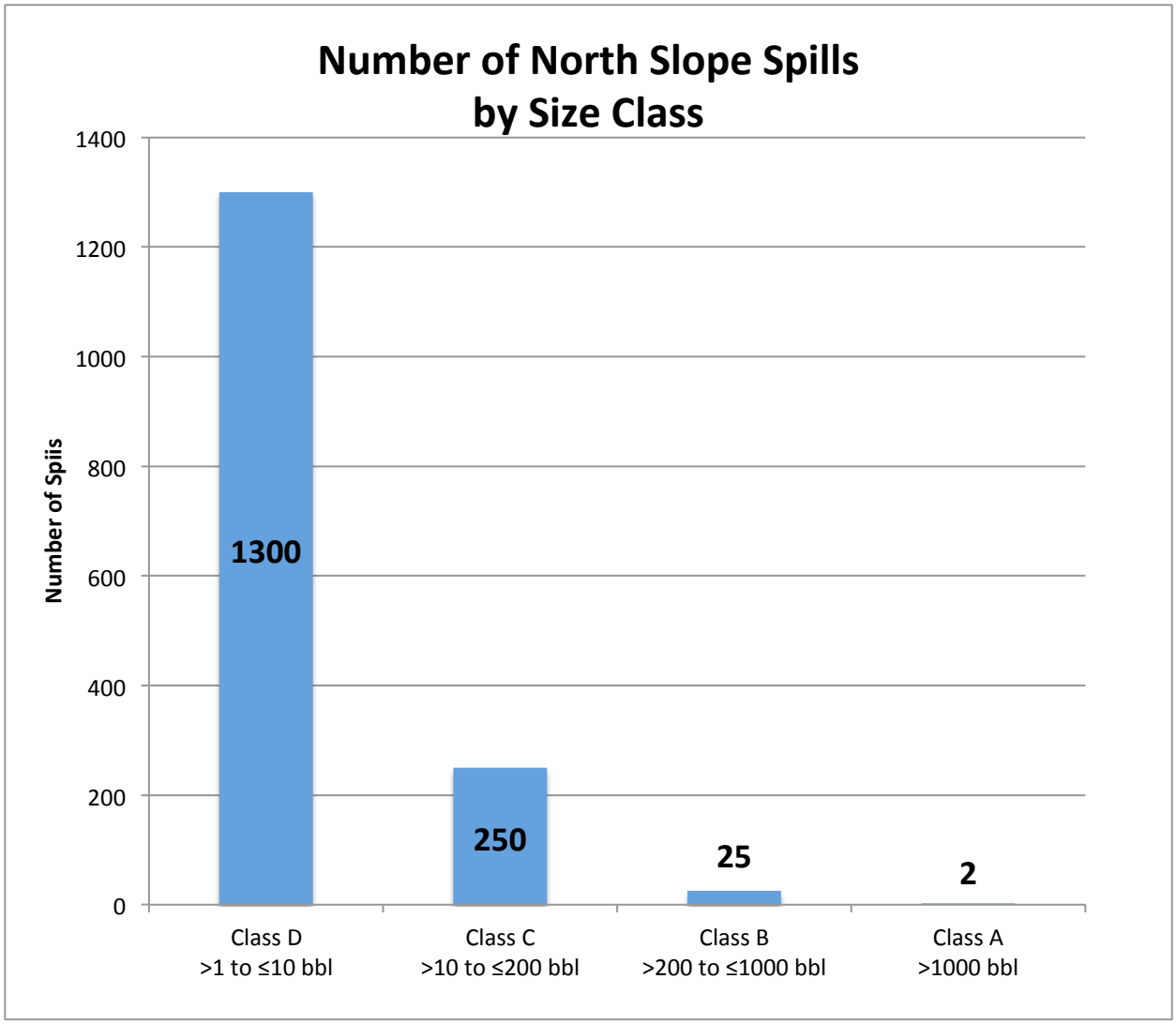

Figure 3.4 – Number of Alaska North Slope spills by size class (June 1971 – September 2011)

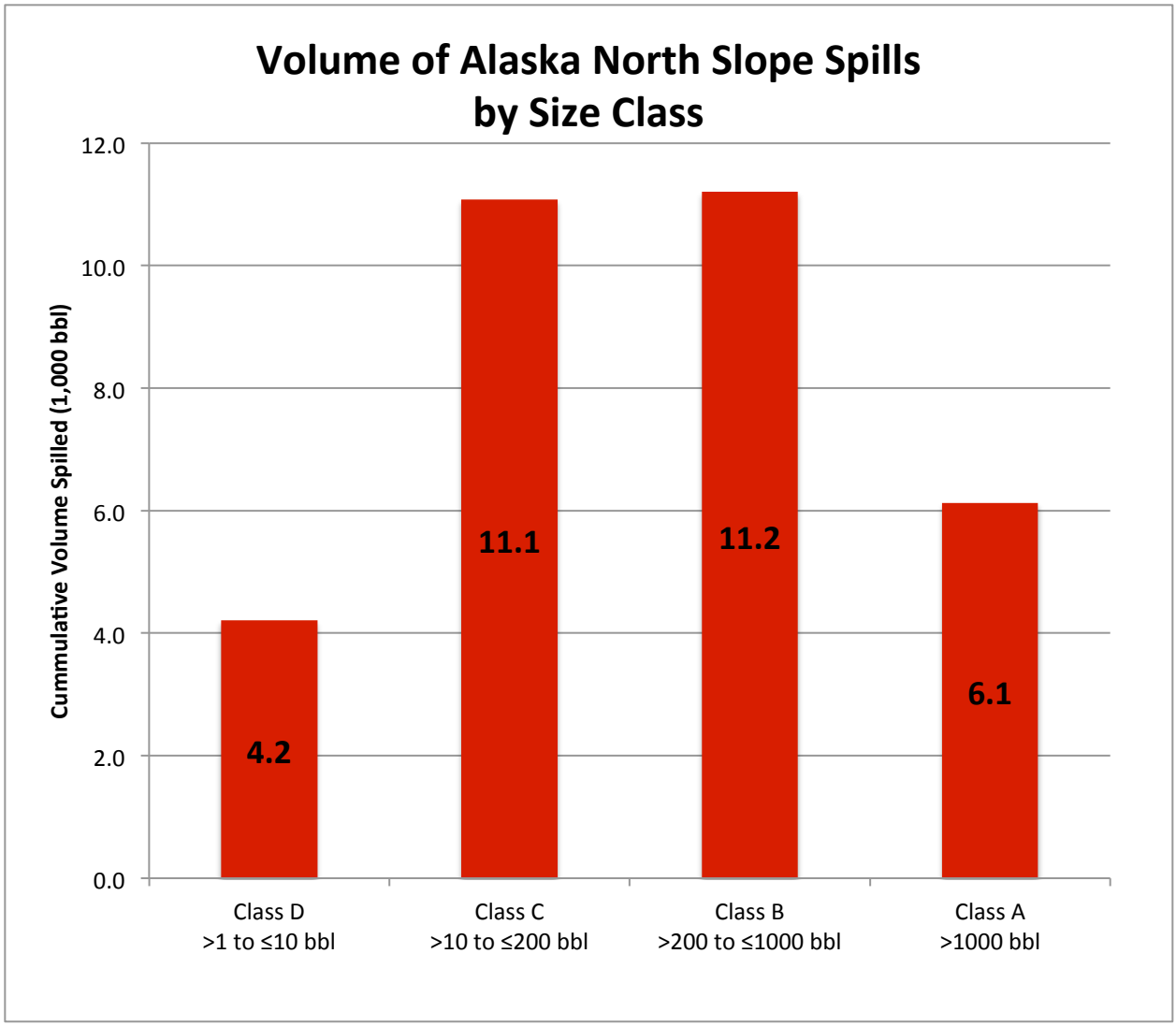

Figure 3.5 – Volume of Alaska North Slope spills by size class (June 1971 – September 2011)

Figure 3.6 shows the oil spill volume associated with substance type, oil field, facility type, and spill cause for spills of Class B, C, and D. Some general patterns emerge across all three classes: in each case, the largest volume of oil was spilled at Prudhoe Bay, attributed to "Mechanical Failure: Other," consisted of crude oil, and came from a production facility.

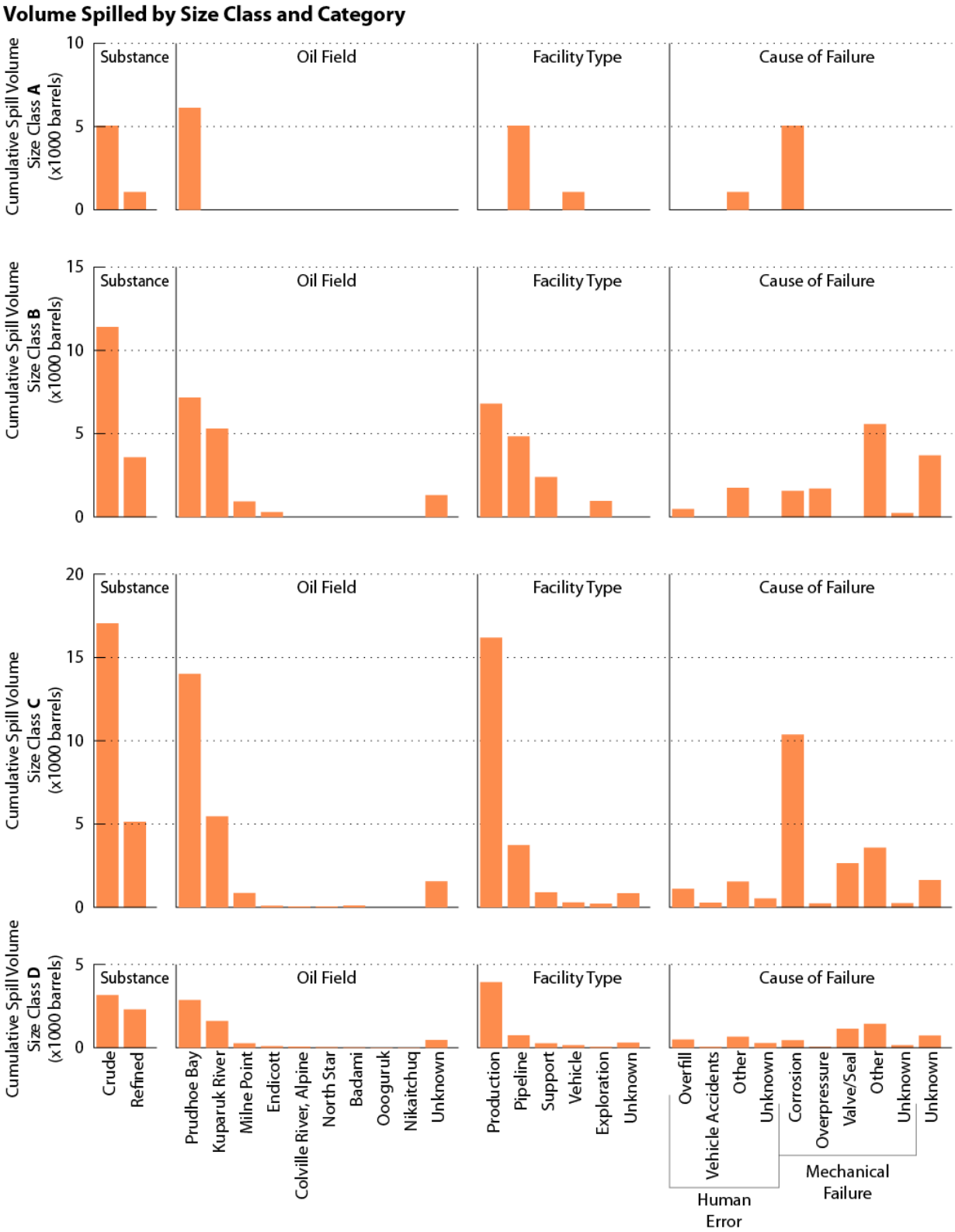

Figure 3.6 – Summary of spill Classes D, C, and B by substance type, oil field, facility type, and spill cause (Class A is not included because there were only two spills; see Section 3.2)

3.2.2 Spill Occurrence by Oil Field

The number and volume of spills were examined by oil field, for spills > 1 bbl where oil field was a known variable.[10] Prudhoe Bay has the highest number of spills (910), the highest mean value for spill volume, (24.1 bbl), and the single largest spill (5,053.6 bbl). The higher number of spills in Prudhoe Bay compared to other fields was due to the large size of this field and the fact that it has been in operation longer than any of the other fields. While the largest number of spills and volume spilled occurred in the Prudhoe Bay oil field, these figures are not different enough from the mean for the other fields to draw any conclusions about this field. The higher mean spill volume was not statistically significant in comparison to that of other fields, and the very high standard deviations for Prudhoe Bay reflect the undue influence of the large 2006 spill on the statistics. With the largest spill removed from the data set, the mean spill volume for Prudhoe Bay was only slightly higher than for other oil fields.

An ANOVA (analysis of variance) test was conducted to consider the relationship between mean spill volume and oil field, showing no statistically significant relationship between the two factors.[11] Thus, oil fields could be combined in further analyses.

Almost 80% of the spills were greater than one bbl and less than or equal to 10 bbl (Class D; see Figure 3.7), but the cumulative volume of Class D spills was only 13% of the volume spilled (see Figure 3.8). Less than 2% of spills were larger than 200 bbl (Classes A and B), but these spills account for 53% of the volume spilled. Table 3.1 shows the number and volume of spills for each oil field.

[10] There were 186 spills in the database subset for which the oil field was unknown.
[11] $F(3, 1502)=0.467$, $p = 0.705$.

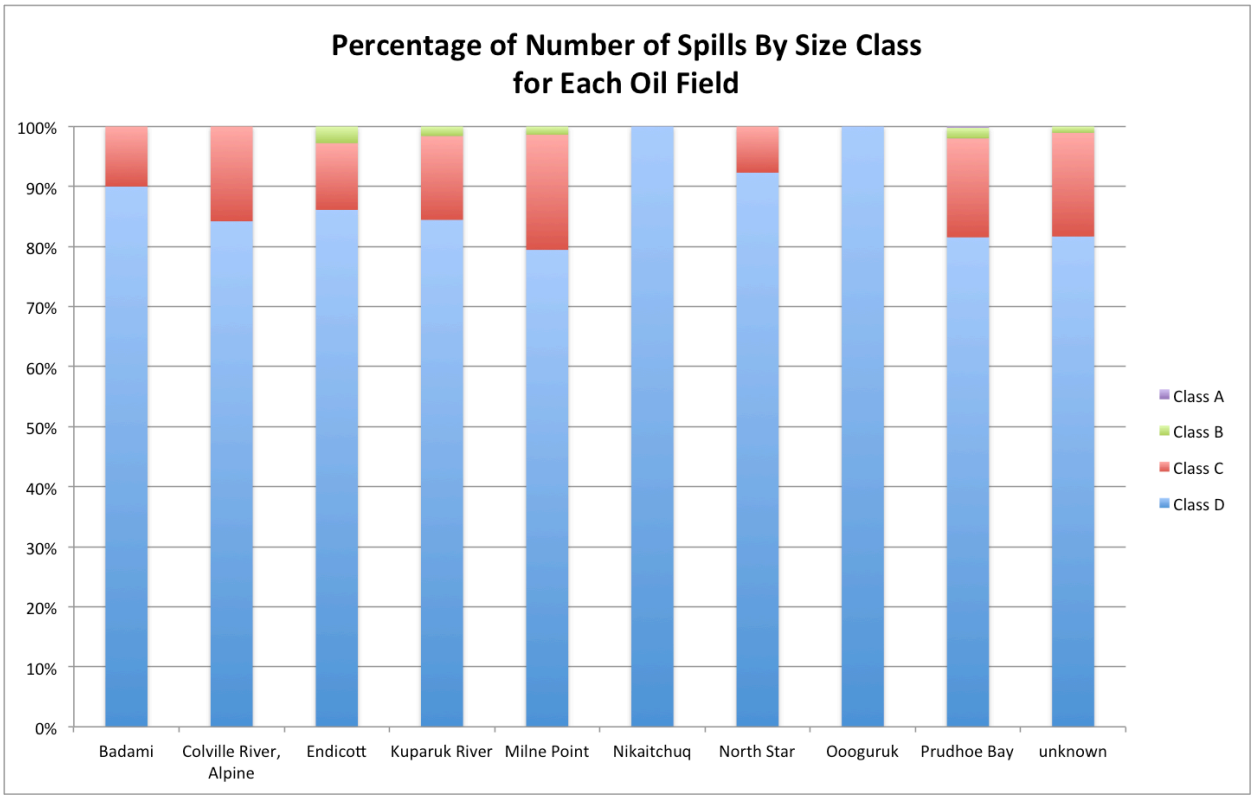

Figure 3.7 – Percentage of number of spills of each size class (A – D) for each oil field (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered.

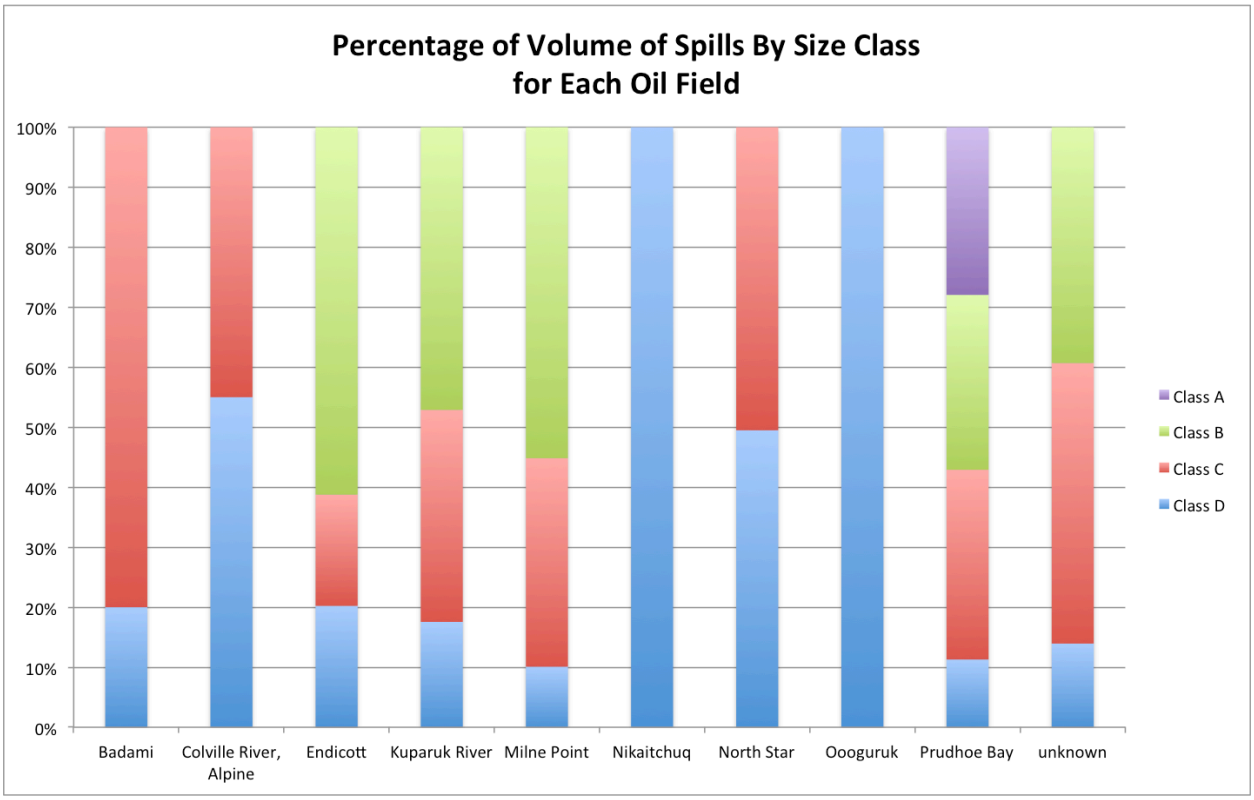

Figure 3.8 – Percentage of volume of spills of each size class (A – D) for each oil field (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

Table 3.2 – Spill number and volume by oil field (June 1971 – September 2011) for size classes A – D

	Number				Volume (bbl)			
Field/Size Class	**D**	**C**	**B**	**A**	**D**	**C**	**B**	**A**
Badami	9	1	0	0	27	109	0	0
Colville River, Alpine	16	3	0	0	56	46	0	0
Endicott	31	4	1	0	95	87	287	0
Kuparuk River	266	44	5	0	854	1,719	2,292	0
Milne Point	58	14	1	0	169	583	925	
Nikaitchuq	4		0	0	9	0	0	0
North Star	12	1	0	0	45	46		
Oooguruk	6		0	0	15	0	0	0
Prudhoe Bay	742	150	16	2	2,475	6,932	6,388	6,125
unknown	156	33	2	0	465	1,557	1,310	0
TOTAL	**1,300**	**250**	**25**	**2**	**4,212**	**11,080**	**11,202**	**6,125**

3.2.3 Overall Spill Occurrence by Cause

Mechanical failures caused the highest total spill volume from 1971 – 2011. While the largest number of spills (450) was caused by "other" mechanical failures, the mean size was larger for spills caused by corrosion.[12] The large mean for corrosion (140.8 bbl) is strongly influenced by the single GC-2 pipeline spill of 5,054 bbl. However, even without that spill, the mean volume for corrosion caused spills is still high at 51.5 bbl. Over-pressurization was the cause associated with the second highest mean spill volumes (76.6 bbl), with no statistical difference between corrosion and over-pressurization. All other spill causes had much lower mean values than mechanical failure and corrosion.

Figures 3.9 and 3.10 (with summary data presented in Table 3.3) show the spill cause data broken down by size class.

[12] 145.84 bbl for corrosion; 17.42 for other.

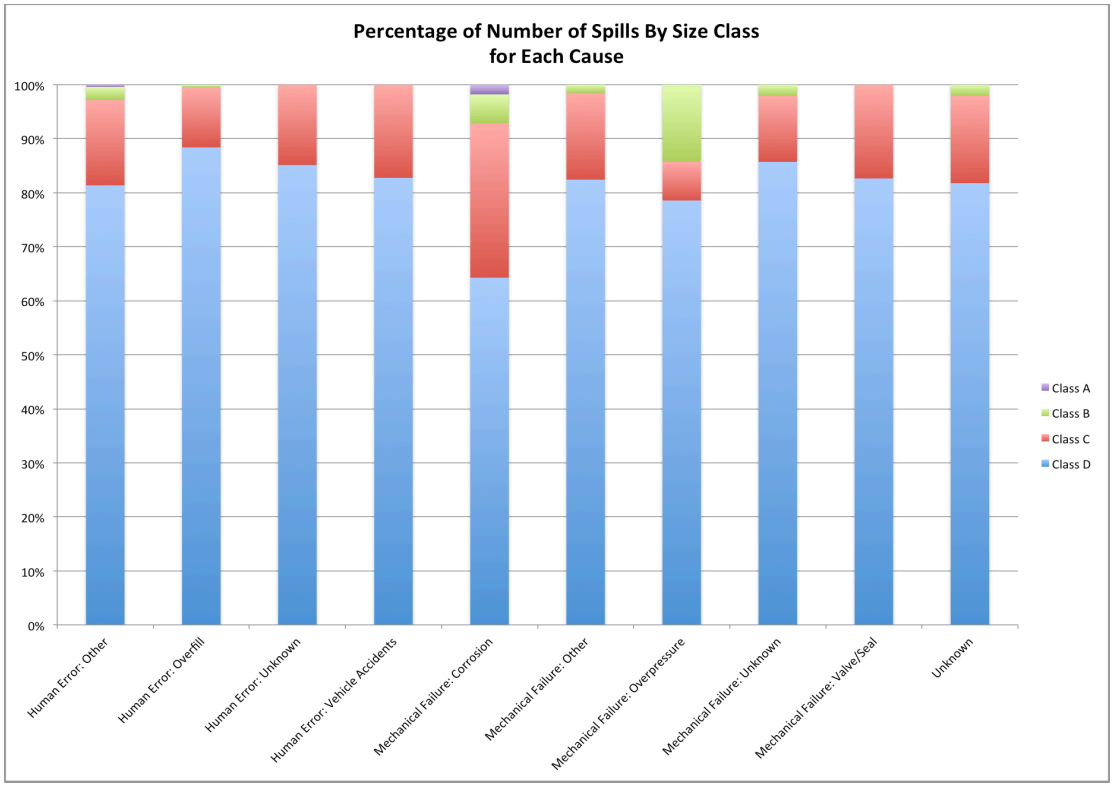

Figure 3.9 – Percentage of number of spills of each size class (A – D) by attributed cause (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

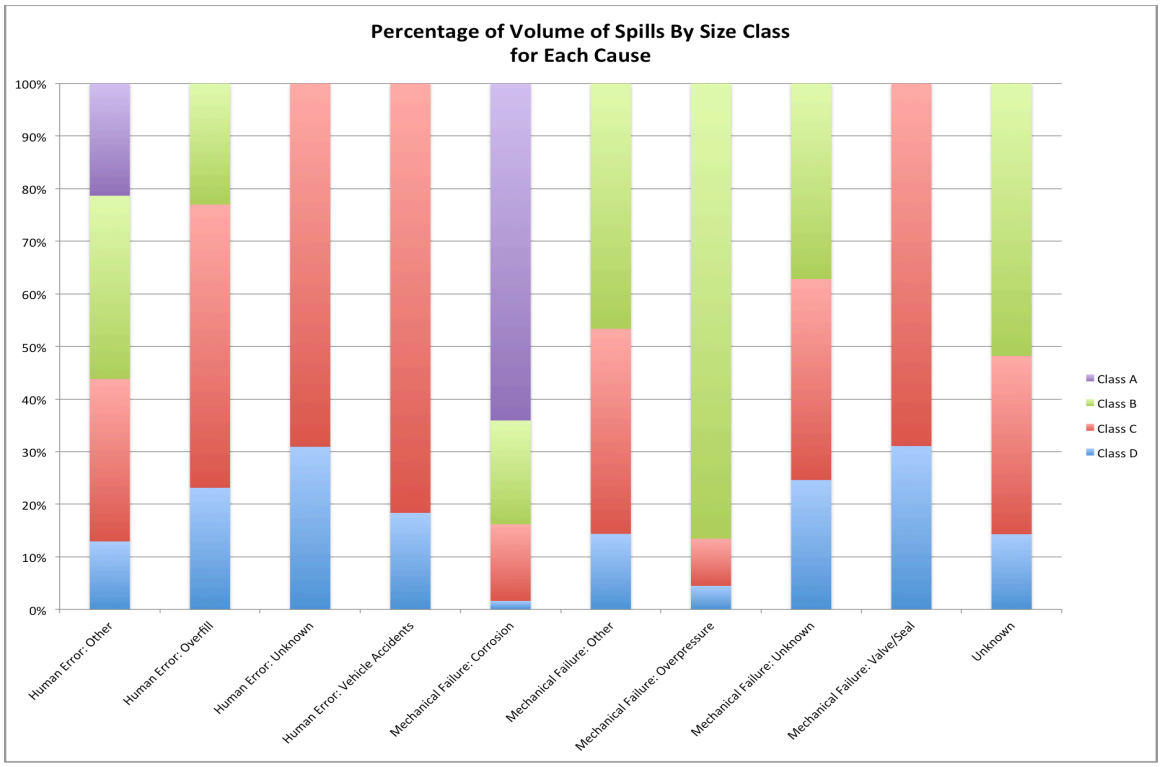

Figure 3.10 – Percentage of volume of spills of each size class (A – D) by attributed cause (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

Table 3.3 – Number and volume of spills by attributed cause (June 1971 – September 2011)

	Number				Volume (bbl)			
Cause/Size Class	**D**	**C**	**B**	**A**	**D**	**C**	**B**	**A**
Human Error: Other	201	39	6	1	649	1,551	1,749	1,071
Human Error: Overfill	160	20	1		478	1,114	476	
Human Error: Unknown	63	11			237	529		
Human Error: Vehicle Accidents	24	5			61	271		
Mechanical Failure: Corrosion	36	16	3	1	127	1,150	1,556	5,054
Mechanical Failure: Other	380	74	7		1,157	3,140	3,757	
Mechanical Failure: Overpressure	11	1	2		48	96	929	
Mechanical Failure: Unknown	42	6	1		157	244	238	
Mechanical Failure: Valve/Seal	181	38			607	1,348		
Unknown	202	40	5		689	1,635	2,497	
ALL	**1300**	**250**	**25**	**2**	**4,212**	**11,080**	**11,202**	**6,125**

3.2.4 Spill Occurrence by Facility Type

From June 1971 – September 2011, pipeline spills were responsible for the highest mean volume of Alaska North Slope spills, while production facilities were responsible for the highest total number of spills. The mean spill volume for pipelines was approximately 145 bbl when the largest spill was included (decreased to 62 bbl when that outlier spill was excluded). An analysis of variance revealed that mean spill volume was very much dependent on facility type, even with the largest spill excluded,[13] and with pipeline used as the reference category, all other facility types are found to have a statistically significant, lower mean value for spill volume.

Except for pipeline spills, the median spill size was relatively constant by facility type at approximately 2 - 3 bbl per facility type. The median pipeline spill was 9 bbl. Note that the large spill associated with the vehicle facility was the second larges spill in the dataset. This 1,071 bbl diesel spill was caused by a piece of equipment running into and puncturing a bladder tank in 1971.

Figures 3.11 and 3.12 (with summary data in Table 3.4) show the spill data for facility type by size class.

[13] $F(3, 1502)=16.4, p < 0.001$

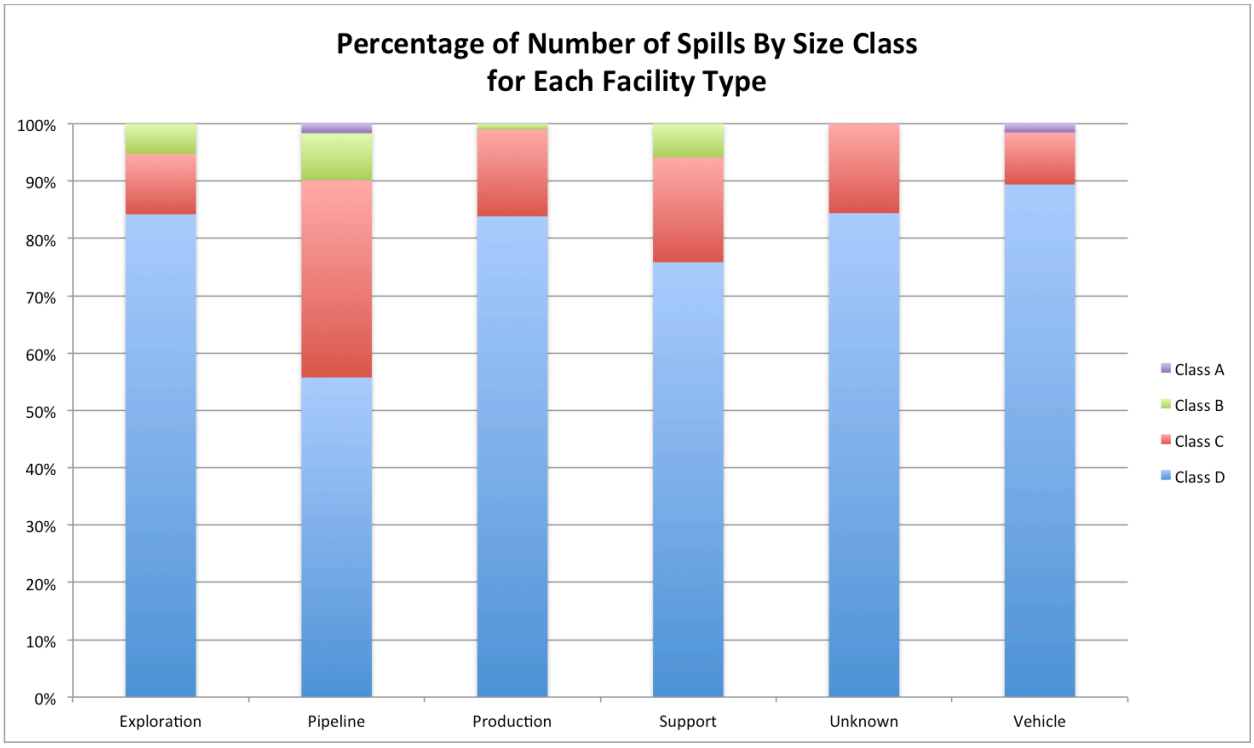

Figure 3.11 – Percentage of number of spills of each size class (A – D) by facility type (June 1971 – September 2011); note that Class E (≤ 1 bbl) spill are not considered

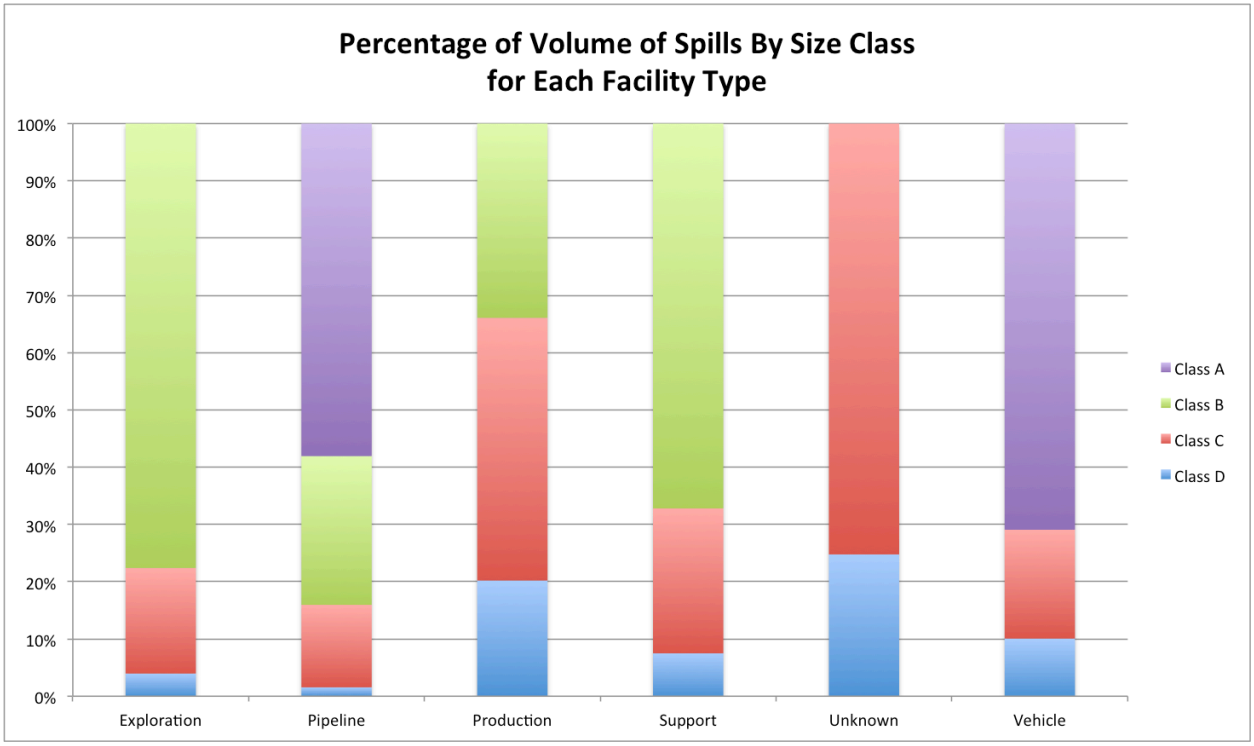

Figure 3.12 – Percentage of volume of spills of each size class (A – D) by facility type (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

Table 3.4 – Number and volume of spills by facility type (June 1971 – September 2011)

	Number				Volume (bbl)			
Facility Type/Size Class	**D**	**C**	**B**	**A**	**D**	**C**	**B**	**A**
Exploration	16	2	1		49	226	952	
Pipeline	34	21	5	1	134	1,254	2,262	5,054
Production	1008	182	12		3,333	7,569	5,597	
Support	91	22	7		266	900	2,390	
Unknown	92	17			277	843		
Vehicle	59	6		1	152	287		1,071
TOTAL	**1300**	**250**	**25**	**2**	**4,212**	**11,080**	**11,202**	**6,125**

3.2.5 Spill Occurrence by Substance Type

The mean spill volume for crude oil spills from June 1971 – September 2011 was much higher when compared to refined products.[14] Even with the largest spill removed (GC-2 pipeline spill), the mean volume for crude oil spill was still higher, with statistical significance.

Section 4.3 further investigates the relationship between oil type and spill occurrence.

Figures 3.13 and 3.14 (with summary data in Table 3.5) show spill by substance type by size class.

[14] $F(1, 1504)=5.2$, $p = 0.005$.

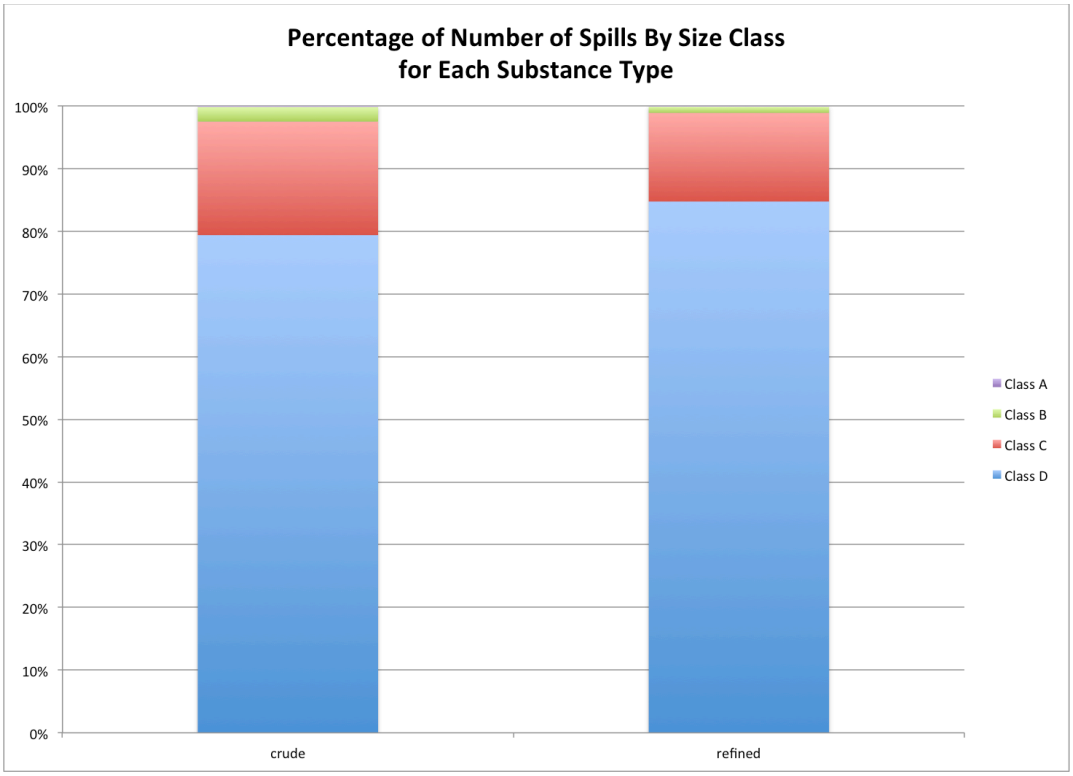

Figure 3.13 – Percentage of number of spills of each size class (A – D) by substance spilled (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

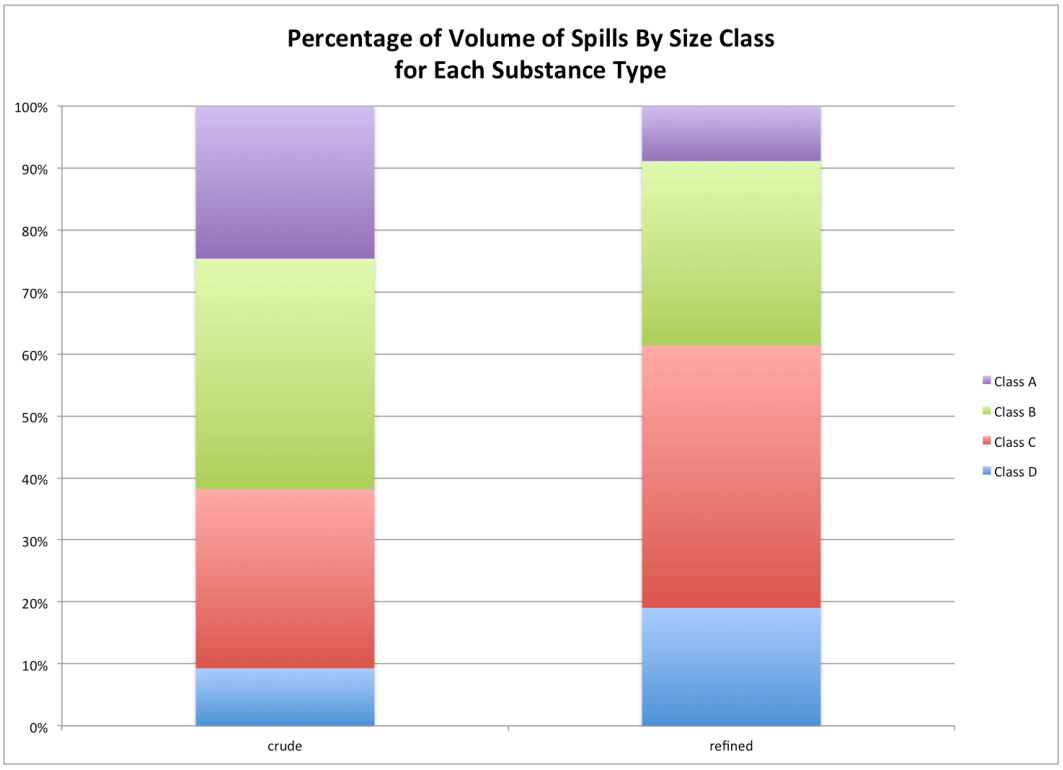

Figure 3.14 – Percentage of volume of spills of each size class (A – D) by substance spilled (June 1971 – September 2011); note that Class E (≤ 1 bbl) spills are not considered

Table 3.5 Number and volume of spills by substance spilled (June 1971 – September 2011)

	Number				Volume (bbl)			
Facility Type/Size Class	**D**	**C**	**B**	**A**	**D**	**C**	**B**	**A**
Crude	539	123	16	1	1,908	5,954	7,617	5,054
Refined	761	127	9	1	2,304	5,126	3,585	1,071
ALL	**1300**	**250**	**25**	**2**	**4,212**	**11,080**	**11,202**	**6,125**

4 TREND ANALYSIS

This section discusses trends indicated by the data across months, years, and substance types for spills of crude oil and refined products.

4.1 Study Timeframe

The remainder of the report, beginning in this section, uses a subset of 1,492 spills larger than one barrel that took place from January 1980 – December 2010. The following spills were excluded from the larger dataset discussed in Sections 1 - 3: 14 spills from the partial year of January – September 2011 and 71 spills from the 1970s.

Spills from 2011 were excluded because a full year's worth of data was not available, and our analyses required *annual* spill counts and volumes.

Spills from 1971 - 1979 were excluded because of suspected inconsistencies in reporting practices and requirements. Figure 3.1 shows the small number of spill reports during the 1970s, when only nine spills greater that one barrel were reported during the first five years of the decade. The first small spills were not reported until 1972, and reporting of small spills continued to be rare through most of the 1970s. Production through the TAP did not begin until 1977. Only two crude oil spills were reported prior to that time.

The under-reporting of small spills prior to 1980 makes any computed mean spill volumes highly inaccurate and biased towards high values. For this reason, these numbers are not useful in efforts to predict mean volumes or expected numbers of spills. To avoid these problems, the scope of the regression modeling undertaken in this study called for limiting the data to information beginning in 1980.

4.2 Annual Spill Rates

There is a statistically significant relationship between the number of spills that occur each month and total crude oil production volume each month. However, the effect size was so small (power= 0.00 and R^2 of 0.11) that the model was deemed to be much less useful than the annual models (power=0.86 and R^2 of 0.24). Comparing Figure 3.1 with Figure 4.3 illustrates the smoothing of the data when utilizing annual models. (See also Section 5.2.1)

4.3 Periodicity in Alaska North Slope Spills and Rates

Timing of spill occurrence showed a cyclical pattern (see Figure 4.1, which displays data from 1980 – 2010 totaled by calendar month). Over the time frame beginning in 1980, the largest number of spills was recorded in the month of June and the smallest number in October.

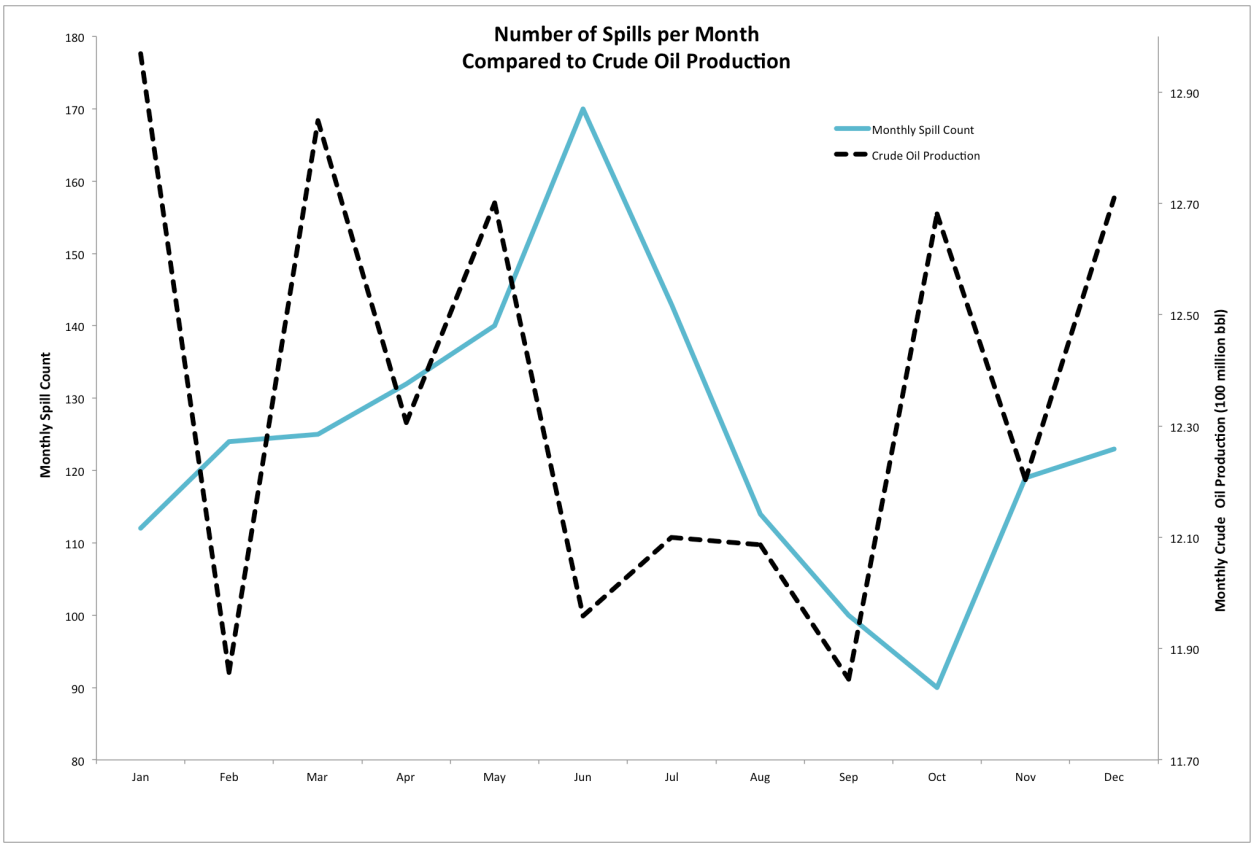

Figure 4.1 – Comparison of spill occurrence and cumulative production volume for each month from 1980 – 2010

Two different approaches were applied to validate the apparent periodicity in spill occurrence by month. A best fit model proved to be one involving a periodic sine function. A Monte Carlo simulation study also verified the periodic nature the number of spills per month. It was concluded that the observed pattern did not occur randomly and there was in fact a significant periodic pattern in the number of Alaska North Slope spills occurring in given months.

Figure 4.2 shows the actual number of spills in each calendar month plotted against the best fit sinusoidal curve demonstrating a strong cyclic pattern in the data.

Further exploration of periodicity by size class showed that there is no evidence of a cyclic pattern in large (Class B) spills. There was some slight periodicity to Class C spill occurrence, and a strong signal of periodicity in

Class D spills. The Monte Carlo study confirmed that such behavior could not have occurred randomly.

Because of the cyclical nature and high variability of monthly spill data, we chose to focus on annual spill numbers for occurrence modeling. (See Section 5.1.2.)

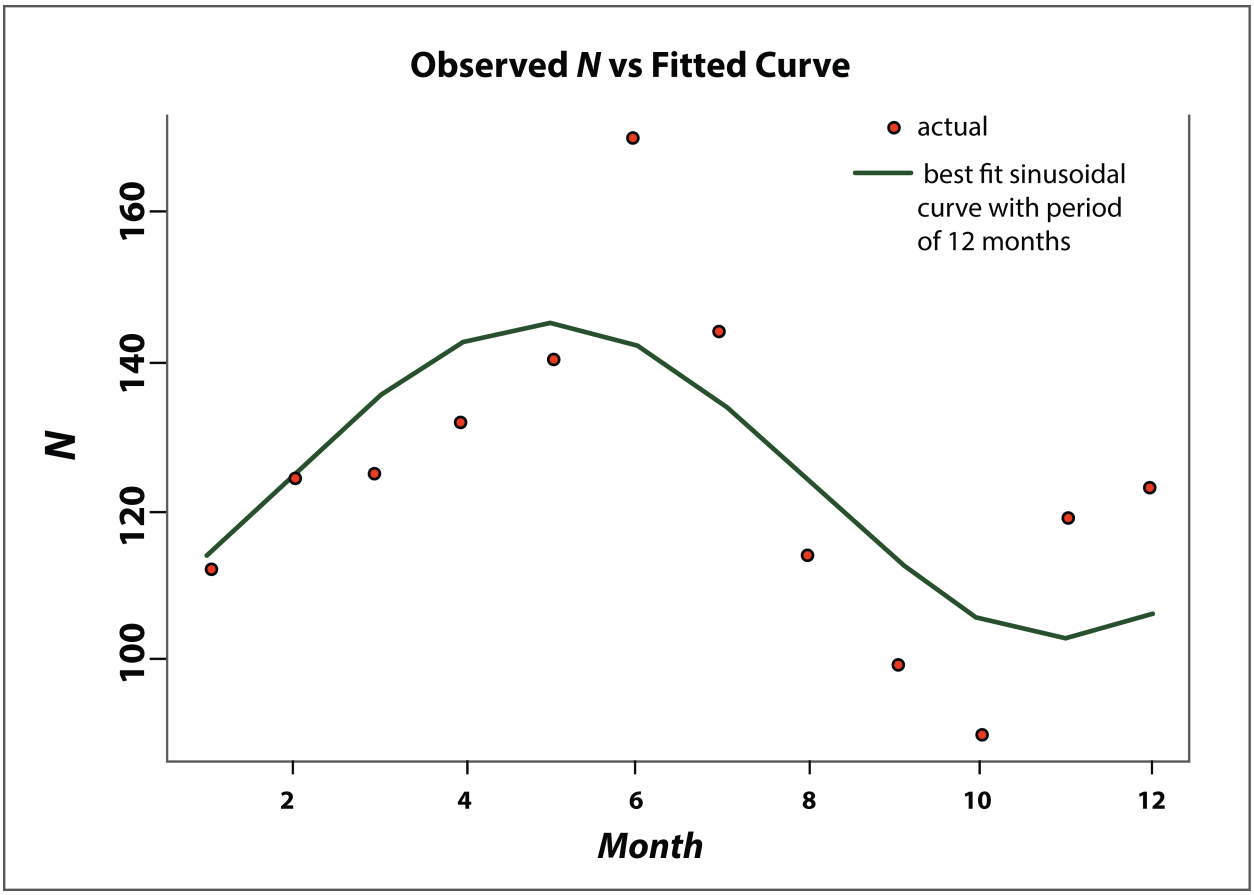

Figure 4.2 – Fitted curve for annual spill data (1980 – 2010)

4.4 Spill Trends by Year

In early 1980s, spill numbers rose as crude oil production rose. The maximum number of annual spills (108) occurred in 1987 and the maximum crude oil production occurred in 1988. Since then, crude oil production has gradually declined. The number of spills rapidly declined from the peak in 1987 to a minimum number (19) in 1992 and then rose again and varied mostly between 40 and 50 spills per year in the 1990s and 2000s. With the exception of the period in the early 1990s when few spills were reported, the trend in annual spill numbers roughly follows the crude oil production trend. Figure 4.3 shows the number of spills each year overall and by size class compared to the annual volume of crude oil production from all fields.

The majority of spills fall into Class D. These small spills most closely mimic the crude oil production curve. While the number of spills in the larger spill classes varies, there is no apparent trend over the time of the study.

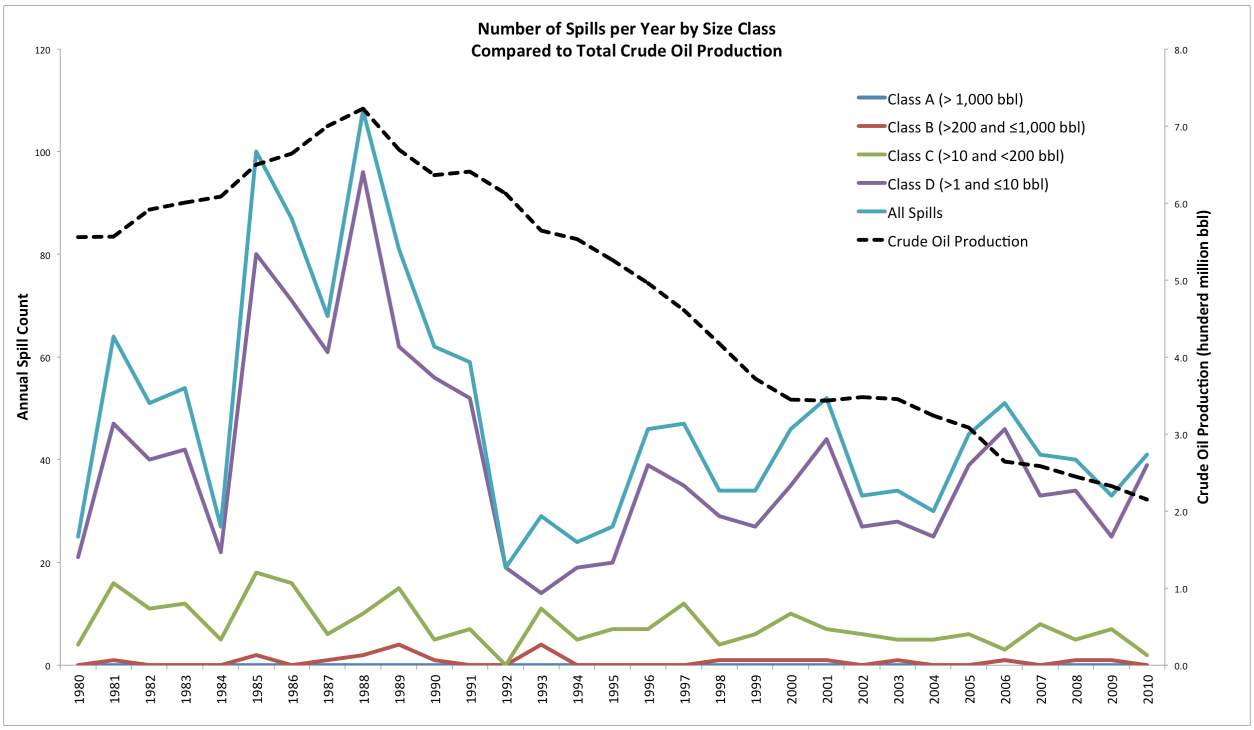

Figure 4.3 – Annual number of Alaska North Slope spills by spill size class, compared to total crude oil production (1980 – 2010)

Figure 4.4 shows the volume of spills each year overall and by size class compared to the annual volume of crude oil production from all fields. It is difficult to see any relationship between crude oil production and the volume of spills per year. Classes B and C account for the majority of the volume spilled, with the noted exception of the one Class A spill in 2006.

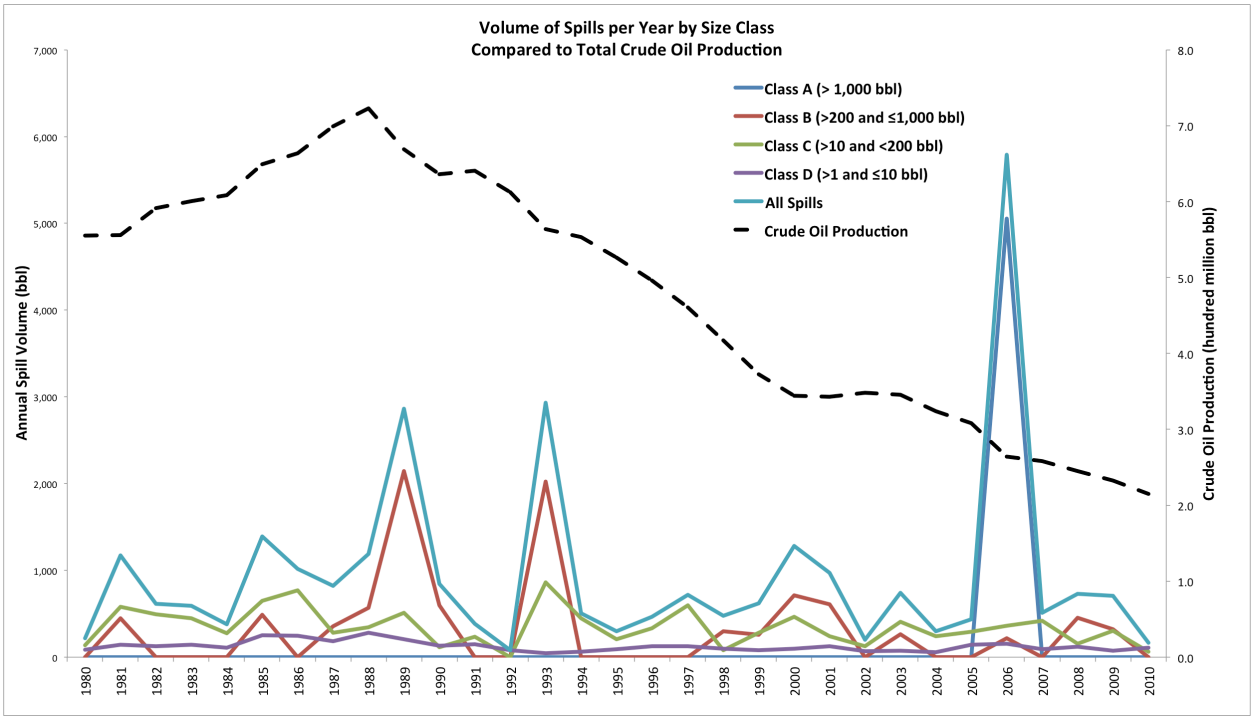

Figure 4.4 – Annual volume of Alaska North Slope industry spills by spill size class, compared to total crude oil production (1980 – 2010)

4.5 Spill Trends by Product Type

Product type is presented as crude oil and refined oil (all non-crude products). Figure 4.5 shows the number of spills each year by product type compared to the annual volume of crude oil production from all fields. In general, there are more refined product spills per year (57%) than crude oil spills (43%), but crude oil spills tend to be larger.

When compared to the crude oil production curve, the annual number of crude oil spills appears to peak (48 in 1985 and 46 in 1988) at about the same time as peak oil production in 1988 followed by a rapid decline to a minimum of 7 spills in 1992. In the 1900s and 2000s the number of crude oil spills increased again and fluctuated in the range of 10 - 25 spills per year.

The annual number of refined oil spills varies more. The highest spill counts (50 in 1981, 52 in 1985, 62 in 1988, and 50 in 1989) all occur in the 1980s. Yet, one of the lowest spill counts (10 in 1984) also occurred in the 1980s, demonstrating the variability in this data. The same rapid decline in refined oil spill numbers is seen in the early 1990s (nine spills in 1994 and 1998) with a sharper rise after the late 1990s. In fact, it appears that the annual number of refined oil spills leveled off 1994, while at the same time, crude oil production has decreased.

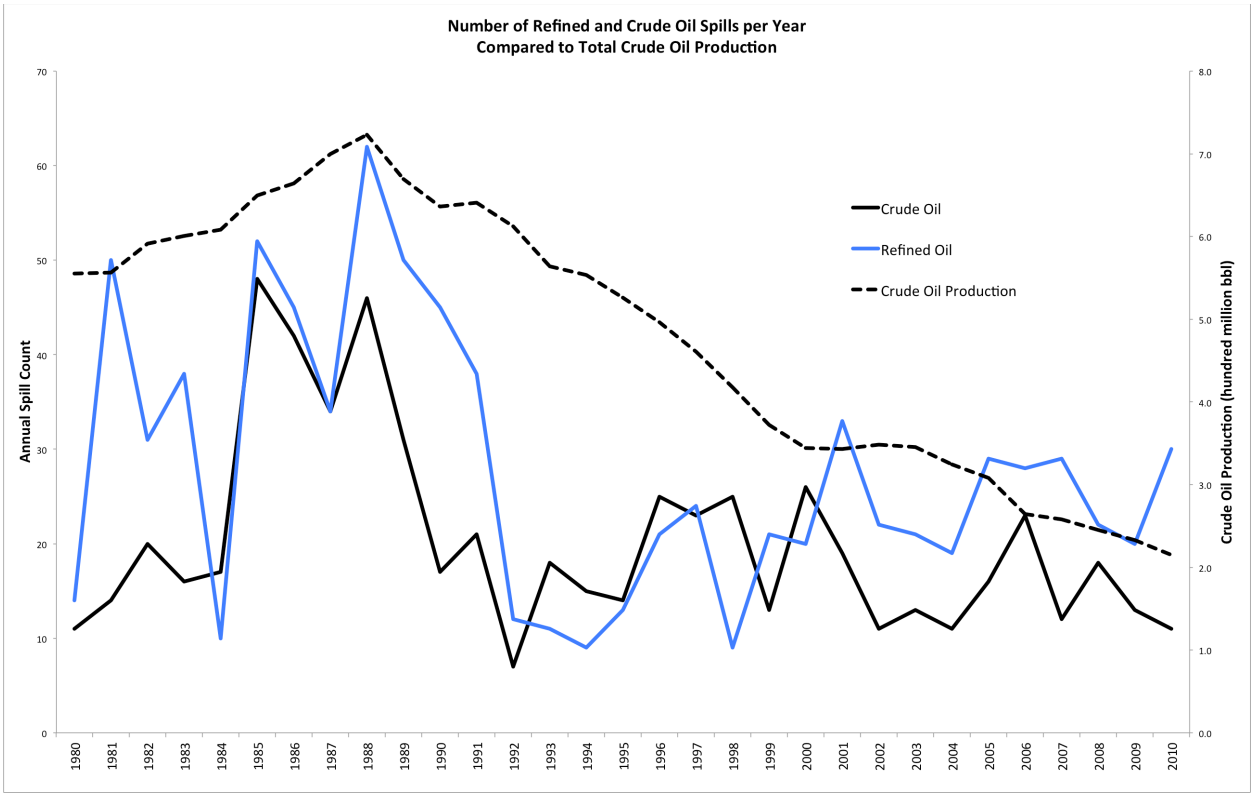

Figure 4.5 – Yearly number of Alaska North Slope spills by spill product type, compared to total crude oil production (1980 – 2010)

Figure 4.6 shows the volume of spills each year by product type compared to the annual volume of crude oil production from all fields. Fifty-eight percent of the volume spilled came from crude oil spills. For several of the years examined (1984, 1993, 1995, 1998, and 2006), more than 90% of the volume spilled was crude oil. A few very large crude oil spills appear to influence the distribution. Neither crude nor refined oil spill volumes follow the production curve on a yearly basis.

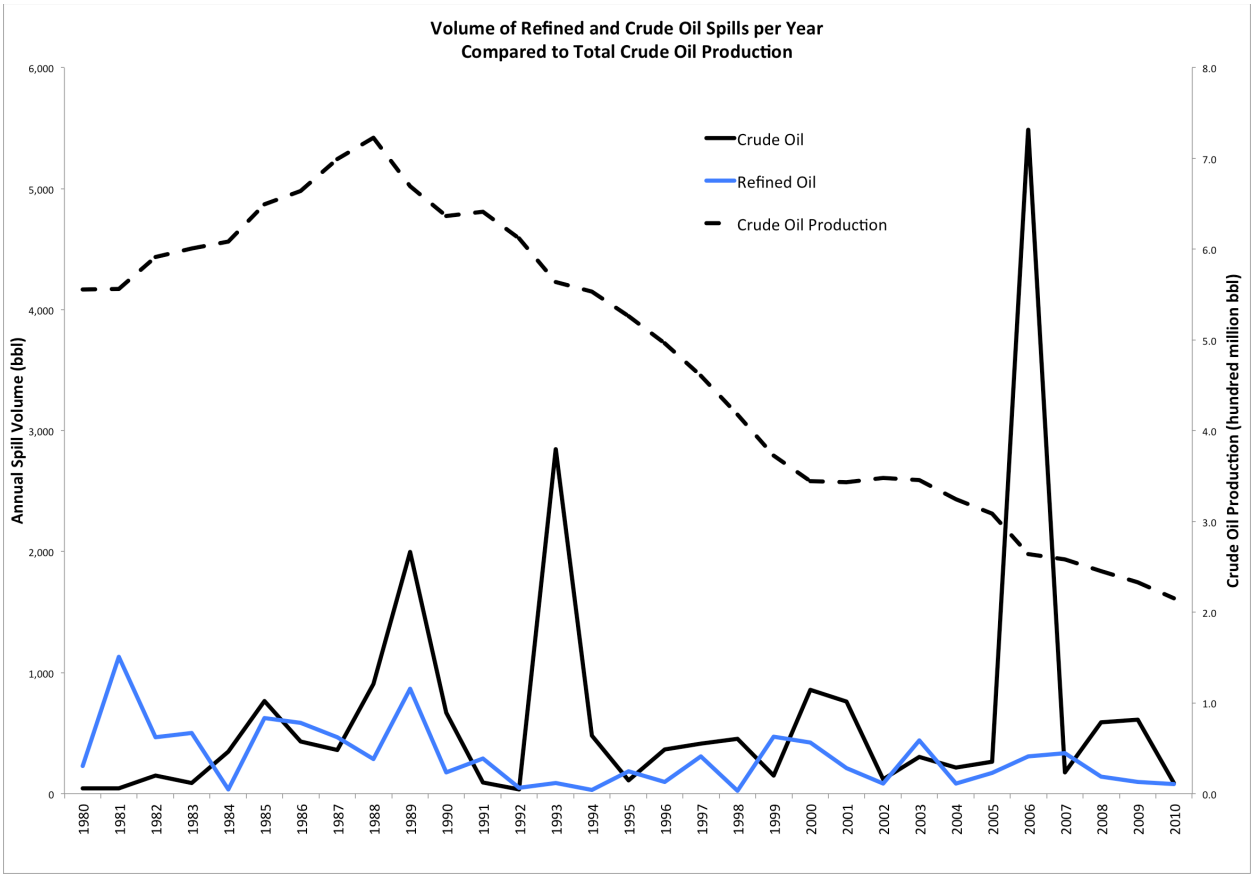

Figure 4.6 – Annual volume of Alaska North Slope spills by spill product type, compared to total crude oil production (1980 – 2010)

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5 SPILL RATE OCCURRENCE ESTIMATES

The primary goal of this study was to examine whether spill occurrence rates can be predicted based on past Alaska North Slope oil spill trends. This was done by developing various models to the Alaska North Slope spill data set, and then comparing the predicted spill occurrence generated by the models to the actual spill occurrence for a given set of variables. Attempts were made to develop models that could predict the number and volume of spills based on production variables, spill substance, and spill size.

5.1 Estimating Occurrence Rates by Production Variables

5.1.1 Screening Independent Variables

The five independent production variables first considered for the modeling occurrence rates were:

- Produced crude oil volume without natural gas liquids,
- Produced crude oil volume including natural gas liquids,
- Produced water volume,
- Produced gas volume, and
- Number of producing wells.

Table 5.1 defines the independent variables used. Figure 5.1 shows a scatterplot matrix of the independent variables associated with production, illustrating their strong dependent relationships. Many combinations of variables are very highly correlated. Some relationships are positive: for example, as crude oil production increases or decreases, natural gas liquids also increase or decrease.

Table 5.1 Independent Variable Descriptions

VARIABLE	DESCRIPTION
ProdOil	Total yearly production of oil in millions of bbl for a given oil field
ProdWater	Total yearly production of water in millions of bbl for a given oil field
ProdGas	Total yearly production of gas in millions of MCF for a given oil field
ProdWells	Total number of producing wells in a given year for a given oil field
TotLength	Total length of pipeline in ten-thousands of linear feet in service during a given year for a given oil field
ProdYear	Number of years that a given field has been producing

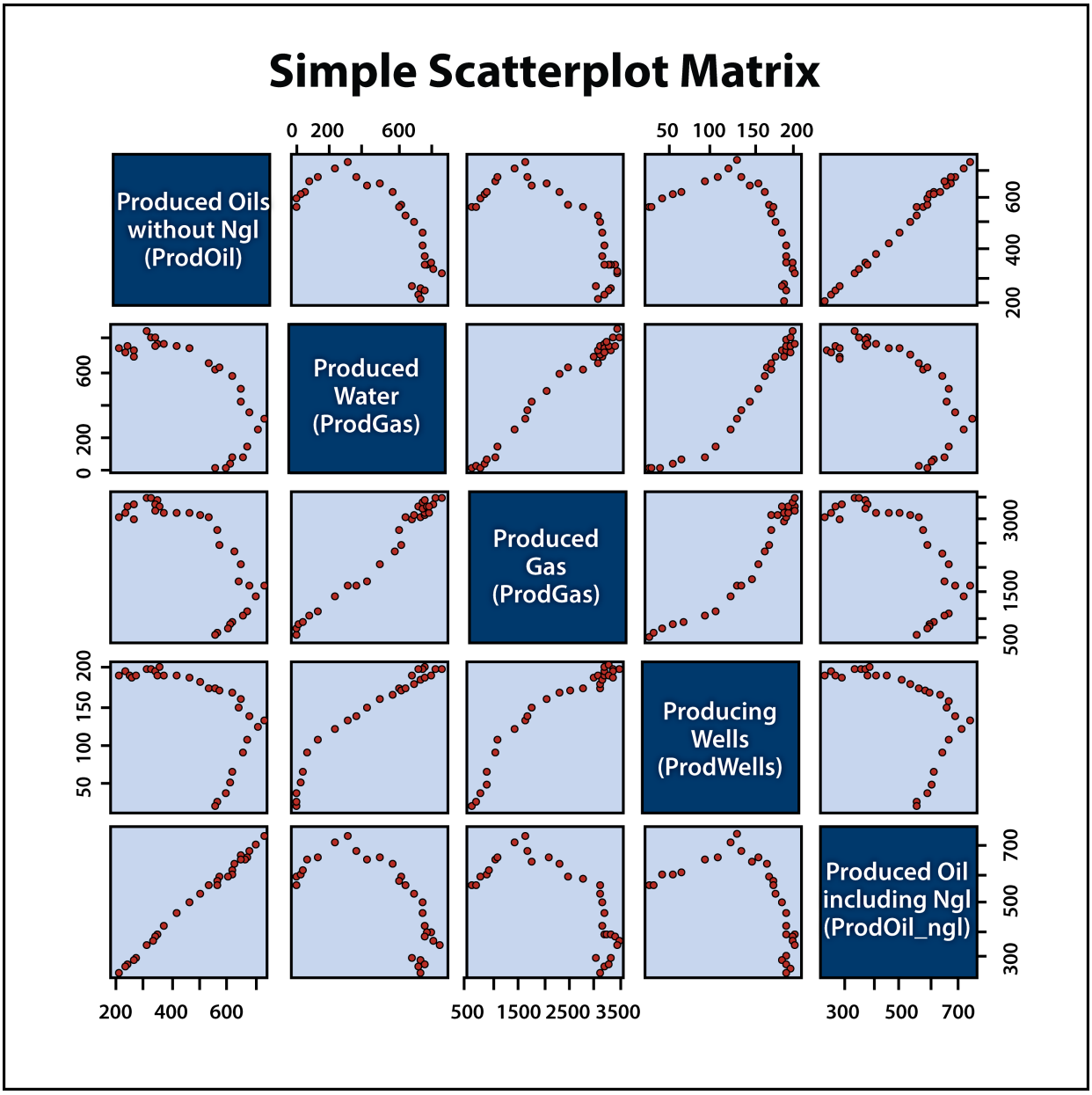

Figure 5.1 – Scatterplot matrix of independent production variables

Some relationships are negative: for example, as produced oil decreased after the peak in the mid-1980s, produced water increased. Because of this collinearity, the use of multiple variables in models introduces redundancy and models with highly collinear variables are statistically invalid. The modeling approaches, therefore, first focused on single variables.

Pipeline length and field age data were also available for several oil fields and were used in mixed regression analysis.

5.1.2 Considering Monthly Spill Data

Linear regression and mixed effect regression models were applied and a number of validation checks performed to identify valid approaches to predict spill numbers and volumes.

Initial modeling was performed on monthly data. After conducting a number of statistical checks to characterize and explore relationships in the data, four types of linear regression models were eventually compared: 1) a simple regression in which the variable N, number of spills per month, was the dependent variable, 2) a simple linear regression in which the natural log transformed N was the dependent variable, 3) a Poisson regression, and 4) a negative binomial regression.

All four regression models had poor predictive ability due to high month-to-month variability in the number of spills. As noted in Section 4.1, monthly spill reports were found to cycle throughout the year, with the highest number of reported spills occurring in June. As a result of this poor predictive ability, the decision was made to focus instead on yearly figures for spills and production data. Monthly data was consolidated into yearly totals to smooth the data, eliminating the effects of the noted cyclical behavior; however, while this did reduce the sample size from 372 months to 31 years, it did not decrease the predictive power of the models.

5.1.3 Selecting Modeling Approaches

Simple linear regressions were applied to compare the relationship between independent variables and the number of spills. Total produced crude oil and total produced crude oil with natural gas had the strongest relationship to the number of spills. Produced water, produced gas, and produced wells do not appear to be strong independent predictors of the number of spills. None of the independent variables proved to be a significant predictor of either maximum spill volume or the natural log transformation of this variable.

Multiple linear regression models were run for different combinations of independent variables, but combining produced oil with a second variable (either produced gas, produced water, or producing wells) did not prove to be a significantly better predictor. As described in Section 5.1.1, due to collinearity there was little or no benefit to adding other oil production metrics to the model.

Poisson regression and negative binomial regression models were also run in an attempt to improve on accuracy, but the very slight improvement over simple linear regression was not deemed significant enough to warrant using these models over the linear regression.

While linear regression models provided valid approaches to model spill occurrence by number; no models provided a valid approach to estimating spill occurrence by volume.

5.1.4 Predicting Annual Spill Numbers From Crude Oil Production Using Linear Regression

A simple linear regression model proved effective in predicting the number of spills per year (N_tot) based on total yearly crude oil production. The best linear regression model showed that the expected total number of spills occurring each year was significantly related to the volume of oil produced (ProdOil) as expressed in the following formula:

$$N_tot = 15.56 + 0.068\ (ProdOil)$$

This model had an R^2 value of 0.24 suggesting that it explains approximately 24% of the total variation observed in yearly spill numbers. Computed power for the model was an acceptable 0.86. The model tells us that for every additional one hundred million barrels of produced oil increase the expected number of spills increases by approximately 7 spills per year.

Figure 5.2 is a scatter plot of the annual number of spills versus crude oil production plotted with the best fitting linear regression line. Note the 6 points less than 30 spills per year near the bottom right: this cluster has a strong influence on the model. Four of the years in that cluster come from 1992 – 1995 when spills-per-year were at their minimum. The model fit improves considerably without these years included.

With the records for these four years removed from the dataset, the R^2 value for the simple linear regression of number of spills per year against total oil production per year rises to 0.43. This model explains more than 40% of the variation in the number of spills. Power for this model was 0.99 and the diagnostic plots indicate that this was a more valid model with regard to meeting model assumptions. One possible explanation for anomalies in annual spill rates is an under-representation of small spills during this four-year period. Examination of the dataset showed that from 1992 – 1995, the number of small spills (<5 bbl) was a much lower percent of the total spills reported. However, data points should never be arbitrarily removed from a model. Understanding what happened during these anomalous years could be an important component of understanding North Slope oil spill trends.

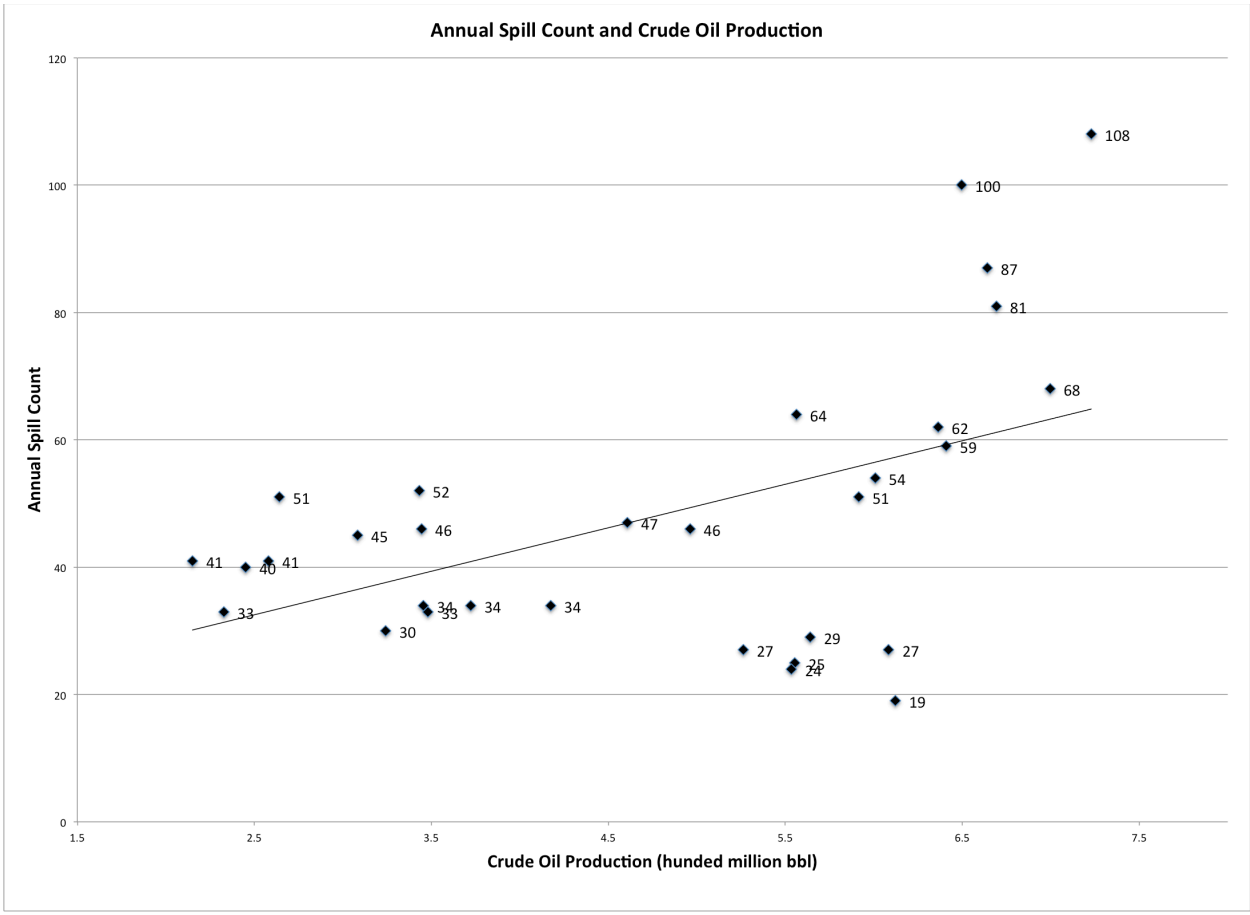

Figure 5.2 – Scatter plot of the annual number of spills versus crude oil production shown with linear regression line

A locally weighted scatterplot smoothing (LOWESS) non-parametric procedure was also fitted to the data and produced a model that had a better fit (Power =.989 and R^2= 0.58). This model suggests that spill rates remained constant until crude oil production reached 550 million bbl per year, after which the annual spill numbers increased with increased production. However, the sample size was inadequate to adopt this model.

5.1.5 Predicting Annual Spill Volume From Crude Oil Production Using Linear Regression

There is no trend in oil spill volume related to crude oil production, as shown in the graph in Figure 5.3. Neither linear nor multiple linear regression techniques resulted in a valid predictive model for spill volume.

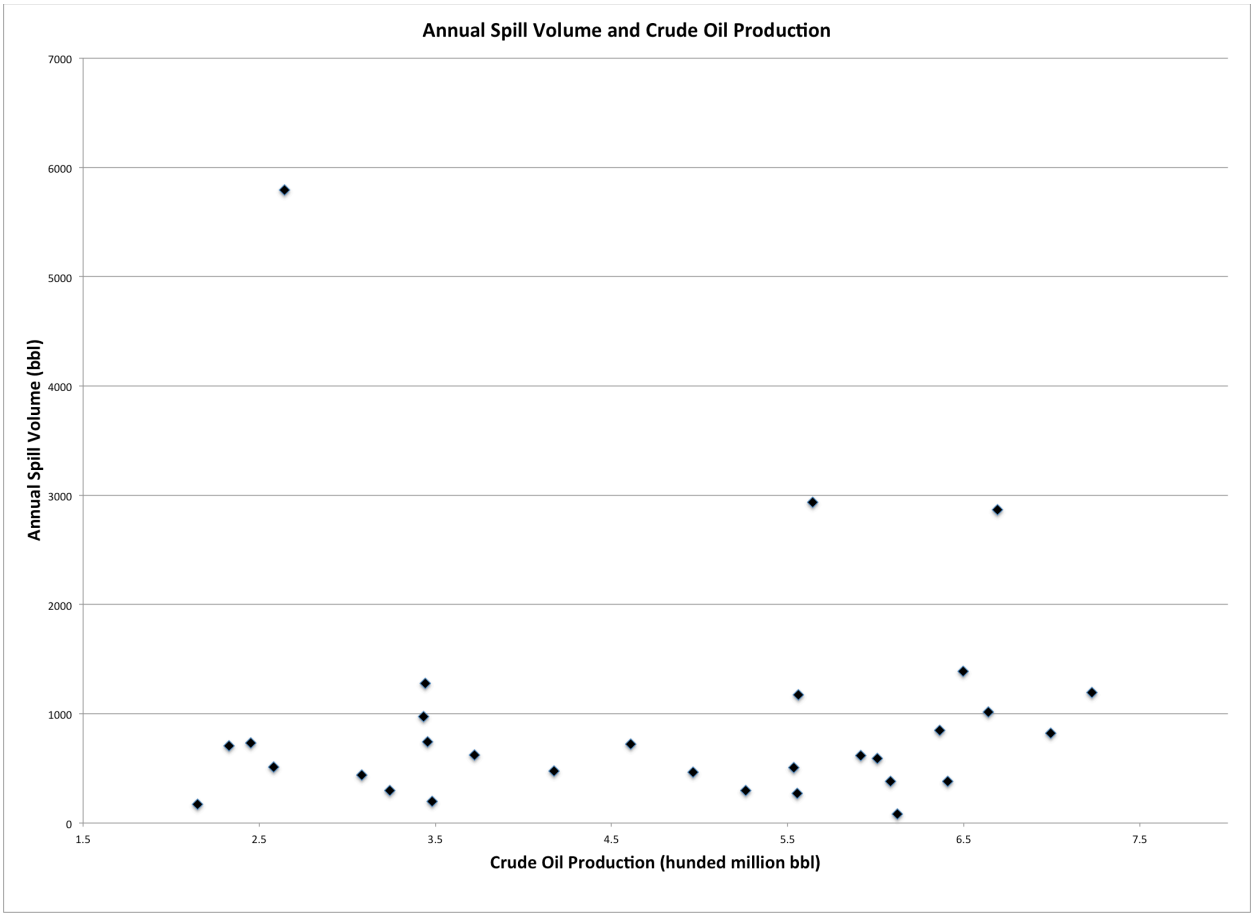

Figure 5.3 – Annual spill volume plotted against annual crude oil production

5.1.6 Predicting Annual Spill Numbers From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

A more involved mixed effect regression model, i.e., one involving both fixed and random effects, was developed to further explain the variability in the observed annual number and volume of spills per year. Since the mean number of spills per year differed by oil field, a model was sought to explain this difference based on field-specific characteristics. Mixed effect regression models provide an opportunity to determine whether production variables such as oil field age or pipeline length can be used to predict oil spill occurrence. The number of spills per year for each oil field was regressed against the following fixed effect production variables (the random effect was the oil field):

- Total annual crude oil production;
- Total annual produced water production;
- Total annual natural gas production;
- Total number of producing wells in a given year for each oil field;
- Total length of pipeline in service during a given year for a given oil field; and

- Number of years that a given oil field had been producing.[15]

Mixed regression models were run to assess whether these factors could predict number and/or volume of spills per year.

Three oil fields were included in this analysis as the random effects in the model. The three fields selected (Kuparuk River, Milne Point, and Prudhoe Bay) had the most complete data regarding pipeline lengths. The range of spills for each of these three oil fields is shown in Figure 5.4.

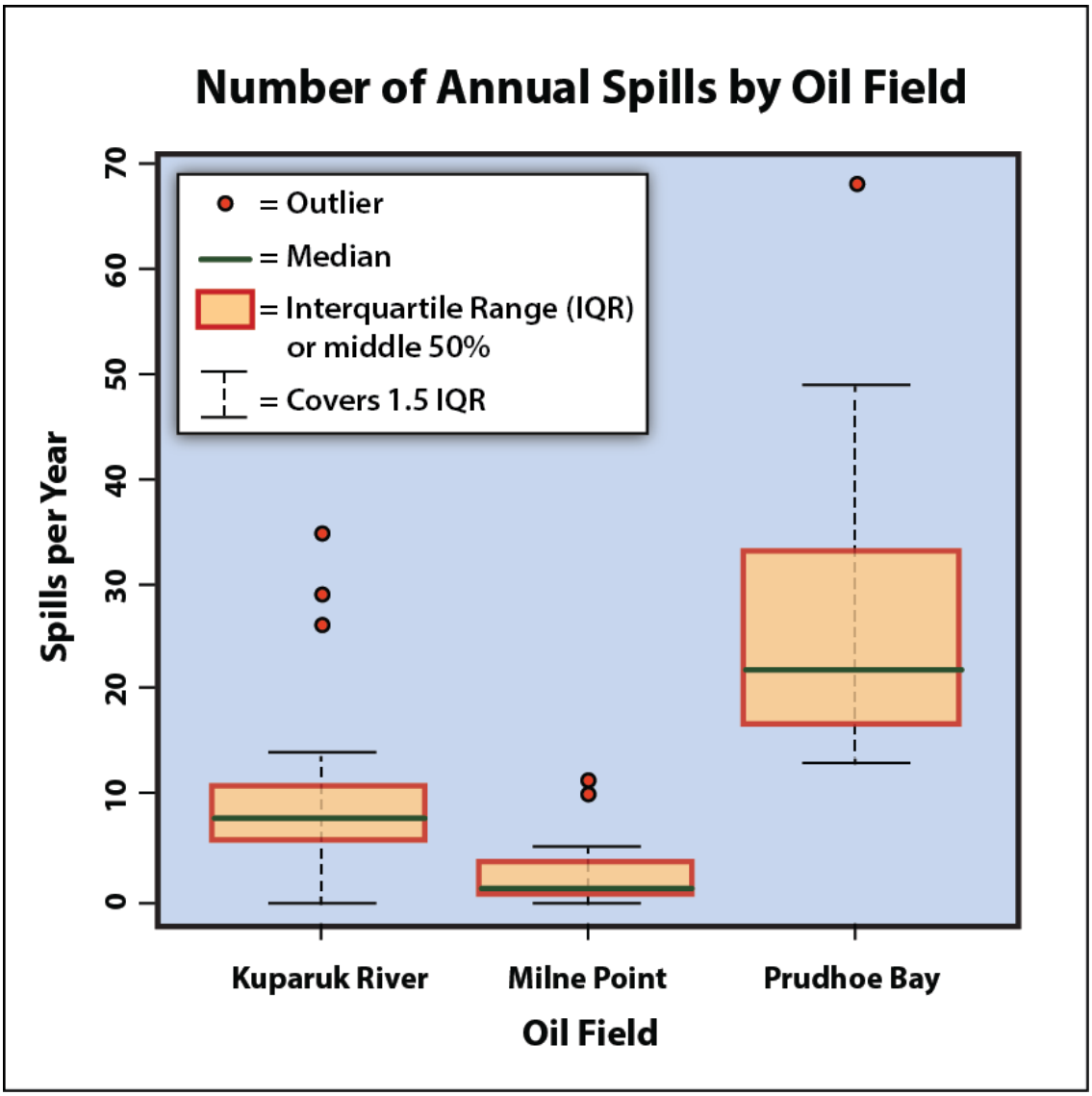

Figure 5.4 – Number of annual spills by oil field for the Kuparuk River, Milne Point, and Prudhoe Bay fields

For the three oil fields used in developing the mixed effect models, the occurrence of spills in each of these size ranges was shown in Table 5.2.

[15] Given that multi-collinearity proved to be such a problem in the multiple linear regressions, the decision was made that no two variables having a Pearson correlation coefficient greater than or equal to 0.9 would be considered in the model simultaneously. Thus, the inclusion of total length of pipelines precluded the simultaneous inclusion of produced water or producing wells.

The average values used to prorate total spills into predicted groups were 81.95% of spills assigned as smaller (Class D), 16.24% assigned to the middle size (Class C), and 1.80% assigned as larger spills (Class B).

Table 5.2 – Actual occurrence of spills at Kuparuk River, Milne Point, and Prudhoe Bay oil fields for Class B-D spills

Oil field	Total	Class D	Class C	Class B
bbl		>1 - ≤10	>10 - ≤200	>200 - ≤1,000
Kuparuk River n=	309	262	42	5
		84.79%	13.59%	1.62%
Milne Point n=	67	52	14	1
		77.61%	20.90%	1.49%
Prudhoe Bay n=	843	685	142	16
		81.26%	16.84%	1.90%
Total n=	1219	999	198	22
		81.95%	16.24%	1.80%

The model used the annual number of spills (N) as the dependent variable, with the following fixed effects: (1) crude oil production for each field (ProdOil), (2) length of pipeline in service per year (TotLength), and (3) years since the field began production (ProdYear). The oil field was used as the random effect. All of these variables were included in the initial model, but an ANOVA comparison based on the log likelihood statistic was used to reduce the model to one including only those variables which were significant at a 95% confidence level. When this was done, only crude oil production and length of pipeline per year remained in the model.

The predictive equation for this model was:

$$N_tot = 2.778 + 0.054(\text{ProdOil}) + 0.026(\text{TotLength})$$

The 95% confidence intervals were:

Intercept	(-0.0003, 5.5570)
ProdOil	(0.0438, 0.0650)
Tot Length	(0.0002, 0.0496)

When crude oil production and total pipeline length were included in the model simultaneously, every additional 100 million barrels of oil produced was associated with an increase in the number of spills on average by 5.4 spills per year. The 95% confidence interval was (4.4, 6.5). Every additional one million feet of pipe was associated with an increase in the number of expected spills by 2.6 spills per year. The 95% confidence interval was (0.2, 5.0). The model did not show any dependence on oil field, which means that it is valid for application across North Slope oil

fields. The model suggests that while there are large differences in the number of spills that occur each year at each oil field, these are largely related to differences in respective production volumes and total length of pipeline in operation per year.

Diagnostic tests focused on model residuals indicate that the model has a reasonably strong predictive value for annual number of spills. A series of test runs showed that the predicted values for yearly spills deviated from observed values by 7 - 8 spills per year. Based on the validation data, the 95% confidence interval for the expected root mean square error was (3.98, 12.16). The model was found to predict the number of spill occurrences fairly well. A second level of validation was performed by applying a model developed from Milne Point and Prudhoe Bay data to Kuparuk River data. Over the other years of the oil field's lifetime, the model appeared to predict the number of spills reasonably well with an error rate equal to or less than that for the fields based on which it was developed.

5.1.7 Predicting Annual Spill Volume From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

With a relationship established between the number of spills, production volume, and length of pipeline, a mixed effect regression model was applied to investigate whether similar relationships existed between spill volume and production variables. Since there was no strong correlation between spill number and volume in the Alaska North Slope spills dataset, the expectation was that, like the linear regression modeling discussed in Section 5.1.1, mixed effect regression modeling that predicts the number of spills may not be valid in predicting spill volumes.

After comparing a number of mixed regression modeling approaches, the best fit was found to be a model that considered only total length of pipeline as a fixed effect. However, unlike the models predicting spill number, the volumetric model showed a large variance between oil fields (16,943), meaning that it does not generalize well to other oil fields. The 5,054 bbl GC-2 pipeline release from Prudhoe Bay in March 2006 that exerted undue influence on the linear regression models also presents a problem for the mixed effect regression modeling. Even with the outlier removed, the model still shows a large variance between oil fields (12,686). Therefore, the mixed regression model was found to be unsuccessful in predicting spill volume based on production variables.

Validation of the mixed regression model via examination of model residuals confirmed that it has poor predictive value for annual spill volume. A second level of validation using Kuparuk River as a test field also showed that the model was not a valid predictor of spill volume.

5.2 Estimating Occurrence Rates by Oil Type

Linear regression and mixed effects regression analyses were used in an attempt to estimate oil spill occurrence rates (by number and volume) for crude oil and refined oil product types.

5.2.1 Predicting Annual Crude Oil Spill Numbers From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

A statistically significant model was found to predict the number of expected crude spills per year at a given field based upon yearly production volume and length of pipeline in service. The model was valid across oil fields.

The predictive equation for this model was:

$$N_crude = 0.659 + 0.025(\text{ProdOil}) + 0.018(\text{TotLength})$$

The 95% confidence intervals were:

Intercept	(-0.8027, 2.1212)
ProdOil	(0.0199, 0.0309)
Tot Length	(0.0057, 0.0310)

5.2.2 Predicting Annual Crude Oil Spill Volume From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

No statistically significant model was found relating the volume of crude spilled annually per field to any of the production variables. This was likely due to the effect of the statistically extreme outliers in the data for volume spilled.

5.2.3 Predicting Annual Refined Oil Spill Numbers From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

A statistically significant model was found to predict the number of expected refined product spills per year at a given field based upon production volume. The random effect of oil field was found to be highly significant. As this model cannot be applied across oil fields, separate equations were developed for the three oil fields considered.

The predictive equations developed for three oil fields were:

Kuparuk River:	$N_refine = 0.44 + 0.029(\text{ProdOil})$
Milne Point:	$N_refine = -0.77 + 0.029(\text{ProdOil})$
Prudhoe Bay:	$N_refine = 0.33 + 0.029(\text{ProdOil})$

The 95% confidence intervals were:

Intercept	(0.8269, 4.7168)
ProdOil	(0.0220, 0.0365)

5.2.4 Predicting Annual Refined Oil Spill Volume From Crude Oil Production and Pipeline Data Using Mixed Effects Regression

A statistically significant model for predicting the volume of refined oil spilled annually was found. The model applied across oil fields, and the significant predictive variable in the model was the volume of crude oil[16] produced. The equation of the model was:

$$Max_volume_refine = 3.77 + 0.481(\text{ProdOil})$$

The 95% confidence intervals were:

Intercept	(-25.6942, 33.2307)
ProdOil	(0.3607, 0.6014)

5.3 Occurrence Estimates by Spill Size

A series of analyses were conducted to determine whether the observed relationships between overall spill occurrences (by number and volume) and various production variables applied across the three spill size classes that were the focus of this study. For the three oil fields used in developing the mixed effect models, the occurrence of spills in each of these size ranges is shown in Table 5.3.

Table 5.3 – Spill occurrence by size class and oil field, 1980 – 2010

Oil field		Total	Class D	Class C	Class B
			>1 - ≤10 bbl	>10 - ≤200 bbl	>200 - ≤1,000 bbl
Kuparuk	**n=**	309	262	42	5
			84.79%	13.59%	1.62%
Milne Point	**n=**	67	52	14	1
			77.61%	20.90%	1.49%
Prudhoe Bay	**n=**	843	685	142	16
			81.26%	16.84%	1.90%
Total	**n=**	**1219**	**999**	**198**	**22**
			81.95%	16.24%	1.80%

5.3.1 Class D Spills (>1 bbl, ≤10 bbl)

A simple linear regression was applied to Class D spill data. Produced oil was found to be the significant variable, with a highly significant relationship to the number of Class D spills each year.

The predictive equation for this model was:

[16] Note that ProdOil does not contain Natural Gas Liquids.

$$N_sm = 13.115 + 0.055(\text{ProdOil})$$

This model was found to be highly significant, $F(1, 29) = 7.98$, $p = 0.008$. The R^2 of 0.22 suggest it was a moderately well-fitted model. Power for this model was an acceptable 0.81. The 95% confidence intervals were:

Intercept	(-7.062, 33.2929)
ProdOil	(0.015, 0.0954)

On average, every 100 million barrel increase in oil production was associated with an increase in the expected number of Class D oil spills of 5.5 spills per year. The 95% confidence interval on the intercept falls into the negative region, suggesting that a no intercept model might be appropriate. However, to be consistent throughout this work the intercept has been left in the model.

Outliers once again came into play. As previously noted, there are anomalies in the number of Class D spills reported during the late 1980s and early 1990s. An unusually high number of spills exists in the data for 1985-1988, with an unusually low number during the early 1990s. The high number of spills in the late 1980s is attributed to unusually high production volumes.

A mixed regression was run for Class D spills categorized by oil field to assess whether the best mixed regression model for predicting the number of Class D spills would include the same significant variables as the simple linear regression model and to verify that the model could be generalized to other oil fields. The model selected included both yearly volume of oil produced and total length of pipeline in service. The fixed effect of oil production volume was found to be on the same order of magnitude as the simple linear regression, but slightly different. The mixed regression model predicts 0.045 spills for one million barrels of oil produced (compared to 0.055 for linear regression model). However, the mixed regression model shows an increase of 0.021 spills for every additional 10,000 linear feet of pipeline. The accuracy of this model decreases with increasing oil field size.

The best-fit model for estimating the number of Class D spills was a simple linear regression model based on the volume of oil produced.

Multiple linear regression was also applied to Class D spills to explore the relationships between *volume* spilled and the independent variables of total oil produced, total water produced, and total number of wells in production. Because of problems with multi-collinearity, only the total oil produced variable was included in final modeling. A multiple linear regression model for Class D spill volume based on total oil production proved to have adequate predictive power. The model has an R^2 of 0.27 indicating that it explains about 27% of the observed variability in the volume of oil spilled in small spills each year. Power for the model was quite high at 0.90. It showed that on average, every 10 million barrel

increase in produced oil was associated with an average increase in the yearly volume spilled by 1.87 bbl per year with a 95% confidence interval of 0.069 and 0.304.

A mixed regression model was applied to Class D spills. A model with fixed effects for volume oil produced, pipeline length, and oil field age proved to be more accurate for predicting Class D spill volumes than a model focused on all spill sizes, and it could be generalized to all oil fields. The model showed that for every 10 million barrel increase in produced oil, the expected value of maximum spilled volume increases by 1.4 bbl per year when controlling for years of production and total pipe length. For every additional 10 years that a field has been in service, the expected value of spilled oil volume decreases by 8.3 bbl per year when controlling for produced oil and pipe length. For every 100,000-foot increase in pipe length, the expected value of spill volume increases by 1.5 bbl when controlling for produced oil and years of production.

5.3.2 Class C Spills (>10 bbl, ≤200 bbl)

A multiple linear regression was run to consider whether the *number* of Class C spills was significantly related to production variables. The volume of produced water was found to be the most significant variable that could be used to predict the number of Class C spills.

The predictive equation for this model was:

$$N_med = 11.515 - 0.007\ (\text{ProdWater})$$

This model was found to be highly significant, $F(1, 29) = 9.181$, $p = 0.005$. The R^2 of 0.24 suggests it explains more than 20% of the observed variability in the number of Class C spills. Power for the model was high at 0.86.

The 95% confidence intervals were:

Intercept	(8.621, 14.409)
ProdWater	(-0.012 -0.002)

The model predicts that, on average, every one billion barrel increase in produced water was associated, on average, with decrease in the number of spills by eight spills per year.

Significance does not imply cause. Produced water was highly correlated with spill year, so it is possible that there is some underlying time dependent factor that was ultimately responsible for the observed number of Class C spills. In fact, because the number of Class C spills has declined steadily over time, any of the independent variables modeled may have simply been acting as a substitute for time.

A mixed regression was run for Class C spills categorized by oil field to assess whether the best mixed regression model for predicting the number of Class C spills would include the same significant variables as simple

regression, to verify that the model could be generalized to other oil fields, and to allow consideration of the variables pipe length and how long the oil field had been in service.

The best mixed regression model for determining the number of Class C spills was based on the amount of produced oil. The model appears to be generally applicable across oil fields, with some caution. The variance between the fields was not zero, and thus each oil field has a different intercept. The smallest field, Milne Point, has an intercept of 0.58, and the largest field has an intercept of 1.60. This difference of one spill was not large. Therefore, if done with some caution, the model still appears to have the potential to be generalized to other fields. Based on the mixed regression model, every one billion barrel increase in oil production was associated, on average, with an increase in the number of spills of 8 spills per year. The reliability of the model decreases as the size of the oil field increases, for reasons that are not well understood. However, overall the mixed regression analysis provides a strong predictive model for the number of Class C spills based on the volume of oil production.

No models were found that could reliably predict the *volume* of oil spilled from Class C spills. No variables were found to correlate strongly to Class C spill volumes, and no models were found to have sufficient predictive power. An alternate approach to predicting the volume of Class C spills was to first predict the expected number of spills, and then to multiply this by the mean volume per spill in this size range, 44.52 bbl. This method was found to perform as well as the regression models that were tested. In the interest of simplicity, it is recommended that this latter approach be used.

5.3.3 Class B Spills (>200 bbl, ≤1,000 bbl)

Multiple linear regression and mixed regression models were run to consider whether the *number* of Class B spills was significantly related to production variables. No valid model could be developed. Class B spills appear to occur randomly and cannot be predicted reliably from the operating variables considered in this study. There were no Class B spills recorded for half of the years in the dataset.

To determine whether a model could be used to estimate the *volume* of oil spilled from Class B spills, multiple linear regression and mixed regression models were applied. Again, no model was found to fit the variables. A simpler estimating method was to use the historical spill frequencies for each oil field to estimate large spill return rates. This method predicts that, on average, Prudhoe Bay experiences a large spill once every two years, Kuparuk River experiences one every six years, and Milne Point experiences one every 25 years.

5.3.4 Occurrence Estimation for Spills Equal or Greater than 500 bbl

Ten spills greater than or equal to 500 bbl have been reported in the history of the North Slope oil fields.[17] The subset of these spills across all years (1971 - 2011) was examined, and is summarized in Table 5.4 below. Two of these spills were refined product and both of these occurred in the 1970s. Eight of the spills were crude oil, and all of these occurred after 1980. Of the eight crude spills, five occurred in production or processing facilities and three occurred in pipelines. The time interval between these large spills ranged from less than one month to 16 years. No time pattern was observed.

An estimate of spill occurrence was developed based on total cumulative crude production (as of the end of the month in which each spill occurred). By the end of 2010, there had been eight crude oil spills of volume greater than or equal to 500 bbl, and 15.82 billion bbl of crude had been produced. This gives a rate of approximately one crude oil spill greater than or equal to 500 bbl per every two billion barrels of produced oil over the lifetime of the Alaska North Slope through 2010. A reasonable estimate would be for one large spill per every 1.5 to 2 billion bbl of crude oil produced.

Table 5.4 – All Alaska North Slope spills ≥500 bbl (June 1971 – September 2011)

Spill Date	Volume Released	Substance Type	Cum Total Produced (billion bbl)	Oil Field	Facility Type	Months Since Last
6/3/1971	1,071.43	refined	n/a	Prudhoe Bay	other	
7/16/1973	952.38	refined	n/a	unknown	exploration	25
7/28/1989	925.00	crude	7.03	Milne Point	production	195
8/25/1989	600.00	crude	7.09	Kuparuk River	pipeline	0
12/10/1990	600.00	crude	7.95	Prudhoe Bay	production	15
8/17/1993	675.00	crude	9.58	Kuparuk River	production	32
9/26/1993	650.12	crude	9.62	Prudhoe Bay	production	1
8/21/2000	715.00	crude	12.82	Prudhoe Bay	production	84
2/19/2001	607.14	crude	12.99	Prudhoe Bay	pipeline	6
3/2/2006	5,053.62	crude	14.68	Prudhoe Bay	pipeline	61
12/31/2010			15.82			

[17] These 10 spills do not include spills on the Alaska North Slope from the construction of TAPS.

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6 CONCLUSIONS

6.1 Limitations and Challenges of Occurrence Models

As with all regression analyses, these models do not confirm that the relationships noted were causal, merely that they were strong enough that they were not likely to have occurred by chance. It was always possible that another variable, not captured in the model, was really the underlying cause that may be responsible for two or more variables changing in a significant manner. Caution should be used when applying statistical models for predictions in dissimilar circumstances. While these occurrence models performed adequately for predicting spill numbers in similar oil fields during a similar timeframe (see Section 5.1.6), using them to predict spills from other geographic locations or in timeframes where technology or industry practices differ could lead to predictions outside the confidence intervals.

Other factors besides oil production volume and pipeline length contribute to oil spill occurrence rates. For example, because some spills are caused by human error, the number of work hours by people employed in the industry could be related to spill occurrence. Spill size could also be a function of the time it takes to detect and stop a leak.

It will always be challenging to model oil spill occurrences because of the changes in reporting standards and compliance, and the changes in best practices, experience, or technology, utilized by the oil production industry. Given the efforts of regulators and industry to reduce the number and size of spills through prevention practices, these occurrence estimation models may over predict future spills.

6.2 Trends in Spill Data

Several trends are observed in the occurrence of past spills on the Alaska North Slope that may inform future estimates.

- Spill size is independent of oil field.
- Spill size is highly dependent upon facility type, attributed cause, and substance spilled.
- Monthly spill reports cycle annually, with the highest number of reported spills occurring in June each year. This might be explained by the increased light and activity at that time of year increasing the likelihood of leak detection.

6.3 Occurrence Estimates by Spill Number

A variety of regression models were applied to explore the most accurate predictive approaches that could be used to estimate the number of spills based on various production variables. In some cases, strong predictive models were identified. In others, simpler estimating methods proved as accurate as regression modeling.

While several predictive models were developed for overall spill occurrence rates, there were challenges when similar approaches were applied to size category subsets. The best model for predicting the *total number of spills* was a linear regression based upon volume of oil produced and total length of pipeline for a given oil field. The model equation was:

$$N_tot = 2.778+0.054*\text{ProdOil} + 0.026*\text{TotLength}$$

When spills were categorized by size, a mixed effect regression model was developed for Class D (smallest) spills, which showed strong applicability across oil fields due to the fact that the random effect of oil field was small. The model resembles the model for all spills.

$$N_sm = 2.294 + 0.045*\text{ProdOil} + 0.021*\text{TotLength}$$

For Class C spills, a model valid at the 95% confidence level was obtained, but it did not show equal variance across oil fields and therefore was concluded to be field-specific with each oil field having a different intercept. No model valid at 95% confidence was found for predicting the annual occurrence rate of Class B (large) spills.

The recommended model for providing an estimate of the expected number of spills for a given oil field is one in which the total number of spills is estimated using the overall model in which oil field production and estimated pipe length are considered. The number estimated in each size range is computed as the total number of spills multiplied by the historic rates pertaining to size. The average rates used to prorate total spills into predicted groups were 81.95% of spills assigned as Class D, 16.24% assigned to Class C, and 1.80% assigned as Class B.

The performance of spill class size regression models was compared with a simpler strategy of prorating spills into size groups based upon historical rates. The two approaches were compared with several different statistical tests, and found to be basically equivalent in their predictive powers. Therefore, there does not appear to be any strong advantage to using the individual regression models to estimate the number of spills expected in each size category.

6.4 Occurrence Estimates by Spill Volume

No adequate models were identified for predicting spill volumes. Several large outlier spills in the dataset exerted undue influence in the regression process, making it impossible to develop valid models for spill estimates by volume. The two largest outliers, and the only spills in the dataset over 1,000 bbl, were a refined product spill in 1971 and a crude oil spill in 2006. However, even for smaller spill size classes (Classes C and D) where outlier spills were not an issue, volumetric models still proved challenging because of the high variability in the data.

The recommended approach to estimating annual spill volumes was by first estimating the expected number of spills and then multiplying this estimate by the average spill size for the size category. The average spill sizes used to prorate total volume were 3.2 bbl for Class D, 44.5 bbl for Class C, and 424.9 bbl for Class B.

6.5 Occurrence Estimates for Spills Equal or Greater than 500 bbl

Spills of 500 bbl or larger are rare on the Alaska North Slope and appear to be random events with respect to crude oil production volume. The best approach to estimating their occurrence was a simple return rate that predicts between zero and two spills of more than 500 bbl will occur for every one billion barrels of production.

6.5 Recommendations

Occurrence estimates might be improved by considering more independent variables. Many oil spills are the result of human error, which is likely a function of the number of humans interaction with oil carrying devices, so considering the number of man-days worked during a given year may prove a valuable predictor of the number of spills. Also the volume of refined product utilized to construct and operate the oil production infrastructure might be a better predictor of refined oil spill than total oil production.

Most crude oil spills are the result of the loss-of-integrity of some portion of the oil production infrastructure. Examining the spill record for an individual facility of the infrastructure (e.g. pipeline, tank, or processing plant) and then comparing similar facilities to establish occurrence rates by facility type may provide additional insight into occurrence rates.

This and other oil spill rate studies are consistently limited by data quality. Reporting standards change over time and some data on potential independent variables are not recorded. Perhaps considering future data needs during the permitting phase of an oil and gas production project could lead to permit stipulations that result in better data sets for future analyses.

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8 APPENDICES

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Appendix A: Collated Oil Spill Dataset

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Appendix A: Oil Spill Data

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1	06/03/71	1071.43	1071.43	A	refined:other	Prudhoe Bay	vehicle	unknown	Human Error: Other
2	01/05/72	357.14	476.19	B	refined:diesel/heating oil	Prudhoe Bay	support	land:unknown	Human Error: Overfill
3	06/10/72	4.76	4.76	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Overpressure
4	04/16/73	101.48	101.48	C	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Other
5	06/14/73	1.19	1.43	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Overfill
6	07/16/73	952.38	952.38	B	refined:diesel/heating oil	unknown	exploration	land:tundra water:unfrozen	Unknown
7	11/27/74	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
8	06/29/75	52.38	52.38	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
9	10/06/75	2.38	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
10	02/20/76	70	70	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
11	03/19/76	6	6	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
12	06/25/77	7	7	D	crude oil	unknown	production	land:gravel	Human Error: Overfill
13	06/25/77	7	7	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
14	07/19/77	5	5	D	crude oil	Prudhoe Bay	production	unknown	Unknown
15	07/25/77	4.4	4.4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
16	08/03/77	3.14	3.14	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
17	10/21/77	11.98	11.98	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
18	11/10/77	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
19	11/17/77	20	20	C	crude oil	Prudhoe Bay	production	unknown	Unknown
20	11/26/77	4.72	4.72	D	refined:diesel/heating oil	Milne Point	production	unknown	Human Error: Other
21	12/04/77	3.77	3.77	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
22	01/18/78	2.52	2.52	D	refined:gasoline	Prudhoe Bay	support	unknown	Human Error: Overfill
23	01/31/78	9.43	9.43	D	refined:diesel/heating oil	unknown	production	land:gravel	Mechanical Failure: Other
24	02/03/78	7.55	7.55	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
25	02/19/78	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
26	02/25/78	3.14	3.14	D	crude oil	Prudhoe Bay	production	unknown	Unknown
27	03/07/78	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
28	03/18/78	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
29	04/17/78	1.26	4	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
30	04/21/78	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
31	04/27/78	2.38	9.43	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Overfill
32	05/01/78	5.03	5.03	D	crude oil	Prudhoe Bay	production	unknown	Unknown
33	05/01/78	3.14	3.14	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
34	05/15/78	3.14	3.14	D	refined:diesel/heating oil	unknown	support	unknown	Human Error: Overfill
35	06/09/78	1.26	1.26	D	crude oil	Milne Point	production	unknown	Mechanical Failure: Overpressure
36	06/21/78	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Unknown
37	06/28/78	15	15	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
38	07/09/78	6.29	6.29	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Unknown
39	08/03/78	1.26	1.26	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
40	08/05/78	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
41	08/10/78	6.29	6.29	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
42	08/22/78	5	5	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
43	11/17/78	1.31	1.31	D	crude oil	Prudhoe Bay	production	unknown	Unknown
44	12/04/78	7.55	7.55	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
45	12/05/78	2.52	2.52	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
46	01/15/79	8.81	8.81	D	crude oil	Prudhoe Bay	production	unknown	Unknown
47	02/11/79	23.81	23.81	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
48	02/14/79	4.4	4.4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
49	02/23/79	1.57	1.57	D	refined:diesel mixture	Prudhoe Bay	vehicle	unknown	Human Error: Vehicle Accidents
50	03/12/79	1.2	1.2	D	refined:hydraulic	Prudhoe Bay	vehicle	unknown	Human Error: Other
51	03/25/79	3	3	D	crude oil	Prudhoe Bay	production	unknown	Unknown
52	04/07/79	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
53	04/10/79	3.14	3.14	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
54	04/22/79	1.89	1.89	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
55	04/29/79	3.14	3.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
56	05/12/79	3.14	3.14	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
57	05/26/79	1.26	1.26	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
58	06/28/79	6	6	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
59	06/29/79	1.9	1.9	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
60	07/04/79	10	10	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
61	07/07/79	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
62	07/09/79	1.26	1.26	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
63	07/14/79	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Unknown
64	07/26/79	1.69	1.69	D	crude oil	Prudhoe Bay	production	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
65	08/11/79	9	9	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
66	08/29/79	5	5	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
67	09/02/79	1.89	1.89	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
68	09/04/79	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
69	09/25/79	6	6	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
70	11/09/79	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
71	11/11/79	3	3	D	crude oil	Prudhoe Bay	production	unknown	Unknown
72	01/03/80	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
73	01/04/80	45	45	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
74	03/20/80	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
75	04/06/80	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
76	04/29/80	1.19	1.19	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
77	05/07/80	4.76	4.76	D	crude oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
78	06/04/80	10	10	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
79	06/04/80	10	10	D	crude oil	Prudhoe Bay	production	unknown	Unknown
80	06/05/80	5	5	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
81	06/18/80	1.19	1.19	D	crude mixture	Prudhoe Bay	production	unknown	Unknown
82	06/19/80	3	3	D	crude oil	Prudhoe Bay	production	unknown	Unknown
83	07/01/80	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
84	08/08/80	5	5	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
85	08/22/80	6	6	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
86	08/23/80	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
87	09/03/80	20	20	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
88	10/23/80	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
89	10/31/80	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
90	11/07/80	1.19	1.79	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Unknown
91	11/11/80	15	15	C	refined:oil mud	Kuparuk River	production	unknown	Mechanical Failure: Other
92	11/16/80	4.76	4.76	D	refined:gasoline	unknown	support	unknown	Unknown
93	11/21/80	102	102	C	refined:diesel/heating oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
94	12/06/80	1.79	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Corrosion
95	12/18/80	6	6	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
96	12/30/80	2	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
97	01/12/81	4.76	5	D	crude oil	Prudhoe Bay	production	unknown	Unknown
98	01/14/81	11.9	23.81	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
99	01/19/81	9.52	10	D	refined:oil mud	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
100	01/20/81	9.52	10	D	crude oil	Prudhoe Bay	production	unknown	Unknown
101	01/21/81	1.9	2	D	refined:other	Prudhoe Bay	production	unknown	Unknown
102	01/25/81	4	4	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
103	02/06/81	11.9	22.14	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Vehicle Accidents
104	02/18/81	16.67	16.67	C	refined:diesel/heating oil	unknown	support	unknown	Unknown
105	02/19/81	1.79	1.79	D	refined:other	unknown	unknown	unknown	Unknown
106	02/23/81	1.9	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
107	03/19/81	4.76	4.76	D	refined:other	Prudhoe Bay	production	unknown	Unknown
108	03/21/81	0.95	1.19	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
109	04/03/81	2	3	D	refined:oil mud	Prudhoe Bay	production	unknown	Human Error: Overfill
110	04/09/81	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
111	04/13/81	0.6	1.43	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Vehicle Accidents
112	04/16/81	1.43	1.43	D	refined:other	unknown	support	unknown	Unknown
113	04/24/81	101.95	101.95	C	refined:gasoline	Prudhoe Bay	production	land:gravel	Human Error: Overfill
114	04/25/81	2.86	2.86	D	refined:oil mud	Prudhoe Bay	production	unknown	Human Error: Overfill
115	04/25/81	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
117	04/26/81	2.38	10	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
118	04/26/81	14.29	14.29	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
119	04/29/81	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
120	05/01/81	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
121	05/04/81	14.29	14.29	C	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Overfill
122	05/08/81	1	2	D	refined:oil mud	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
123	05/15/81	1.19	1.19	D	refined:other	Prudhoe Bay	support	unknown	Human Error: Other
124	05/21/81	0.95	1.19	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other
125	05/27/81	0.48	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
126	05/30/81	2.98	2.98	D	crude oil	Prudhoe Bay	production	unknown	Unknown
127	05/31/81	0.95	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
128	06/07/81	2.38	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
129	06/08/81	71.43	71.43	C	refined:hydraulic	unknown	exploration	unknown	Unknown
130	06/08/81	23.81	23.81	C	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
131	06/10/81	2.12	2.12	D	crude mixture	unknown	unknown	unknown	Unknown
132	06/11/81	23.81	23.81	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
133	06/21/81	2.38	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
134	06/22/81	0.95	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
135	06/25/81	3	3	D	crude oil	Kuparuk River	production	unknown	Unknown
136	07/24/81	2.02	2.02	D	refined:diesel/heating oil	unknown	support	land:gravel	Human Error: Overfill
137	08/04/81	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
138	08/07/81	21.43	23.81	C	refined:diesel/heating oil	unknown	support	unknown	Unknown
139	08/09/81	40	40	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Other
140	08/10/81	21.43	21.43	C	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
141	08/19/81	1.55	1.55	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
142	08/22/81	428.57	450	B	refined:diesel/heating oil	Prudhoe Bay	support	land:containment	Mechanical Failure: Other
144	09/04/81	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
145	09/04/81	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
146	09/09/81	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
147	10/06/81	47.62	59.52	C	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
148	10/26/81	9.52	10	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Overpressure
149	10/29/81	1.31	1.31	D	refined:other	unknown	exploration	unknown	Unknown
150	11/05/81	0.48	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
151	11/05/81	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
152	11/13/81	4	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
153	11/15/81	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
154	11/25/81	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
155	12/01/81	6	7	D	refined:diesel/heating oil	Milne Point	production	unknown	Unknown
156	12/02/81	47.52	47.52	C	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
157	12/06/81	23.81	23.81	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Other
158	12/07/81	1.67	1.67	D	refined:hydraulic	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
159	12/10/81	1.43	1.43	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
160	12/19/81	1	2	D	crude oil	Prudhoe Bay	production	unknown	Unknown
161	12/23/81	50	50	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
162	12/30/81	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
163	01/13/82	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Unknown
164	01/20/82	1.43	1.67	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
165	01/20/82	2	2	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
166	02/13/82	11.9	11.9	C	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Valve/Seal
167	02/27/82	1.62	1.62	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
168	03/04/82	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
169	03/07/82	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
170	03/08/82	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
171	03/14/82	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
172	03/23/82	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
173	04/02/82	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
174	04/02/82	2	2	D	crude oil	Prudhoe Bay	production	unknown	Unknown
175	04/14/82	3	3	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Vehicle Accidents
176	04/15/82	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
177	04/30/82	60	60	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
178	05/12/82	42.86	42.86	C	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
179	05/14/82	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
180	05/31/82	4.76	4.76	D	refined:diesel/heating oil	unknown	support	land:unknown	Human Error: Unknown
181	06/03/82	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
182	06/07/82	3	3	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
183	06/17/82	1.43	1.43	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
184	06/19/82	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
185	06/22/82	3.1	3.1	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
186	06/24/82	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
187	06/26/82	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
188	07/06/82	1.9	1.9	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Other
189	08/09/82	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
190	08/09/82	2.86	2.86	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
191	08/13/82	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Mechanical Failure: Valve/Seal
192	08/15/82	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
193	08/20/82	2.86	2.86	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
194	08/23/82	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
195	09/27/82	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
196	10/17/82	25	25	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
197	10/18/82	4.76	4.76	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
198	10/26/82	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Mechanical Failure: Other
199	10/31/82	150	200	C	refined:diesel/heating oil	Prudhoe Bay	production	land:containment	Human Error: Overfill
200	11/01/82	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
201	11/04/82	30	30	C	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Valve/Seal
202	11/07/82	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
203	11/09/82	25	25	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
204	11/10/82	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
205	11/15/82	1.79	1.79	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
206	11/18/82	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Other
207	11/21/82	45	45	C	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Other
208	11/22/82	2	2	D	crude oil	Prudhoe Bay	production	unknown	Unknown
209	12/03/82	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
210	12/04/82	5.95	5.95	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
211	12/12/82	25	25	C	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
212	12/23/82	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
213	12/27/82	15	15	C	crude oil	Prudhoe Bay	production	land:gravel	Unknown
214	01/27/83	1	10	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
215	01/28/83	62	62	C	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Overfill
216	02/09/83	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
217	03/31/83	54.76	54.76	C	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Unknown
218	04/24/83	3.57	3.57	D	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Other
219	05/12/83	23.81	23.81	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
220	05/16/83	1.07	1.07	D	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Other
221	05/17/83	1.31	1.31	D	refined:hydraulic	Kuparuk River	support	unknown	Mechanical Failure: Other
222	05/18/83	1.43	1.43	D	refined:other	unknown	vehicle	land:tundra	Human Error: Vehicle Accidents
223	05/25/83	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
224	05/29/83	5.95	5.95	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
225	06/02/83	2.38	2.38	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Human Error: Overfill
226	06/03/83	5	5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
227	06/09/83	2	4	D	crude oil	Prudhoe Bay	production	unknown	Unknown
228	06/12/83	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
229	06/13/83	47.62	47.62	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Unknown
230	06/13/83	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
231	06/19/83	114.29	114.29	C	refined:diesel/heating oil	unknown	unknown	land:gravel	Mechanical Failure: Unknown
232	06/25/83	1.19	1.19	D	crude oil	Kuparuk River	production	unknown	Unknown
233	06/25/83	5	5	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Unknown
234	07/05/83	2.38	11.9	C	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Unknown
235	07/08/83	1.43	1.79	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
236	07/08/83	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
237	07/10/83	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
238	07/10/83	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
239	07/11/83	5	5	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
240	07/13/83	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
241	07/28/83	1.79	1.79	D	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other
242	08/03/83	4	4	D	crude oil	Kuparuk River	production	land:gravel	Unknown
243	08/16/83	2	2	D	crude oil	Milne Point	production	land:gravel	Mechanical Failure: Valve/Seal
244	08/19/83	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
245	08/22/83	1.79	1.79	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Human Error: Overfill
246	08/22/83	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Unknown
247	08/25/83	2.38	2.38	D	refined:diesel/heating oil	unknown	unknown	water:unfrozen	Unknown
248	08/27/83	10	10	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
249	09/06/83	1.19	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
250	09/06/83	24	24	C	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Unknown
251	09/23/83	9.52	9.52	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Mechanical Failure: Valve/Seal
252	09/27/83	0.71	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
253	10/19/83	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
254	10/28/83	7	7	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
255	11/01/83	2	2.38	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
256	11/01/83	1.31	1.55	D	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Valve/Seal
258	11/02/83	15	15	C	refined:diesel/heating oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Valve/Seal
259	11/04/83	23.81	23.81	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
260	11/12/83	1.19	1.67	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
261	11/15/83	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
262	11/16/83	35	35	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
263	11/22/83	3	3	D	crude oil	Kuparuk River	production	unknown	Unknown
264	11/23/83	3.9	3.9	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Other
265	11/28/83	3.1	3.1	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Other
266	11/29/83	23	23	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
267	12/05/83	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Unknown
268	12/18/83	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
269	01/03/84	60	60	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
270	01/03/84	3.57	3.57	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
271	02/06/84	9.52	9.52	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
272	02/11/84	1.5	1.5	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
273	02/19/84	3	3	D	crude oil	unknown	production	unknown	Human Error: Other
274	03/04/84	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
275	03/04/84	6	6	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
276	03/12/84	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
277	03/17/84	38.1	38.1	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
278	04/08/84	10	10	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
279	04/13/84	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
280	05/18/84	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
281	05/24/84	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
282	06/10/84	3	3	D	crude mixture	unknown	production	unknown	Mechanical Failure: Other
283	06/11/84	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
284	06/14/84	5	5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
285	06/18/84	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Unknown
286	06/30/84	1.19	1.19	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
287	07/03/84	1.19	1.19	D	refined:other	Prudhoe Bay	support	land:gravel	Mechanical Failure: Valve/Seal
288	07/20/84	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Unknown
289	07/26/84	5	5	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
290	08/09/84	20	20	C	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
291	08/19/84	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
292	09/10/84	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
293	10/09/84	30	30	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
294	11/06/84	125	125	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
295	12/22/84	5	5	D	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Unknown
296	01/13/85	2.14	2.14	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
297	01/22/85	1.19	2.62	D	crude oil	Prudhoe Bay	production	unknown	Unknown
298	01/31/85	2.14	2.14	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
299	02/08/85	1.19	1.19	D	crude oil	unknown	vehicle	unknown	Human Error: Overfill
300	02/10/85	5	5	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
301	02/11/85	10.48	10.48	C	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
302	02/13/85	2.38	2.62	D	refined:diesel/heating oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Other
303	02/14/85	1.67	1.67	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Other
304	02/16/85	2.14	2.14	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
305	03/02/85	2	2	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
306	03/16/85	1.57	1.57	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
307	03/19/85	20	20	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
308	03/19/85	20	20.95	C	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
309	03/22/85	7.14	7.14	D	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Other
310	03/30/85	1.05	1.05	D	crude oil	unknown	production	unknown	Unknown
311	04/03/85	10.48	10.48	C	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Unknown
312	04/07/85	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
313	04/07/85	1.43	1.43	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
314	04/08/85	2.1	2.1	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
315	04/09/85	1.05	1.05	D	crude oil	unknown	production	unknown	Unknown
316	04/10/85	27	27	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
317	04/10/85	2	2.14	D	crude oil	Prudhoe Bay	production	land:unknown	Human Error: Other
318	04/18/85	1.19	1.9	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
319	04/22/85	5	5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
320	04/22/85	5.24	5.24	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
321	04/22/85	3.81	3.81	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
322	04/27/85	4.76	9.52	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Unknown
323	04/30/85	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Overfill
324	04/30/85	15	15	C	crude oil	Kuparuk River	production	unknown	Human Error: Other
325	04/30/85	5	5	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
326	05/03/85	5.95	5.95	D	crude oil	Prudhoe Bay	support	unknown	Human Error: Unknown
327	05/08/85	1.9	1.9	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
328	05/11/85	2.86	2.86	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
329	05/13/85	5	5.95	D	crude oil	unknown	pipeline	water:frozen	Mechanical Failure: Valve/Seal
330	05/13/85	2.98	2.98	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Valve/Seal
331	05/18/85	25	25	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
332	05/22/85	95.24	95.24	C	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
333	05/25/85	50	50	C	refined:diesel/heating oil	unknown	production	unknown	Human Error: Vehicle Accidents
334	05/31/85	1.19	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Other
335	06/02/85	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
336	06/02/85	23.81	23.81	C	crude oil	Prudhoe Bay	production	unknown	Unknown
337	06/02/85	238.1	238.1	B	crude oil	Prudhoe Bay	support	land:unknown	Mechanical Failure: Unknown
338	06/03/85	1.5	1.5	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
339	06/05/85	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Valve/Seal

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
340	06/17/85	0.95	1.19	D	refined:diesel/heating oil	Kuparuk River	unknown	unknown	Human Error: Overfill
341	06/18/85	3	3	D	refined:diesel/heating oil	Milne Point	production	unknown	Human Error: Overfill
342	06/30/85	0.95	1.19	D	refined:other	Prudhoe Bay	unknown	unknown	Mechanical Failure: Valve/Seal
343	07/02/85	1.43	1.43	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
344	07/12/85	20.24	20.24	C	refined:diesel/heating oil	Milne Point	production	land:gravel	Mechanical Failure: Other
345	07/15/85	2.02	2.02	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
346	07/17/85	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
347	07/17/85	4	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
348	07/19/85	1.19	1.19	D	refined:diesel mixture	unknown	unknown	land:gravel	Human Error: Other
349	07/22/85	5	5.95	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
350	07/23/85	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
351	08/01/85	1.07	1.07	D	refined:gasoline	unknown	unknown	land:gravel	Mechanical Failure: Valve/Seal
352	08/08/85	2.38	2.38	D	refined:other	Kuparuk River	support	land:gravel	Human Error: Overfill
353	08/17/85	2.38	2.38	D	refined:other	Milne Point	production	unknown	Human Error: Other
354	08/22/85	1.79	1.79	D	crude oil	Prudhoe Bay	production	land:tundra	Unknown
355	08/24/85	4.76	4.76	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other
356	08/31/85	5	5	D	refined:oil mud	Milne Point	production	unknown	Unknown
357	09/01/85	5	5	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
358	09/02/85	2	2	D	crude oil	Kuparuk River	production	land:gravel	Human Error: Overfill
359	09/02/85	4	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
360	09/06/85	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
361	09/15/85	4	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
362	09/19/85	15	15	C	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Valve/Seal
363	09/21/85	3	3	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Unknown
364	10/03/85	2	3	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Valve/Seal
365	10/05/85	2.98	2.98	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
366	10/05/85	2.02	3	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Valve/Seal
367	10/06/85	2	2	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Unknown
368	10/06/85	3	3	D	crude oil	Kuparuk River	production	land:gravel	Human Error: Other
369	10/12/85	1.43	14	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
370	11/02/85	0.6	1.19	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Human Error: Overfill
371	11/03/85	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
372	11/06/85	2.98	2.98	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
373	11/14/85	250	250	B	refined:gasoline	Prudhoe Bay	support	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
374	11/15/85	175	175	C	crude oil	Milne Point	production	land:containment	Mechanical Failure: Valve/Seal
375	11/18/85	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
376	11/21/85	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
377	11/24/85	5	7	D	refined:oil mud	Prudhoe Bay	production	land:gravel	Human Error: Overfill
378	11/25/85	10	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
379	11/27/85	1.19	1.43	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
380	11/29/85	1.31	1.31	D	refined:hydraulic	Prudhoe Bay	vehicle	unknown	Human Error: Other
381	12/01/85	1.31	1.31	D	refined:other	Prudhoe Bay	production	unknown	Unknown
382	12/03/85	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
383	12/05/85	5	5	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
384	12/06/85	44	44	C	crude oil	Kuparuk River	production	land:gravel	Human Error: Overfill
385	12/11/85	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	support	land:tundra	Human Error: Overfill
386	12/12/85	3	3	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
387	12/15/85	25	40	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
388	12/15/85	1.31	1.31	D	refined:hydraulic	Kuparuk River	production	unknown	Unknown
389	12/16/85	0.95	1.07	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
390	12/16/85	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
391	12/22/85	1.19	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
393	12/26/85	1.5	1.5	D	refined:diesel/heating oil	unknown	production	unknown	Human Error: Overfill
394	12/27/85	4.76	4.76	D	crude oil	Prudhoe Bay	production	land:tundra	Human Error: Other
395	12/28/85	30	30	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
396	12/29/85	1.19	1.19	D	crude oil	unknown	production	unknown	Mechanical Failure: Overpressure
397	01/02/86	4	40.21	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
398	01/03/86	2	3	D	crude oil	Kuparuk River	production	unknown	Unknown
399	01/04/86	1.19	1.19	D	refined:diesel/heating oil	Milne Point	vehicle	unknown	Human Error: Vehicle Accidents
400	01/08/86	118.02	118.02	C	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Overfill
401	01/11/86	1.9	1.9	D	crude oil	unknown	production	unknown	Unknown
402	01/13/86	1.9	1.9	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
403	01/17/86	5	5	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Unknown
404	01/21/86	2.38	2.38	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Human Error: Overfill
405	01/23/86	5	5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
406	01/30/86	3	3	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
407	02/02/86	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
408	02/14/86	7	7	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
409	02/15/86	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
410	02/17/86	7.5	7.5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
411	02/18/86	2	2	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
412	02/21/86	7.14	7.14	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
413	03/02/86	10	80.95	C	refined:diesel/heating oil	Prudhoe Bay	production	land:containment	Human Error: Other
414	03/02/86	4	4	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
415	03/10/86	9	10	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
416	03/10/86	3	3	D	refined:diesel/heating oil	unknown	production	unknown	Mechanical Failure: Unknown
417	03/10/86	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
418	03/12/86	2	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
419	03/15/86	3	3	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
420	03/18/86	1	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
421	03/20/86	2	2	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Other
422	03/27/86	6	6	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
423	03/28/86	7.31	7.31	D	refined:gasoline	Prudhoe Bay	production	unknown	Human Error: Other
424	04/02/86	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
425	04/05/86	47.62	50	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
426	04/07/86	16.67	19.05	C	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Other
427	04/09/86	2.5	2.5	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
428	04/10/86	4.76	4.76	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
429	04/11/86	3	3	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
430	04/20/86	2.55	2.55	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
431	04/22/86	4	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
432	04/23/86	47.62	47.62	C	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
433	04/29/86	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
434	05/01/86	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
435	05/11/86	2	6	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
436	05/21/86	5	5	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
437	05/25/86	5	5	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Mechanical Failure: Valve/Seal
438	05/26/86	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
439	05/27/86	5.95	5.95	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
440	05/30/86	2.38	3.57	D	refined:gasoline	Prudhoe Bay	production	unknown	Mechanical Failure: Other
441	05/31/86	3	3	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
442	06/04/86	2	2	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
443	06/07/86	2	2	D	refined:other	Prudhoe Bay	support	land:gravel	Human Error: Other
444	06/09/86	3	3	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Overpressure
445	06/10/86	3	5	D	crude oil	Prudhoe Bay	production	water:unknown	Mechanical Failure: Other
446	06/11/86	4	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
447	06/18/86	5	5	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
448	06/20/86	2	2	D	refined:other	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
449	06/27/86	11.9	11.9	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
450	06/29/86	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
451	07/06/86	3	3	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Overfill
452	07/06/86	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
453	07/15/86	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
454	07/17/86	1.43	1.43	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
455	07/24/86	1.31	5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
456	07/31/86	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
457	08/04/86	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Unknown
458	08/09/86	10	15	C	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
459	08/10/86	2	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
460	08/12/86	2	2	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
461	08/25/86	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
462	08/31/86	18	20	C	refined:oil mud	Endicott	production	land:gravel	Mechanical Failure: Other
463	09/01/86	2.5	2.5	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
464	09/09/86	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
465	09/15/86	20	20	C	crude oil	Milne Point	production	unknown	Human Error: Other
466	09/25/86	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
467	09/26/86	1.19	1.19	D	refined:gasoline	Prudhoe Bay	support	land:gravel	Mechanical Failure: Other
468	09/29/86	30	30	C	crude oil	Milne Point	production	unknown	Human Error: Unknown
469	10/07/86	2.12	2.12	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
470	10/16/86	100	100	C	refined:diesel/heating oil	Prudhoe Bay	support	land:unknown	Mechanical Failure: Other
471	10/22/86	2	2	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Valve/Seal
472	10/22/86	4	4	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
473	11/04/86	3	3	D	refined:oil mud	Prudhoe Bay	support	unknown	Mechanical Failure: Other
474	11/07/86	120	120	C	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
475	11/10/86	25	25	C	crude oil	Milne Point	production	unknown	Human Error: Other
476	11/11/86	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
477	11/23/86	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Vehicle Accidents
478	11/29/86	20	20	C	refined:oil mud	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
479	12/13/86	55	55	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
480	12/19/86	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
481	12/21/86	1.5	1.5	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
482	12/27/86	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
483	12/28/86	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
484	01/05/87	357.14	357.14	B	refined:diesel/heating oil	Prudhoe Bay	support	land:unknown	Human Error: Other
485	01/10/87	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
486	01/13/87	1.19	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
487	01/16/87	2.12	2.12	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
488	02/02/87	5	5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
489	02/09/87	1.5	1.5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
490	02/12/87	2.43	5.24	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
491	02/23/87	2	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
492	02/28/87	2	2	D	refined:diesel mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
493	03/04/87	2	3	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
494	03/06/87	4	5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
495	03/10/87	1.43	1.43	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
496	03/25/87	20	120	C	crude oil	Prudhoe Bay	production	unknown	Unknown
497	03/31/87	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
498	04/03/87	0.9	1.07	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
499	04/24/87	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	unknown	land:gravel	Human Error: Overfill
500	04/29/87	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Unknown
501	05/08/87	1.31	1.31	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Unknown
502	05/11/87	2	2	D	refined:diesel mixture	Prudhoe Bay	production	unknown	Human Error: Other
503	05/24/87	1.19	1.19	D	refined:hydraulic	Endicott	production	land:gravel	Mechanical Failure: Other
504	06/08/87	2.38	2.38	D	refined:diesel mixture	unknown	support	unknown	Unknown
505	06/14/87	1.19	1.19	D	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other
506	06/16/87	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
507	06/19/87	2	2	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
508	06/22/87	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
509	06/22/87	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
510	06/30/87	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
511	07/15/87	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
512	07/17/87	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
513	07/19/87	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
514	07/20/87	2.38	2.38	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
515	07/20/87	2.62	2.62	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
516	07/22/87	3	3	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
517	07/24/87	0.95	1.19	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
518	07/25/87	1.45	1.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
519	07/28/87	0.95	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
520	07/29/87	20	20	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
522	08/04/87	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Other
523	08/04/87	2	2	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Unknown
524	08/07/87	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Unknown
525	08/10/87	2.38	2.38	D	refined:other	unknown	support	unknown	Unknown
526	08/16/87	50	50	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
527	08/24/87	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
528	09/14/87	19.64	19.64	C	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
529	09/16/87	2.5	2.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
530	09/19/87	2	2	D	crude oil	unknown	pipeline	unknown	Mechanical Failure: Valve/Seal
531	09/19/87	5.95	10	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
532	09/20/87	60	60	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
533	09/22/87	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
534	09/27/87	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
535	09/28/87	3	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
536	10/01/87	2	2	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
537	10/03/87	0.83	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
538	10/09/87	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
539	10/10/87	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
540	10/11/87	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
541	10/13/87	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
542	10/14/87	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
543	10/15/87	6	6	D	refined:oil mud	Prudhoe Bay	production	unknown	Unknown
544	10/31/87	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
545	11/08/87	11.9	11.9	C	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
546	11/12/87	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
547	11/14/87	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
548	11/25/87	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
549	11/25/87	9.52	9.52	D	crude oil	unknown	production	unknown	Human Error: Overfill
550	11/26/87	1.9	1.9	D	crude mixture	Kuparuk River	production	unknown	Human Error: Other
551	12/01/87	7.14	7.14	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
552	12/30/87	9.5	9.5	D	refined:gasoline	unknown	production	unknown	Mechanical Failure: Other
553	01/20/88	10	12	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
554	01/21/88	10	10	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
555	01/25/88	1.5	1.5	D	crude mixture	Prudhoe Bay	production	unknown	Unknown
556	01/30/88	15	15	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
557	02/05/88	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
558	02/05/88	1.19	1.19	D	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Other
559	02/08/88	287.14	287.14	B	crude oil	Endicott	production	unknown	Unknown
560	02/12/88	25	25	C	crude oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Corrosion
561	02/14/88	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
562	02/14/88	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
563	02/19/88	1.9	1.9	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
564	02/27/88	1.07	1.07	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
565	02/28/88	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
566	03/06/88	2.38	2.62	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
567	03/07/88	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
568	03/17/88	5	5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
569	03/19/88	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
570	03/30/88	280.95	281	B	crude oil	Prudhoe Bay	pipeline	land:unknown	Mechanical Failure: Corrosion
571	04/01/88	2.5	2.5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
572	04/03/88	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Unknown
573	04/04/88	0.95	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
574	04/07/88	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
575	04/14/88	5	5	D	crude mixture	unknown	pipeline	unknown	Unknown
576	04/19/88	3.57	3.57	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Overfill
577	04/22/88	1.43	1.43	D	refined:diesel/heating oil	Endicott	production	land:gravel	Mechanical Failure: Other
578	04/24/88	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
579	04/24/88	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
580	05/02/88	15	20	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
581	05/03/88	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
582	05/07/88	1.9	1.9	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Other
583	05/15/88	1.07	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
584	05/16/88	2	2	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
585	05/17/88	1.43	1.43	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
586	05/21/88	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
587	05/23/88	1.9	1.9	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
588	06/01/88	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
589	06/05/88	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
590	06/09/88	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
591	06/11/88	5	5	D	crude oil	unknown	production	land:gravel	Human Error: Overfill
592	06/12/88	7.62	7.62	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
593	06/12/88	1.19	1.19	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
594	06/13/88	1.5	1.5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
595	06/16/88	1.19	1.19	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
596	06/19/88	7	7	D	crude oil	Prudhoe Bay	production	unknown	Unknown
597	06/19/88	2	2	D	crude oil	Kuparuk River	production	unknown	Unknown
598	06/21/88	3	3	D	crude mixture	Prudhoe Bay	support	unknown	Human Error: Vehicle Accidents
599	06/23/88	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
600	06/25/88	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
601	06/26/88	2	3	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Other
602	06/28/88	1.67	1.67	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
603	06/29/88	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
604	07/01/88	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
605	07/02/88	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
606	07/04/88	2	3.14	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
607	07/05/88	3	3	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
608	07/09/88	4	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
609	07/11/88	4.76	5.95	D	refined:other	unknown	unknown	unknown	Unknown
610	07/11/88	1.07	1.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
611	07/18/88	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
612	07/20/88	7.14	7.14	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
613	07/23/88	2.38	2.38	D	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
614	08/02/88	1.14	1.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
615	08/03/88	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
616	08/06/88	0.95	1.07	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
617	08/10/88	30	30	C	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
618	08/16/88	50	50	C	crude oil	Prudhoe Bay	production	unknown	Unknown
619	08/16/88	0.95	1.07	D	refined:hydraulic	unknown	support	land:gravel	Mechanical Failure: Other
620	08/20/88	2	2	D	crude mixture	Prudhoe Bay	production	unknown	Human Error: Other
621	08/23/88	4	5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
622	08/29/88	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
623	09/10/88	1.19	1.19	D	crude oil	Endicott	production	unknown	Unknown
624	09/10/88	30	30	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
625	09/11/88	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
626	09/15/88	7	7	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
627	09/30/88	10	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
629	10/01/88	7.62	9.52	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
630	10/10/88	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
631	10/13/88	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
632	10/13/88	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
633	10/15/88	6	6	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
634	10/17/88	2.17	2.17	D	refined:gasoline	Kuparuk River	unknown	unknown	Human Error: Overfill
635	10/19/88	4.76	4.76	D	refined:gasoline	Prudhoe Bay	production	unknown	Unknown
636	10/20/88	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
637	10/25/88	1.31	1.31	D	refined:diesel mixture	Kuparuk River	production	unknown	Unknown
638	10/25/88	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
639	10/26/88	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
640	10/29/88	71.24	71.24	C	crude oil	unknown	production	unknown	Human Error: Unknown
641	11/03/88	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	vehicle	land:gravel	Human Error: Overfill
642	11/04/88	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
643	11/06/88	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
644	11/06/88	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
645	11/11/88	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
646	11/11/88	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
647	11/12/88	1.79	1.79	D	refined:other	unknown	support	unknown	Unknown
648	11/18/88	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
649	11/22/88	30	30	C	crude oil	Endicott	production	unknown	Mechanical Failure: Other
650	11/28/88	1.79	2.02	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
651	12/01/88	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
652	12/04/88	2	2	D	crude oil	unknown	production	unknown	Human Error: Overfill
653	12/05/88	10	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
654	12/05/88	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
655	12/05/88	1.19	1.24	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
656	12/09/88	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Mechanical Failure: Other
657	12/19/88	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
658	12/22/88	4	4	D	crude oil	Prudhoe Bay	production	unknown	Unknown
659	12/26/88	8	8	D	crude oil	Kuparuk River	production	unknown	Unknown
660	12/26/88	4	4	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
661	12/29/88	2	60	C	refined:oil mud	Prudhoe Bay	production	unknown	Mechanical Failure: Other
662	01/03/89	3	3	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
663	01/08/89	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
664	01/18/89	2.38	2.38	D	refined:diesel/heating oil	unknown	production	unknown	Unknown
665	01/19/89	5	5	D	crude oil	Prudhoe Bay	production	unknown	Unknown
666	01/24/89	107.14	154.76	C	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Other
667	02/04/89	75	75	C	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
668	02/05/89	4.76	11.9	C	refined:diesel/heating oil	unknown	production	unknown	Mechanical Failure: Valve/Seal
669	02/06/89	1.19	1.19	D	refined:other	unknown	unknown	land:gravel	Human Error: Overfill
670	02/07/89	4.76	4.76	D	refined:diesel/heating oil	Kuparuk River	unknown	unknown	Human Error: Unknown
671	02/10/89	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
672	02/12/89	16.67	16.67	C	refined:diesel/heating oil	unknown	unknown	water:unknown	Unknown
673	02/27/89	3.57	3.57	D	crude oil	Prudhoe Bay	production	land:tundra	Unknown
674	03/04/89	7.14	7.14	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
675	03/07/89	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
676	03/08/89	1.43	1.43	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Human Error: Unknown
677	03/10/89	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
678	03/12/89	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
679	03/27/89	25	25	C	crude oil	Prudhoe Bay	production	unknown	Unknown
680	04/18/89	357.14	357.14	B	refined:diesel/heating oil	unknown	support	unknown	Unknown
681	04/21/89	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
682	04/22/89	4	4	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
683	05/01/89	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
684	05/03/89	1.43	1.43	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Human Error: Overfill
685	05/04/89	14.29	14.29	C	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
686	05/04/89	1.07	1.07	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
687	05/10/89	2.98	2.98	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
688	05/13/89	11.9	23.81	C	refined:gasoline	unknown	support	unknown	Mechanical Failure: Other
689	05/23/89	1.67	2.62	D	refined:hydraulic	unknown	vehicle	unknown	Human Error: Vehicle Accidents
690	05/27/89	2	2	D	refined:oil mud	Prudhoe Bay	production	unknown	Unknown
691	05/29/89	1.19	1.19	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
692	05/30/89	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
693	06/02/89	12.5	12.5	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
694	06/02/89	2	2	D	crude oil	Kuparuk River	production	land:containment	Mechanical Failure: Other
695	06/05/89	1.62	1.62	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
696	06/08/89	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Human Error: Other
697	06/19/89	2	2	D	refined:other	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
698	06/19/89	29.33	29.33	C	refined:diesel/heating oil	unknown	support	unknown	Human Error: Other
699	06/19/89	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
700	06/21/89	4.76	4.76	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
701	06/21/89	17.1	17.1	C	refined:other	unknown	unknown	unknown	Unknown
702	06/21/89	4	4	D	crude oil	Prudhoe Bay	production	unknown	Unknown
703	06/25/89	1.79	1.79	D	refined:diesel/heating oil	Kuparuk River	production	land:gravel	Human Error: Overfill
704	06/25/89	1.29	1.29	D	refined:hydraulic	Prudhoe Bay	support	land:gravel	Mechanical Failure: Other
705	07/02/89	1.5	1.5	D	refined:other	Prudhoe Bay	support	unknown	Human Error: Other
706	07/03/89	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
707	07/05/89	10	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
708	07/07/89	1.79	1.79	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
709	07/08/89	2.02	2.02	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
710	07/15/89	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	water:unknown	Mechanical Failure: Other
711	07/17/89	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
712	07/19/89	1.19	1.19	D	refined:diesel/heating oil	Milne Point	production	land:tundra	Mechanical Failure: Valve/Seal
713	07/28/89	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	support	land:gravel	Human Error: Other
714	07/28/89	425	925	B	crude oil	Milne Point	production	land:containment	Mechanical Failure: Other
715	07/29/89	1.19	1.19	D	refined:hydraulic	Milne Point	production	land:gravel	Mechanical Failure: Other
716	08/22/89	5	5	D	crude oil	Milne Point	production	land:gravel	Human Error: Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
717	08/24/89	4.29	4.29	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
719	08/25/89	510	600	B	crude oil	Kuparuk River	pipeline	land:tundra	Mechanical Failure: Corrosion
720	08/26/89	2	2	D	crude oil	Prudhoe Bay	production	land:gravel	Unknown
721	08/26/89	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
722	09/02/89	1.5	1.5	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
723	09/07/89	1.31	1.43	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Human Error: Vehicle Accidents
724	09/12/89	10	10	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
725	09/24/89	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
726	10/09/89	25	25	C	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Other
727	10/11/89	2	2	D	refined:oil mud	Prudhoe Bay	production	unknown	Unknown
728	10/16/89	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
729	11/01/89	3	3	D	crude oil	Endicott	production	unknown	Mechanical Failure: Unknown
730	11/06/89	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
731	11/08/89	170	265	B	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Other
732	11/18/89	2.38	2.38	D	refined:diesel/heating oil	Endicott	production	unknown	Unknown
733	11/24/89	1.07	1.07	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
734	11/24/89	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
735	11/24/89	0.95	1.19	D	refined:diesel/heating oil	Milne Point	production	unknown	Human Error: Overfill
736	11/25/89	50	50	C	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other
737	12/11/89	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
738	12/15/89	8	8	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
739	12/16/89	20	26.19	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
740	12/16/89	8	8	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Unknown
741	12/17/89	10	10	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
742	12/19/89	15.48	15.48	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
743	12/24/89	10	10	D	crude oil	Prudhoe Bay	production	unknown	Unknown
744	01/09/90	1.07	1.07	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
745	01/12/90	2.5	2.5	D	crude oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
746	01/14/90	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
747	01/19/90	2.38	2.38	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Unknown
748	01/23/90	1.67	1.67	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
749	01/26/90	1.07	1.07	D	refined:hydraulic	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
750	01/30/90	5.95	5.95	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Human Error: Unknown
751	02/06/90	3.57	3.57	D	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
752	02/07/90	1.19	1.19	D	crude oil	Prudhoe Bay	pipeline	unknown	Unknown
753	02/11/90	1.79	1.79	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
754	02/15/90	1.31	1.31	D	refined:hydraulic	Prudhoe Bay	vehicle	unknown	Human Error: Other
755	02/17/90	1.19	1.19	D	refined:diesel/heating oil	Milne Point	production	unknown	Unknown
756	02/19/90	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
757	02/24/90	1.19	1.19	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
758	02/26/90	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
759	03/14/90	13	15	C	refined:diesel/heating oil	Milne Point	production	land:gravel	Mechanical Failure: Other
760	03/26/90	1.31	1.31	D	refined:hydraulic	Prudhoe Bay	production	unknown	Human Error: Other
761	03/26/90	2	2	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Mechanical Failure: Other
762	03/31/90	1.52	1.52	D	refined:diesel/heating oil	unknown	support	unknown	Human Error: Overfill
763	04/05/90	2.02	2.02	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
764	04/15/90	2.86	2.86	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
765	05/11/90	24	24	C	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other
766	05/12/90	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
767	05/15/90	0.95	1.19	D	crude oil	unknown	support	unknown	Human Error: Unknown
768	05/19/90	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
769	05/20/90	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Unknown
770	05/22/90	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
771	05/23/90	2	2	D	crude oil	Milne Point	production	unknown	Human Error: Overfill
772	05/31/90	1.9	1.9	D	refined:other	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
773	06/03/90	5.71	5.71	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
774	06/09/90	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	support	land:gravel	Mechanical Failure: Other
775	06/18/90	1.31	1.31	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
776	06/22/90	1.19	1.19	D	refined:other	unknown	support	unknown	Human Error: Overfill
777	06/30/90	3.57	3.57	D	refined:oil mud	unknown	support	land:gravel	Mechanical Failure: Other
778	07/03/90	5.71	5.71	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
779	07/09/90	1.31	1.31	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
780	07/11/90	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
781	07/12/90	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Other
782	07/18/90	6	6	D	crude oil	Milne Point	production	land:gravel	Unknown
783	07/20/90	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
784	07/30/90	1.79	1.79	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
785	07/30/90	1.79	1.79	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Valve/Seal

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
786	07/30/90	1.19	1.79	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
787	08/01/90	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
788	08/04/90	4	5	D	refined:diesel/heating oil	Milne Point	production	unknown	Unknown
789	08/06/90	1.5	1.5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
790	08/14/90	2.38	2.38	D	crude oil	unknown	production	land:gravel	Unknown
791	08/15/90	9.52	9.52	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Human Error: Unknown
793	09/02/90	3	3	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Unknown
794	09/12/90	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
795	09/22/90	30	30	C	crude mixture	Kuparuk River	production	land:unknown	Mechanical Failure: Valve/Seal
796	09/30/90	2.5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
797	10/01/90	1.31	1.31	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
798	10/02/90	1.31	1.31	D	refined:hydraulic	Kuparuk River	unknown	unknown	Mechanical Failure: Other
799	11/29/90	2.38	2.38	D	crude oil	unknown	production	unknown	Mechanical Failure: Other
800	11/29/90	2	2	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
801	12/01/90	1.07	1.07	D	refined:hydraulic	Milne Point	production	land:gravel	Mechanical Failure: Other
802	12/10/90	176.19	600	B	crude oil	Prudhoe Bay	production	unknown	Unknown
803	12/13/90	13.81	13.81	C	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Human Error: Unknown
805	12/22/90	4.76	5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
806	12/24/90	30	30	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
807	12/28/90	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Unknown
808	01/19/91	1.43	5.5	D	crude oil	Milne Point	production	land:tundra	Mechanical Failure: Valve/Seal
810	01/21/91	3.57	3.57	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
811	02/01/91	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
812	02/04/91	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
813	02/11/91	2.02	2.02	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
814	02/20/91	15.48	19.05	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
815	02/20/91	3.67	3.67	D	refined:hydraulic	Kuparuk River	unknown	unknown	Mechanical Failure: Other
816	02/21/91	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
817	03/15/91	2.93	2.93	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Human Error: Overfill
818	03/23/91	1.07	1.07	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
819	03/23/91	1.43	1.43	D	crude oil	Prudhoe Bay	production	land:containment	Human Error: Other
820	03/26/91	16	16	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
821	03/27/91	36	36	C	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
822	03/27/91	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
823	04/07/91	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Overfill
824	04/08/91	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
825	04/11/91	1.31	1.33	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Other
826	04/13/91	2.31	10.6	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
827	04/14/91	1.21	1.21	D	refined:diesel/heating oil	unknown	production	unknown	Unknown
828	04/19/91	4	4	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Human Error: Other
829	04/22/91	3.57	3.57	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
830	04/25/91	3.57	3.57	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
831	04/30/91	5	5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
832	05/01/91	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	land:tundra	Unknown
833	05/09/91	1.5	1.5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
834	05/13/91	1.19	2.98	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
835	05/18/91	1.19	1.19	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
836	05/19/91	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
837	05/25/91	4.76	4.76	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Human Error: Overfill
838	06/10/91	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
839	06/11/91	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
841	06/13/91	3	9	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
842	06/13/91	1.19	1.19	D	refined:diesel/heating oil	unknown	vehicle	unknown	Mechanical Failure: Other
843	06/18/91	2.38	2.38	D	refined:other	unknown	unknown	land:gravel	Human Error: Unknown
844	06/23/91	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Unknown
845	07/04/91	2.38	2.38	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Unknown
846	07/04/91	10.24	47.62	C	refined:diesel/heating oil	Milne Point	production	land:gravel	Human Error: Other
847	07/12/91	2.86	2.86	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
848	07/14/91	5	5	D	crude oil	Kuparuk River	production	land:unknown	Human Error: Unknown
849	07/16/91	3.57	3.57	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other
850	07/16/91	2.5	2.5	D	refined:other	Kuparuk River	vehicle	unknown	Mechanical Failure: Other
851	07/18/91	4	4	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
852	07/31/91	75	75	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
853	08/01/91	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
854	08/25/91	4	4	D	crude oil	Kuparuk River	production	unknown	Unknown
855	09/15/91	1.31	1.31	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
856	09/16/91	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
857	09/24/91	1.19	1.19	D	crude oil	unknown	production	land:gravel	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
858	09/28/91	2.38	2.65	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Other
860	09/28/91	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
861	09/28/91	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
862	10/08/91	1.19	1.19	D	refined:other	unknown	unknown	unknown	Human Error: Overfill
863	10/08/91	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
864	11/03/91	2.62	2.62	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
865	11/19/91	2.62	2.62	D	crude oil	Endicott	production	unknown	Mechanical Failure: Valve/Seal
866	11/25/91	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
867	12/04/91	8.57	8.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
868	12/15/91	30	30	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
869	12/19/91	1.29	1.29	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Unknown
870	01/11/92	3.57	3.57	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
871	01/28/92	1.31	1.31	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
872	02/01/92	6.67	6.67	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
873	02/10/92	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
874	04/14/92	6	6	D	crude oil	Prudhoe Bay	production	land:tundra	Human Error: Other
875	04/20/92	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
876	05/26/92	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
877	05/31/92	5.95	5.95	D	crude oil	Prudhoe Bay	production	unknown	Unknown
878	06/07/92	5.95	5.95	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
879	06/24/92	10	10	D	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Unknown
880	07/11/92	2.02	2.02	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Other
881	07/15/92	2.86	2.86	D	refined:diesel/heating oil	Kuparuk River	production	land:unknown	Mechanical Failure: Valve/Seal
882	07/30/92	1.07	1.07	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
883	08/21/92	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
884	08/29/92	8.1	8.1	D	refined:diesel/heating oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Valve/Seal
886	09/11/92	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
887	09/17/92	8	8	D	refined:diesel/heating oil	Kuparuk River	pipeline	land:unknown	Human Error: Unknown
889	10/07/92	1.31	1.31	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Unknown
890	12/11/92	3	3	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
891	02/10/93	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
892	02/21/93	5	5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
893	03/07/93	1.31	1.31	D	refined:hydraulic	Prudhoe Bay	production	unknown	Human Error: Other
894	03/31/93	1.31	1.31	D	refined:hydraulic	unknown	unknown	unknown	Human Error: Other

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895	04/03/93	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Unknown
896	04/05/93	4.88	4.88	D	refined:diesel/heating oil	unknown	production	unknown	Human Error: Other
897	04/19/93	11.9	11.9	C	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Unknown
898	04/23/93	19	19	C	crude oil	unknown	production	unknown	Human Error: Other
899	04/25/93	1.07	1.07	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Human Error: Unknown
900	06/07/93	40	40	C	crude oil	Prudhoe Bay	production	water:unknown	Mechanical Failure: Unknown
901	06/10/93	300	300	B	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Other
902	06/12/93	10	10	D	crude oil	Prudhoe Bay	production	water:unknown	Unknown
903	06/17/93	50	50	C	refined:diesel/heating oil	Prudhoe Bay	unknown	land:unknown	Unknown
904	06/19/93	3	3	D	crude oil	Kuparuk River	production	land:unknown	Unknown
905	06/21/93	15	15	C	crude oil	Prudhoe Bay	production	unknown	Unknown
906	07/09/93	7.14	7.14	D	refined:diesel/heating oil	unknown	unknown	unknown	Unknown
907	07/10/93	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
908	08/17/93	675	675	B	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Corrosion
909	08/30/93	200	200	C	crude oil	Prudhoe Bay	production	land:containment	Human Error: Overfill
910	09/03/93	30	30	C	crude oil	Prudhoe Bay	production	water:unknown	Mechanical Failure: Other
911	09/05/93	5	5	D	crude oil	Prudhoe Bay	production	water:unknown	Mechanical Failure: Other
912	09/20/93	168	168	C	crude mixture	Kuparuk River	production	land:unknown	Human Error: Unknown
913	09/26/93	650	650.12	B	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
914	10/01/93	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Unknown
915	11/13/93	100	100	C	crude oil	Prudhoe Bay	production	land:containment	Human Error: Other
916	12/14/93	30	30	C	crude oil	Prudhoe Bay	pipeline	land:unknown	Unknown
917	12/20/93	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
918	12/24/93	180	200	C	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
919	12/30/93	375	400	B	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
920	01/01/94	5.95	5.95	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Unknown
921	02/07/94	5.95	5.95	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
922	02/16/94	32	32	C	crude oil	Milne Point	production	unknown	Mechanical Failure: Other
923	02/22/94	2	2	D	crude oil	Prudhoe Bay	production	unknown	Unknown
924	02/27/94	2.14	2.14	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Unknown
925	03/18/94	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Unknown
926	04/03/94	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
927	04/06/94	3.1	3.1	D	crude oil	Prudhoe Bay	production	unknown	Unknown
928	05/03/94	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
929	05/10/94	112	142.86	C	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
930	05/10/94	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Unknown
931	05/18/94	3.5	3.5	D	crude oil	Prudhoe Bay	pipeline	land:unknown	Human Error: Unknown
932	06/22/94	6.71	6.71	D	refined:other	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
933	07/10/94	1.9	1.9	D	crude oil	Kuparuk River	production	unknown	Unknown
934	07/18/94	10	10	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
935	07/23/94	1.19	1.19	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
936	08/02/94	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Other
937	09/26/94	1.9	1.9	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
938	10/31/94	60	183.14	C	crude oil	Kuparuk River	pipeline	land:unknown	Mechanical Failure: Corrosion
939	11/06/94	2	2	D	crude oil	Prudhoe Bay	production	unknown	Unknown
940	11/06/94	40	40	C	crude oil	Prudhoe Bay	production	land:unknown	Unknown
941	12/02/94	2.02	2.02	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
942	12/05/94	1.33	1.33	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
943	12/05/94	50	50	C	crude oil	unknown	production	water:unknown	Mechanical Failure: Other
944	01/01/95	11	11	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
945	01/02/95	11	11	C	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
946	01/07/95	17	17	C	crude oil	Kuparuk River	pipeline	land:unknown	Mechanical Failure: Other
947	01/16/95	4.76	4.76	D	crude oil	Kuparuk River	production	unknown	Unknown
948	02/03/95	5	5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
949	02/05/95	8.33	8.33	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
950	02/13/95	5.95	5.95	D	refined:diesel/heating oil	unknown	vehicle	unknown	Unknown
951	03/10/95	71.43	71.43	C	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Other
952	04/04/95	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	vehicle	unknown	Human Error: Other
953	05/01/95	4.88	4.88	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
954	05/07/95	5	5	D	crude oil	Prudhoe Bay	production	land:unknown	Human Error: Other
955	06/03/95	2.62	2.62	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
956	06/07/95	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Human Error: Other
957	07/05/95	1.31	1.31	D	refined:other	Kuparuk River	support	land:gravel	Unknown
958	07/14/95	2	2	D	crude oil	Milne Point	production	land:unknown	Unknown
959	07/26/95	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	unknown	land:gravel	Unknown
961	07/28/95	20	20	C	refined:other	Prudhoe Bay	production	land:unknown	Unknown
962	07/29/95	10	10	D	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Unknown
963	08/06/95	0	6	D	crude oil	Kuparuk River	unknown	land:gravel	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
964	08/13/95	7.14	7.14	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Unknown
965	08/15/95	25	25	C	crude oil	Prudhoe Bay	pipeline	land:unknown	Unknown
967	10/05/95	50	50	C	refined:oil mud	unknown	unknown	land:gravel	Mechanical Failure: Other
968	10/23/95	0	1.28	D	crude oil	Kuparuk River	pipeline	land:gravel	Mechanical Failure: Other
969	10/28/95	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Valve/Seal
970	11/26/95	10	10	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Other
971	12/18/95	1.62	1.62	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
972	12/22/95	0	2.57	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Valve/Seal
973	01/02/96	1.19	1.19	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
974	01/07/96	0	42	C	crude oil	Kuparuk River	production	land:containment	Mechanical Failure: Valve/Seal
975	01/08/96	1.43	1.43	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Mechanical Failure: Other
976	01/27/96	8.33	8.33	D	refined:other	Endicott	production	unknown	Mechanical Failure: Other
977	01/27/96	2.86	2.86	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
978	01/31/96	7	7	D	refined:diesel/heating oil	Milne Point	production	land:unknown	Mechanical Failure: Other
979	02/06/96	10.71	10.71	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
980	02/11/96	1.9	1.9	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
981	02/20/96	1.79	1.79	D	refined:diesel/heating oil	Milne Point	production	land:containment	Human Error: Overfill
982	02/25/96	3	4	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
983	02/29/96	1.38	1.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
984	03/01/96	2	2	D	crude oil	Prudhoe Bay	production	land:unknown	Unknown
985	03/10/96	7	7	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
986	03/28/96	200	200	C	crude oil	Prudhoe Bay	pipeline	land:unknown	Unknown
987	04/07/96	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
988	04/17/96	25.6	25.6	C	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
989	04/21/96	1.05	1.05	D	crude mixture	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
990	04/24/96	3.33	3.33	D	crude oil	Endicott	production	unknown	Mechanical Failure: Other
992	05/26/96	7	7	D	crude oil	Kuparuk River	vehicle	unknown	Human Error: Overfill
993	06/01/96	5	5	D	crude oil	unknown	production	water:unknown	Unknown
994	06/02/96	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
995	06/07/96	1.43	1.43	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
996	06/08/96	5	5	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Valve/Seal
997	06/13/96	1.19	1.19	D	refined:other	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
998	06/13/96	1.14	1.14	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
999	06/17/96	1.14	1.14	D	refined:hydraulic	Kuparuk River	vehicle	land:tundra	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1000	06/30/96	26.19	26.19	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
1001	07/01/96	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	land:gravel	Mechanical Failure: Other
1002	07/06/96	3	3	D	crude mixture	Kuparuk River	unknown	land:gravel	Mechanical Failure: Corrosion
1003	07/09/96	10	10	D	crude oil	Prudhoe Bay	pipeline	water:unknown	Unknown
1004	07/25/96	9.52	9.52	D	crude oil	Endicott	production	land:gravel	Human Error: Unknown
1005	08/05/96	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1006	08/13/96	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Mechanical Failure: Other
1007	08/13/96	16	16	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1008	08/16/96	2	2	D	crude oil	Kuparuk River	pipeline	unknown	Human Error: Other
1009	08/18/96	14.29	14.29	C	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1010	08/21/96	2.86	2.86	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
1011	09/09/96	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1012	09/11/96	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
1013	09/13/96	1.67	1.67	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1014	09/27/96	4.88	4.88	D	refined:diesel/heating oil	unknown	unknown	land:gravel	Mechanical Failure: Unknown
1015	10/17/96	1.07	1.07	D	crude mixture	Milne Point	pipeline	land:gravel	Mechanical Failure: Valve/Seal
1016	10/18/96	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Human Error: Other
1017	10/26/96	2	2	D	refined:diesel/heating oil	Milne Point	unknown	unknown	Human Error: Other
1018	11/22/96	7	7	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1019	12/20/96	1.67	1.67	D	crude oil	Endicott	production	land:tundra	Mechanical Failure: Other
1022	01/16/97	1.31	1.31	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other
1023	01/23/97	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1024	02/03/97	1.19	1.19	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Other
1025	02/04/97	50	50	C	crude oil	unknown	production	land:unknown	Human Error: Unknown
1026	02/05/97	1.43	1.43	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1027	02/07/97	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Unknown
1028	02/13/97	2.14	2.14	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1029	02/18/97	2.12	2.12	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1030	02/28/97	2	2	D	refined:other	Prudhoe Bay	support	unknown	Mechanical Failure: Valve/Seal
1031	03/08/97	5.24	5.24	D	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Valve/Seal
1032	03/12/97	10	10	D	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
1033	03/17/97	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
1034	03/26/97	113	117	C	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
1035	03/31/97	10	10	D	crude oil	Milne Point	production	land:gravel	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1036	04/04/97	30	30	C	crude oil	Kuparuk River	production	land:unknown	Human Error: Unknown
1037	04/15/97	10	10	D	crude oil	Prudhoe Bay	production	land:unknown	Human Error: Unknown
1038	04/27/97	1.79	1.79	D	refined:diesel/heating oil	Kuparuk River	support	unknown	Unknown
1039	04/30/97	41.24	41.24	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1040	05/03/97	2.33	2.33	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1041	05/19/97	180	180	C	refined:diesel/heating oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Other
1042	05/20/97	1.67	1.67	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1043	06/04/97	4.76	4.76	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
1044	06/05/97	7.14	7.14	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1045	06/12/97	4.76	11.9	C	refined:diesel/heating oil	unknown	unknown	land:tundra	Mechanical Failure: Corrosion
1046	06/22/97	11	11	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Other
1047	06/22/97	5	5	D	crude oil	Milne Point	production	land:gravel	Mechanical Failure: Other
1048	06/22/97	47.62	47.62	C	refined:diesel/heating oil	Milne Point	vehicle	land:tundra	Human Error: Other
1049	06/25/97	1.33	1.33	D	refined:diesel/heating oil	unknown	unknown	land:unknown	Unknown
1050	07/02/97	3.69	3.69	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1051	07/03/97	1.38	1.38	D	refined:hydraulic	Prudhoe Bay	vehicle	unknown	Unknown
1052	07/05/97	2.98	2.98	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Other
1053	07/15/97	47.62	47.62	C	crude oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Corrosion
1054	07/21/97	24	24	C	crude oil	Prudhoe Bay	production	water:unfrozen	Mechanical Failure: Valve/Seal
1055	07/21/97	1.19	1.19	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Valve/Seal
1056	07/29/97	1.4	1.4	D	refined:diesel/heating oil	Milne Point	unknown	land:gravel	Mechanical Failure: Unknown
1057	08/03/97	2.5	2.5	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1058	08/04/97	10	10	D	crude oil	Prudhoe Bay	pipeline	land:unknown	Mechanical Failure: Valve/Seal
1059	09/12/97	3.57	3.57	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Valve/Seal
1060	09/12/97	20	20	C	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
1061	09/15/97	6	6	D	crude oil	Prudhoe Bay	pipeline	land:unknown	Mechanical Failure: Corrosion
1062	09/27/97	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	vehicle	water:unknown	Human Error: Vehicle Accidents
1063	10/13/97	4	4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Overpressure
1064	10/14/97	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1065	10/26/97	15.71	15.71	C	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1067	12/08/97	3.21	3.21	D	refined:other	Badami	vehicle	unknown	Human Error: Other
1068	12/14/97	2.86	2.86	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1069	12/21/97	2.98	2.98	D	crude oil	Kuparuk River	production	unknown	Human Error: Other
1070	01/02/98	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Overpressure

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1071	01/10/98	0	300	B	crude oil	Kuparuk River	production	land:containment	Unknown
1072	01/15/98	1.55	1.55	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Unknown
1073	01/26/98	3.62	3.62	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
1074	01/27/98	28.57	28.57	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1075	01/31/98	1.43	1.43	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1076	03/03/98	4.88	4.88	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1077	03/18/98	5	5	D	crude oil	Prudhoe Bay	production	land:unknown	Mechanical Failure: Overpressure
1078	03/21/98	0	6	D	crude oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Other
1079	03/23/98	10	11.9	C	crude oil	Prudhoe Bay	production	land:unknown	Human Error: Overfill
1081	03/25/98	14.29	14.29	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1083	04/07/98	4.76	4.76	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Mechanical Failure: Valve/Seal
1084	04/08/98	2	2.62	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
1085	04/13/98	0	10	D	crude oil	Kuparuk River	production	land:gravel	Mechanical Failure: Valve/Seal
1086	04/15/98	1.55	1.55	D	refined:diesel/heating oil	Colville River, Alpine	vehicle	unknown	Human Error: Vehicle Accidents
1087	04/23/98	3	3	D	crude oil	Prudhoe Bay	production	land:gravel	Human Error: Overfill
1088	05/01/98	3	3	D	refined:diesel/heating oil	Prudhoe Bay	production	land:tundra	Unknown
1089	05/02/98	2.88	2.88	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1090	05/17/98	3	3	D	crude oil	Kuparuk River	production	unknown	Human Error: Overfill
1091	05/29/98	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
1092	06/03/98	1.19	1.19	D	crude oil	Milne Point	production	land:gravel	Mechanical Failure: Unknown
1093	06/12/98	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1094	06/16/98	5	5	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Unknown
1096	08/02/98	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1097	08/21/98	1.19	23.81	C	crude oil	Endicott	production	land:gravel	Mechanical Failure: Other
1098	08/24/98	0	2	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Corrosion
1101	09/25/98	2	2	D	crude oil	Milne Point	production	land:unknown	Mechanical Failure: Other
1102	10/03/98	4.64	4.64	D	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1103	10/06/98	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1104	10/06/98	2.5	2.5	D	crude mixture	Kuparuk River	pipeline	unknown	Mechanical Failure: Corrosion
1105	10/23/98	3.57	3.57	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1106	10/30/98	5.95	5.95	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Overpressure
1107	12/09/98	0	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1108	12/24/98	4.76	4.76	D	refined:other	Kuparuk River	production	unknown	Human Error: Overfill

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1109	01/28/99	0	1.43	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1111	02/06/99	1.19	1.19	D	refined:diesel/heating oil	unknown	exploration	land:tundra	Human Error: Other
1113	03/09/99	1.05	1.05	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1114	03/12/99	2.45	2.45	D	refined:hydraulic	Endicott	production	unknown	Unknown
1116	04/07/99	260	260	B	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1117	04/09/99	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1118	04/18/99	0	1.43	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Other
1119	05/01/99	1.31	1.31	D	crude oil	Badami	production	unknown	Human Error: Overfill
1120	05/04/99	6	6	D	refined:diesel/heating oil	Colville River, Alpine	vehicle	unknown	Human Error: Vehicle Accidents
1121	05/19/99	47.62	47.62	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
1122	06/01/99	1.43	1.43	D	refined:hydraulic	Endicott	production	unknown	Unknown
1123	06/06/99	4.76	4.76	D	refined:diesel/heating oil	Endicott	production	unknown	Human Error: Overfill
1125	06/10/99	0	30.4	C	crude oil	Prudhoe Bay	pipeline	land:tundra	Mechanical Failure: Corrosion
1126	06/15/99	4.52	4.52	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Unknown
1127	06/17/99	4.76	4.76	D	refined:diesel/heating oil	Endicott	production	unknown	Mechanical Failure: Other
1128	06/22/99	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1129	07/03/99	4.76	4.76	D	refined:hydraulic	Prudhoe Bay	production	unknown	Human Error: Other
1130	07/10/99	1.64	1.64	D	refined:other	Kuparuk River	production	unknown	Unknown
1131	07/17/99	100	100	C	refined:other	Prudhoe Bay	production	unknown	Unknown
1133	07/23/99	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1134	07/23/99	0	30	C	crude oil	Kuparuk River	production	land:tundra water:unfrozen	Mechanical Failure: Corrosion
1137	08/12/99	2.62	2.62	D	crude oil	Endicott	production	unknown	Mechanical Failure: Other
1138	08/15/99	32.14	32.14	C	crude mixture	Kuparuk River	pipeline	land:gravel	Mechanical Failure: Valve/Seal
1139	09/06/99	1.55	1.55	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1140	09/07/99	1.43	1.43	D	refined:other	unknown	unknown	unknown	Mechanical Failure: Valve/Seal
1141	09/15/99	1.79	1.79	D	crude oil	Endicott	production	unknown	Unknown
1142	10/04/99	6.21	6.21	D	refined:hydraulic	Prudhoe Bay	production	unknown	Unknown
1143	10/10/99	0	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1144	11/10/99	3.57	3.57	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1145	11/11/99	2.38	2.38	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1146	11/22/99	5.1	5.1	D	refined:diesel/heating oil	Kuparuk River	pipeline	unknown	Human Error: Other
1147	12/16/99	40.47	40.47	C	crude oil	unknown	production	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1148	12/22/99	4.4	4.4	D	refined:hydraulic	Endicott	production	unknown	Mechanical Failure: Valve/Seal
1149	12/23/99	9.05	9.05	D	refined:diesel/heating oil	unknown	support	unknown	Unknown
1150	01/25/00	13.09	13.09	C	crude oil	Endicott	production	unknown	Mechanical Failure: Other
1151	01/27/00	1.79	1.79	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other
1152	02/06/00	1.43	1.43	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1153	02/14/00	4.76	4.76	D	crude oil	unknown	production	unknown	Mechanical Failure: Valve/Seal
1154	02/14/00	0	1.07	D	crude oil	Kuparuk River	pipeline	land:containment	Mechanical Failure: Other
1155	02/16/00	2.98	2.98	D	crude oil	Badami	production	unknown	Mechanical Failure: Valve/Seal
1156	02/17/00	4.05	4.05	D	crude oil	Endicott	production	unknown	Mechanical Failure: Other
1157	03/02/00	142.86	142.86	C	refined:other	unknown	unknown	unknown	Unknown
1158	03/13/00	0	4.77	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1159	03/15/00	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1160	03/20/00	23.81	23.81	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1163	04/24/00	11.9	11.9	C	refined:hydraulic	Colville River, Alpine	support	unknown	Human Error: Other
1164	05/01/00	4.79	4.79	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1165	05/05/00	1.14	1.14	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Overfill
1166	05/06/00	4.76	4.76	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1167	05/19/00	2.62	2.62	D	refined:other	Kuparuk River	vehicle	unknown	Human Error: Other
1168	06/08/00	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1169	06/19/00	1.67	1.67	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1170	06/19/00	1.19	1.19	D	crude oil	Prudhoe Bay	pipeline	land:containment	Mechanical Failure: Other
1171	06/27/00	2.38	2.38	D	crude mixture	Milne Point	production	unknown	Mechanical Failure: Other
1172	06/27/00	4.76	4.76	D	refined:other	unknown	unknown	land:gravel	Unknown
1173	07/01/00	3.57	3.57	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1174	07/07/00	4.17	4.17	D	refined:hydraulic	Endicott	production	unknown	Mechanical Failure: Other
1175	07/12/00	15.47	15.48	C	refined:other	Prudhoe Bay	pipeline	land:gravel	Mechanical Failure: Corrosion
1176	07/12/00	0	2.02	D	crude oil	Kuparuk River	pipeline	land:tundra water:unfrozen	Mechanical Failure: Valve/Seal
1177	07/17/00	3.57	3.57	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1179	08/07/00	12.57	12.57	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1180	08/14/00	3	3	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1181	08/20/00	2.62	2.62	D	crude oil	Prudhoe Bay	pipeline	land:containment	Mechanical Failure: Other
1182	08/21/00	714.94	715	B	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1183	09/01/00	2.14	2.14	D	refined:other	Kuparuk River	production	land:containment	Unknown
1184	09/06/00	1.19	1.19	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1185	09/13/00	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Overfill
1186	09/16/00	1.9	1.9	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1187	09/26/00	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Unknown
1188	09/26/00	2.38	2.38	D	refined:other	Endicott	unknown	unknown	Human Error: Other
1190	10/19/00	10	10	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1191	12/01/00	15	15	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Valve/Seal
1192	12/01/00	2.02	2.02	D	crude mixture	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1193	12/02/00	2.69	3.57	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1194	12/04/00	15	15	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1195	12/09/00	2.62	2.62	D	refined:other	Kuparuk River	production	unknown	Unknown
1196	12/17/00	180.95	180.95	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Valve/Seal
1197	12/24/00	36	36	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Overfill
1198	12/24/00	1.07	1.07	D	refined:other	Colville River, Alpine	support	unknown	Human Error: Other
1199	12/27/00	1.67	1.67	D	crude oil	Kuparuk River	pipeline	land:gravel	Mechanical Failure: Corrosion
1200	01/05/01	5	5	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Mechanical Failure: Other
1201	01/12/01	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Valve/Seal
1202	01/15/01	1.9	1.93	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1203	01/21/01	1.07	1.07	D	refined:other	Prudhoe Bay	unknown	unknown	Mechanical Failure: Other
1204	01/22/01	68	68	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1205	02/02/01	24	24	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1208	02/14/01	1.79	1.79	D	refined:other	Colville River, Alpine	vehicle	unknown	Mechanical Failure: Other
1209	02/19/01	224.98	607.14	B	crude oil	Prudhoe Bay	pipeline	land:tundra	Mechanical Failure: Overpressure
1210	02/19/01	8.21	8.21	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1212	02/20/01	1.02	1.02	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1213	03/06/01	1.55	1.55	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Other
1214	03/09/01	2.62	2.62	D	refined:other	North Star	production	unknown	Human Error: Other
1215	03/12/01	2.38	2.38	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Vehicle Accidents
1216	03/20/01	2.98	2.98	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1217	03/29/01	3	3	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Human Error: Overfill
1218	03/31/01	1.24	1.24	D	refined:other	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1219	04/01/01	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1220	04/03/01	1.79	1.79	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Overfill
1221	04/15/01	3.48	3.48	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1222	04/15/01	0	23.8	C	crude oil	Kuparuk River	pipeline	land:tundra	Mechanical Failure: Corrosion
1224	04/23/01	1.79	1.79	D	crude oil	Endicott	production	unknown	Unknown
1225	05/04/01	1.79	3.57	D	refined:other	North Star	production	unknown	Mechanical Failure: Other
1226	05/10/01	9.52	9.52	D	refined:other	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1227	05/20/01	3.57	3.57	D	refined:other	Prudhoe Bay	production	land:containment	Human Error: Other
1229	05/27/01	2.5	2.5	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
1230	06/07/01	1.19	1.19	D	crude oil	unknown	exploration	unknown	Mechanical Failure: Valve/Seal
1231	06/07/01	11.9	11.9	C	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Valve/Seal
1232	06/11/01	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1233	06/14/01	1.08	1.19	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1234	06/25/01	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Unknown
1235	07/04/01	1.19	1.19	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1236	07/07/01	3.81	3.81	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1237	07/16/01	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1238	07/21/01	10	10	D	crude oil	Prudhoe Bay	pipeline	land:tundra	Mechanical Failure: Corrosion
1239	07/25/01	1.31	1.31	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Unknown
1240	08/10/01	1.43	1.43	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Unknown
1241	08/18/01	1.43	1.43	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1242	09/06/01	3.98	3.98	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1243	09/15/01	35.71	35.71	C	refined:other	unknown	support	unknown	Unknown
1244	09/25/01	14.29	14.29	C	refined:other	Colville River, Alpine	support	unknown	Human Error: Other
1245	10/03/01	1.55	1.55	D	refined:diesel/heating oil	unknown	production	unknown	Mechanical Failure: Valve/Seal
1246	10/27/01	1.14	1.14	D	refined:hydraulic	Prudhoe Bay	production	land:gravel	Mechanical Failure: Other
1247	11/15/01	2	2	D	crude oil	North Star	production	unknown	Mechanical Failure: Valve/Seal
1248	11/20/01	1.19	1.19	D	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
1249	11/22/01	0	1.43	D	crude oil	Milne Point	production	land:containment	Human Error: Overfill
1250	11/24/01	1.9	1.9	D	crude oil	Prudhoe Bay	production	land:containment	Human Error: Overfill

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1251	11/28/01	7.14	7.14	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1252	11/30/01	2.69	2.69	D	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Other
1253	12/03/01	10	10	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1254	12/13/01	1.71	1.71	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
1255	12/15/01	61.9	61.9	C	crude oil	unknown	production	unknown	Mechanical Failure: Other
1256	12/15/01	0	2.4	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1258	01/02/02	1.31	1.31	D	refined:diesel/heating oil	North Star	production	unknown	Human Error: Other
1259	01/09/02	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1260	01/14/02	2.74	2.74	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1261	02/01/02	2.38	2.38	D	refined:other	Prudhoe Bay	unknown	unknown	Mechanical Failure: Valve/Seal
1263	02/23/02	3.55	3.55	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1264	03/01/02	1.19	1.19	D	refined:diesel/heating oil	North Star	production	unknown	Mechanical Failure: Valve/Seal
1265	03/11/02	1.19	1.19	D	refined:hydraulic	unknown	exploration	water:frozen	Mechanical Failure: Valve/Seal
1266	04/07/02	2.29	2.29	D	crude mixture	Kuparuk River	production	unknown	Mechanical Failure: Other
1267	04/15/02	1.19	1.19	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
1268	05/06/02	2.38	2.38	D	crude oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1269	05/06/02	2.38	2.38	D	refined:diesel/heating oil	unknown	production	unknown	Mechanical Failure: Valve/Seal
1270	05/11/02	1.52	1.52	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Human Error: Other
1272	05/29/02	0	21.28	C	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1273	06/11/02	1.67	1.67	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1274	07/10/02	1.19	1.19	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1275	07/14/02	11.3	11.31	C	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1276	07/16/02	8.33	8.33	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1277	07/18/02	2	2	D	crude oil	unknown	pipeline	unknown	Unknown
1278	08/01/02	0	30	C	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Valve/Seal
1279	08/06/02	17.86	17.86	C	crude oil	Milne Point	production	unknown	Mechanical Failure: Other
1280	08/12/02	1.79	1.79	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1281	08/29/02	16	23.81	C	refined:diesel/heating oil	Kuparuk River	vehicle	land:tundra	Human Error: Vehicle Accidents
1282	09/08/02	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1283	09/14/02	1.31	1.31	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1284	10/07/02	1.5	1.5	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1285	10/07/02	6.5	6.5	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1286	10/16/02	23	23	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1287	11/04/02	7.14	7.14	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1288	11/05/02	1.24	1.24	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1289	11/16/02	2	2	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1290	11/25/02	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1291	12/17/02	6.55	6.55	D	refined:other	Kuparuk River	production	unknown	Human Error: Overfill
1292	12/24/02	1.9	1.9	D	crude oil	Badami	production	unknown	Mechanical Failure: Valve/Seal
1293	01/20/03	0	1.91	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1294	02/28/03	85.14	85.14	C	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1295	03/09/03	2	2	D	refined:hydraulic	unknown	unknown	water:frozen	Mechanical Failure: Other
1296	03/11/03	2.14	2.14	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Vehicle Accidents
1297	03/14/03	109	109	C	crude oil	Badami	production	unknown	Human Error: Other
1298	03/21/03	1.05	1.05	D	crude mixture	Endicott	pipeline	unknown	Mechanical Failure: Valve/Seal
1299	03/22/03	2.38	2.38	D	crude mixture	unknown	production	unknown	Human Error: Overfill
1300	03/30/03	0	2.38	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
1301	04/13/03	2.62	2.62	D	crude mixture	Kuparuk River	pipeline	unknown	Mechanical Failure: Valve/Seal
1302	04/24/03	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1303	04/25/03	4.45	4.45	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1304	05/11/03	0	1.47	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1305	05/17/03	1.81	2.19	D	refined:diesel mixture	Kuparuk River	vehicle	unknown	Human Error: Vehicle Accidents
1306	05/25/03	0	8	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Corrosion
1307	05/27/03	35.71	142.86	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1308	06/13/03	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1309	06/24/03	4.52	4.52	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
1310	06/29/03	1.43	1.43	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1311	07/07/03	1.02	1.02	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Valve/Seal
1312	07/18/03	4	4	D	crude oil	Milne Point	production	land:tundra	Human Error: Overfill
1313	07/20/03	4.76	4.76	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1314	07/25/03	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1315	08/08/03	3.33	3.33	D	refined:hydraulic	Colville River, Alpine	production	unknown	Human Error: Other
1316	08/12/03	1.19	1.19	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Other
1317	08/21/03	1.31	1.31	D	refined:other	unknown	unknown	unknown	Mechanical Failure: Other
1318	09/11/03	1.19	1.19	D	refined:other	unknown	unknown	unknown	Unknown
1320	09/24/03	46	46	C	refined:diesel/heating oil	North Star	unknown	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1321	10/07/03	5	5	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Other
1322	11/01/03	3.81	3.81	D	refined:diesel/heating oil	Badami	production	unknown	Mechanical Failure: Other
1323	11/03/03	2.14	2.14	D	refined:diesel/heating oil	Milne Point	production	land:gravel	Human Error: Overfill
1324	11/17/03	261.9	261.9	B	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Other
1325	11/18/03	1.19	1.19	D	refined:hydraulic	North Star	production	unknown	Mechanical Failure: Other
1327	12/06/03	0	23	C	crude oil	Milne Point	production	land:containment	Mechanical Failure: Other
1328	12/31/03	3.1	3.1	D	refined:hydraulic	Milne Point	production	unknown	Mechanical Failure: Other
1329	01/13/04	2.38	2.38	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
1330	01/14/04	2.86	2.86	D	refined:diesel/heating oil	unknown	unknown	unknown	Mechanical Failure: Other
1331	01/16/04	1.79	1.79	D	refined:diesel/heating oil	Kuparuk River	vehicle	unknown	Mechanical Failure: Unknown
1332	02/28/04	38.1	38.1	C	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1333	03/17/04	5.66	23.81	C	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1334	03/18/04	10	10	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Mechanical Failure: Other
1335	03/26/04	1.6	1.6	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Human Error: Overfill
1337	04/05/04	2.86	2.86	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1339	05/09/04	5	5	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1340	05/12/04	18.17	18.17	C	crude mixture	Kuparuk River	pipeline	unknown	Mechanical Failure: Valve/Seal
1342	05/26/04	1.43	1.43	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1343	05/30/04	1.98	1.98	D	refined:diesel/heating oil	Kuparuk River	exploration	unknown	Unknown
1345	06/08/04	0	1.19	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
1346	06/18/04	0	135	C	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1347	06/23/04	1.19	1.19	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1348	06/24/04	1.9	1.9	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1349	07/10/04	3.1	3.1	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1350	07/14/04	1.1	1.1	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1351	07/15/04	0	1.2	D	crude oil	Kuparuk River	production	land:tundra water:unfrozen	Mechanical Failure: Valve/Seal
1353	07/19/04	2.86	2.86	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1354	07/30/04	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Unknown
1355	09/20/04	1.79	1.79	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1356	10/02/04	1.07	1.07	D	refined:hydraulic	Endicott	production	unknown	Mechanical Failure: Valve/Seal
1357	10/21/04	1.79	1.79	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1358	10/30/04	1.76	1.76	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1359	11/20/04	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1360	11/30/04	3.33	3.33	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1361	12/04/04	0	25	C	crude oil	Prudhoe Bay	production	land:tundra water:frozen	Mechanical Failure: Valve/Seal
1362	12/07/04	1.52	1.52	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1363	12/23/04	1.79	1.79	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1365	01/09/05	0	1.31	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Corrosion
1366	01/16/05	0	3.06	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1367	01/28/05	1.9	1.9	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1368	02/04/05	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1369	02/04/05	1.79	1.79	D	refined:hydraulic	Prudhoe Bay	production	unknown	Human Error: Other
1370	02/13/05	15.71	15.71	C	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
1371	02/16/05	2	2	D	crude mixture	Milne Point	production	unknown	Mechanical Failure: Other
1372	02/22/05	2	2	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1374	03/01/05	1.19	1.19	D	refined:other	unknown	unknown	unknown	Human Error: Other
1375	03/12/05	15.48	15.48	C	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1377	03/14/05	5.43	5.43	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1378	03/16/05	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Overfill
1379	03/19/05	2	2.02	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1380	03/26/05	0	170.66	C	crude oil	Kuparuk River	production	land:tundra	Mechanical Failure: Corrosion
1381	03/30/05	7.67	7.67	D	refined:diesel/heating oil	North Star	production	land:containment	Human Error: Other
1383	04/05/05	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1384	04/05/05	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1385	04/12/05	30	30	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Other
1386	04/19/05	2.38	2.38	D	refined:diesel/heating oil	North Star	production	unknown	Mechanical Failure: Valve/Seal
1387	04/27/05	4.76	4.76	D	refined:diesel/heating oil	Prudhoe Bay	unknown	unknown	Human Error: Other
1388	05/01/05	1.02	1.02	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1389	05/04/05	2.6	2.6	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1390	05/10/05	9.52	9.52	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1391	05/22/05	1.79	1.79	D	refined:other	Kuparuk River	production	unknown	Unknown
1392	06/03/05	0	21.9	C	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1394	06/03/05	2.38	9.52	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1395	06/08/05	4.76	4.76	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Corrosion

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1396	06/11/05	1.31	2.86	D	refined:diesel/heating oil	Prudhoe Bay	support	land:gravel	Mechanical Failure: Valve/Seal
1398	06/28/05	10	10	D	refined:other	Kuparuk River	production	unknown	Human Error: Unknown
1399	07/12/05	38.17	38.17	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1400	08/01/05	8.33	8.33	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Other
1401	08/09/05	0	2.3	D	crude oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Corrosion
1402	08/11/05	3.26	3.26	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Unknown
1403	08/31/05	5.36	5.36	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1404	09/02/05	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Other
1405	09/04/05	1.9	1.9	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1406	09/12/05	5.48	5.48	D	refined:other	Badami	production	unknown	Human Error: Unknown
1408	10/02/05	0	2.38	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1409	10/14/05	3.1	3.1	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Other
1411	10/29/05	10	10	D	refined:diesel/heating oil	North Star	production	unknown	Unknown
1412	11/05/05	2	5	D	crude oil	Prudhoe Bay	production	land:tundra	Mechanical Failure: Other
1413	11/14/05	0	1.19	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1414	11/29/05	1.26	1.26	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Corrosion
1415	12/01/05	3.74	3.74	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1416	12/20/05	1.1	1.1	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Valve/Seal
1417	01/09/06	3.57	3.57	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1418	01/10/06	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Vehicle Accidents
1419	01/11/06	0	1.91	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1420	01/17/06	1.24	1.24	D	crude oil	Milne Point	production	unknown	Mechanical Failure: Other
1421	01/17/06	8.93	8.93	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Vehicle Accidents
1422	01/18/06	1.6	1.6	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
1423	01/27/06	2	2.62	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1424	02/06/06	3.93	3.93	D	refined:hydraulic	Endicott	production	unknown	Mechanical Failure: Valve/Seal
1425	02/09/06	2	2	D	refined:diesel/heating oil	Prudhoe Bay	production	land:gravel	Human Error: Unknown
1426	02/12/06	0	1.87	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1428	02/26/06	4.29	4.29	D	refined:diesel/heating oil	North Star	production	unknown	Human Error: Other
1429	03/02/06	4785.71	5053.62	A	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1430	03/25/06	4	4	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1431	03/27/06	1.02	1.02	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1433	03/30/06	0	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1434	04/04/06	4.76	4.76	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1436	04/08/06	0	1.91	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1437	04/12/06	7.81	7.81	D	crude oil	unknown	production	unknown	Human Error: Overfill
1438	04/19/06	9.81	9.81	D	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Unknown
1439	05/02/06	0	5.34	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1440	05/07/06	9.52	9.52	D	crude oil	Kuparuk River	production	unknown	Human Error: Unknown
1441	05/09/06	1.19	1.19	D	refined:hydraulic	Prudhoe Bay	unknown	unknown	Mechanical Failure: Other
1443	05/13/06	1.07	1.07	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1444	06/08/06	2.38	2.38	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1445	06/12/06	3.1	3.1	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
1446	06/22/06	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1448	07/03/06	2.76	2.76	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1449	07/15/06	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Overpressure
1450	07/16/06	2.14	2.14	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Other
1451	07/20/06	2.86	2.86	D	refined:other	Kuparuk River	production	unknown	Mechanical Failure: Other
1452	08/04/06	3.57	3.57	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1453	08/06/06	120	199	C	crude oil	Prudhoe Bay	pipeline	land:tundra	Mechanical Failure: Corrosion
1454	08/07/06	0	4.77	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Valve/Seal
1455	08/07/06	1.79	1.79	D	refined:other	Prudhoe Bay	production	unknown	Unknown
1457	08/19/06	2	2	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Vehicle Accidents
1459	08/26/06	3.57	3.57	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1461	09/14/06	3.57	3.57	D	refined:diesel/heating oil	Badami	production	unknown	Human Error: Unknown
1462	09/18/06	15	15	C	crude oil	Prudhoe Bay	production	unknown	Unknown
1463	09/24/06	1.43	1.43	D	refined:other	Endicott	production	unknown	Human Error: Other
1466	09/28/06	4.4	4.4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1467	09/29/06	1.92	1.92	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1468	10/09/06	0	1.6	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1469	10/13/06	1.19	1.19	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1470	10/24/06	1.19	1.19	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Valve/Seal
1472	10/31/06	220	220	B	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1473	11/04/06	1.19	1.19	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1474	11/20/06	7.14	7.14	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1475	11/21/06	2.38	2.38	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1476	12/08/06	1.19	1.19	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Vehicle Accidents
1477	12/12/06	0	1.91	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1478	12/19/06	3	150	C	crude mixture	Prudhoe Bay	production	land:containment	Mechanical Failure: Corrosion
1479	01/05/07	4.76	4.76	D	refined:diesel/heating oil	Nikaitchuq	exploration	land:containment	Human Error: Overfill
1480	01/05/07	1.05	1.05	D	crude mixture	Colville River, Alpine	production	unknown	Human Error: Other
1482	01/13/07	0	15.47	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1483	01/29/07	3.12	3.12	D	refined:hydraulic	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1484	02/01/07	1.31	1.31	D	crude mixture	Prudhoe Bay	production	unknown	Human Error: Other
1485	02/04/07	11.45	11.45	C	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1486	02/06/07	2.62	2.62	D	refined:diesel/heating oil	Badami	production	unknown	Mechanical Failure: Other
1487	02/08/07	0	5	D	crude oil	Prudhoe Bay	production	unknown	Unknown
1488	02/15/07	2	2	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1489	03/03/07	0	11.9	C	crude oil	Milne Point	production	land:containment	Mechanical Failure: Other
1490	03/05/07	1.43	1.43	D	refined:hydraulic	unknown	support	unknown	Mechanical Failure: Other
1492	03/31/07	1.31	1.31	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Other
1493	04/05/07	2.5	2.5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Corrosion
1494	04/08/07	165	165	C	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Vehicle Accidents
1495	04/09/07	2.38	2.38	D	refined:diesel/heating oil	Milne Point	production	land:containment	Human Error: Other
1496	04/15/07	80	80	C	refined:diesel/heating oil	unknown	unknown	unknown	Human Error: Other
1498	04/19/07	8.33	8.33	D	refined:diesel/heating oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Other
1499	04/24/07	3.57	3.57	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1500	05/03/07	1.9	1.9	D	refined:diesel/heating oil	Milne Point	production	land:containment	Mechanical Failure: Other
1502	05/22/07	0	2.07	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1503	05/23/07	3.45	3.45	D	refined:hydraulic	Endicott	production	unknown	Mechanical Failure: Valve/Seal
1504	05/28/07	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1505	06/06/07	7	7	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1506	06/15/07	2.98	2.98	D	refined:hydraulic	unknown	unknown	unknown	Mechanical Failure: Valve/Seal
1507	06/16/07	4.76	4.76	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1508	06/30/07	0	3	D	crude oil	Prudhoe Bay	production	land:containment	Mechanical Failure: Other
1509	08/05/07	1.55	1.55	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1510	08/08/07	2.74	2.74	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1511	09/05/07	1.33	1.33	D	refined:diesel/heating oil	Oooguruk	production	unknown	Mechanical Failure: Other
1512	09/10/07	20.95	20.95	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1513	09/10/07	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1514	09/29/07	1.31	1.31	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill
1516	10/19/07	6.19	6.19	D	refined:diesel/heating oil	Oooguruk	production	unknown	Mechanical Failure: Other
1517	10/28/07	0	1.19	D	crude oil	Kuparuk River	production	land:containment	Mechanical Failure: Valve/Seal
1519	11/02/07	2.86	2.86	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1520	11/03/07	1.43	1.43	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Mechanical Failure: Other
1521	11/16/07	1.95	1.95	D	refined:diesel/heating oil	Oooguruk	support	unknown	Human Error: Overfill
1522	11/22/07	10.71	10.71	C	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1524	12/07/07	1.79	1.79	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1525	12/16/07	2.38	102	C	crude oil	Kuparuk River	pipeline	land:tundra	Unknown
1526	12/28/07	3.33	3.33	D	refined:hydraulic	Kuparuk River	support	unknown	Mechanical Failure: Valve/Seal
1527	01/21/08	2.02	2.02	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1528	01/24/08	2.86	2.86	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1530	02/10/08	1.67	1.67	D	refined:hydraulic	unknown	exploration	land:containment	Mechanical Failure: Other
1531	02/10/08	0	6	D	crude oil	Prudhoe Bay	production	land:gravel	Mechanical Failure: Valve/Seal
1533	02/21/08	20	20	C	refined:diesel/heating oil	Colville River, Alpine	production	unknown	Mechanical Failure: Valve/Seal
1534	02/26/08	12	12	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1535	02/28/08	5.55	5.55	D	crude oil	Endicott	production	unknown	Human Error: Other
1536	03/17/08	50	50	C	crude oil	Kuparuk River	production	unknown	Unknown
1538	03/29/08	6.45	6.45	D	refined:diesel/heating oil	unknown	support	unknown	Human Error: Overfill
1539	04/10/08	3.86	3.86	D	refined:hydraulic	Prudhoe Bay	support	unknown	Mechanical Failure: Valve/Seal
1540	04/15/08	1.19	1.19	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1541	04/17/08	2.86	2.86	D	refined:hydraulic	unknown	exploration	land:containment	Mechanical Failure: Other
1542	04/22/08	2.62	2.62	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1543	05/08/08	10	10	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1544	05/08/08	5	5	D	crude oil	unknown	production	unknown	Mechanical Failure: Other
1545	05/09/08	3.57	3.57	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1546	05/09/08	3.21	3.21	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
1547	05/09/08	8.33	8.33	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1548	05/12/08	5.24	5.24	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1549	05/14/08	1.78	1.78	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1550	05/17/08	4.01	4.01	D	crude oil	Colville River, Alpine	production	unknown	Mechanical Failure: Corrosion

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1551	05/23/08	5.24	5.24	D	refined:other	unknown	support	unknown	Mechanical Failure: Valve/Seal
1552	05/26/08	1.07	1.07	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
1553	05/29/08	2.38	2.38	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Unknown
1554	06/02/08	1.4	1.4	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1555	07/02/08	2	2	D	crude oil	Colville River, Alpine	production	unknown	Human Error: Other
1556	07/16/08	20.24	20.24	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1557	07/17/08	7.14	7.14	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1559	07/30/08	3.33	3.33	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1560	07/30/08	2.5	2.5	D	crude mixture	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1561	08/01/08	1.62	1.62	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1563	08/06/08	55	55	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1564	08/09/08	3.81	3.81	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1565	09/14/08	2	2	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Unknown
1566	10/02/08	3.57	3.57	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1567	10/25/08	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Unknown
1569	11/08/08	4	4	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1570	11/15/08	2.38	2.38	D	refined:other	unknown	support	unknown	Human Error: Other
1572	12/25/08	0	452	B	crude oil	Kuparuk River	pipeline	unknown	Mechanical Failure: Other
1573	12/27/08	2.02	2.02	D	refined:hydraulic	unknown	exploration	unknown	Mechanical Failure: Other
1574	01/07/09	23.81	23.81	C	refined:diesel/heating oil	unknown	support	unknown	Human Error: Other
1575	01/11/09	2.86	2.86	D	refined:other	North Star	production	unknown	Mechanical Failure: Other
1576	01/12/09	96.38	96.38	C	crude mixture	Milne Point	production	unknown	Mechanical Failure: Overpressure
1577	01/14/09	1.19	1.19	D	refined:hydraulic	Milne Point	production	land:gravel	Mechanical Failure: Other
1578	01/14/09	2.31	2.31	D	refined:diesel/heating oil	unknown	support	land:containment	Human Error: Other
1579	02/07/09	20.02	20.02	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1580	02/10/09	1.9	1.9	D	refined:other	Milne Point	production	land:containment	Mechanical Failure: Other
1581	02/18/09	1.33	1.33	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1582	02/18/09	46	46	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1583	02/27/09	2	2	D	refined:diesel/heating oil	Milne Point	production	unknown	Human Error: Other
1584	03/11/09	4.76	4.76	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1585	03/15/09	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1586	03/16/09	9.52	9.52	D	refined:diesel/heating oil	unknown	exploration	land:containment	Mechanical Failure: Valve/Seal
1587	03/21/09	2.38	2.38	D	refined:hydraulic	Kuparuk River	support	unknown	Mechanical Failure: Other

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1589	03/22/09	0	45	C	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1590	04/09/09	0	1.8	D	crude oil	Milne Point	production	unknown	Human Error: Unknown
1591	04/30/09	2.38	2.38	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1594	05/13/09	1.67	1.67	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Human Error: Overfill
1595	05/25/09	2.79	2.79	D	refined:diesel/heating oil	Prudhoe Bay	support	unknown	Mechanical Failure: Other
1596	06/24/09	1.79	1.79	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1597	06/26/09	1.79	1.79	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Overpressure
1598	07/09/09	1.5	1.5	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1599	07/20/09	10	10	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1601	08/25/09	1.86	1.86	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1602	08/27/09	2.38	2.38	D	refined:diesel/heating oil	unknown	support	land:unknown	Unknown
1604	11/08/09	2.86	2.86	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1605	11/19/09	1.9	1.9	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1606	11/21/09	5.95	5.95	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1608	11/29/09	321.43	321.4	B	crude oil	Prudhoe Bay	pipeline	land:tundra water:frozen	Mechanical Failure: Overpressure
1609	12/02/09	0	34	C	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Corrosion
1610	12/05/09	4.76	4.76	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1611	12/13/09	41.55	41.55	C	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1612	12/21/09	2.38	2.38	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1613	01/02/10	3.14	3.14	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Other
1614	01/13/10	4.29	4.29	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Overfill
1615	01/20/10	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1616	01/27/10	3.79	3.79	D	crude oil	Prudhoe Bay	pipeline	unknown	Mechanical Failure: Other
1617	01/30/10	1.79	1.79	D	crude oil	Oooguruk	production	unknown	Mechanical Failure: Other
1618	02/09/10	10.17	10.17	C	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Vehicle Accidents
1619	02/09/10	2.38	2.38	D	refined:diesel/heating oil	Badami	production	unknown	Human Error: Overfill
1620	02/11/10	2.4	2.4	D	refined:diesel/heating oil	Endicott	production	unknown	Mechanical Failure: Corrosion
1621	02/17/10	1.9	1.9	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Human Error: Other
1622	02/23/10	2.02	2.02	D	refined:diesel/heating oil	Nikaitchuq	production	unknown	Mechanical Failure: Valve/Seal
1624	03/05/10	6.57	6.57	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Other
1625	03/05/10	3	3	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Unknown
1626	03/07/10	2.38	2.38	D	refined:diesel/heating oil	Endicott	production	unknown	Human Error: Other
1627	03/12/10	1.19	1.19	D	refined:diesel/heating oil	Nikaitchuq	unknown	unknown	Unknown

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1628	03/16/10	1.17	1.17	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1629	03/19/10	2.38	2.38	D	refined:diesel/heating oil	unknown	support	unknown	Human Error: Overfill
1630	03/21/10	1.07	1.07	D	refined:hydraulic	Kuparuk River	production	unknown	Mechanical Failure: Other
1631	03/26/10	7.81	7.81	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1632	04/12/10	3.5	3.5	D	refined:diesel/heating oil	Milne Point	production	unknown	Mechanical Failure: Valve/Seal
1633	04/17/10	4.5	4.5	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Vehicle Accidents
1635	05/18/10	2	2	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1636	05/22/10	1.48	1.48	D	refined:hydraulic	Colville River, Alpine	production	unknown	Mechanical Failure: Other
1637	05/24/10	1.07	1.07	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1638	05/30/10	1.05	1.05	D	refined:diesel/heating oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1640	06/13/10	3.1	3.1	D	refined:diesel/heating oil	Endicott	production	unknown	Human Error: Vehicle Accidents
1641	06/19/10	1.43	1.79	D	refined:diesel/heating oil	Prudhoe Bay	vehicle	unknown	Human Error: Vehicle Accidents
1642	06/20/10	4.76	4.76	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Other
1643	06/21/10	0	52.07	C	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1644	06/25/10	3.57	3.57	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1645	07/03/10	3.52	3.52	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Other
1646	07/05/10	1.9	1.9	D	refined:diesel/heating oil	unknown	exploration	unknown	Mechanical Failure: Other
1647	07/31/10	2.38	2.38	D	refined:other	Prudhoe Bay	production	unknown	Human Error: Overfill
1648	09/11/10	8	8	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Other
1649	09/17/10	1.67	1.67	D	refined:other	Prudhoe Bay	production	unknown	Mechanical Failure: Valve/Seal
1650	09/20/10	1.19	1.19	D	refined:diesel/heating oil	unknown	support	unknown	Mechanical Failure: Other
1651	09/24/10	1.43	1.43	D	refined:hydraulic	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1652	11/04/10	1.07	1.07	D	refined:other	unknown	support	unknown	Human Error: Unknown
1653	11/11/10	2.79	2.79	D	refined:hydraulic	Oooguruk	vehicle	unknown	Mechanical Failure: Other
1654	11/21/10	2.38	2.38	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Vehicle Accidents
1656	12/17/10	2.14	2.14	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1657	12/29/10	2.38	2.38	D	refined:diesel/heating oil	unknown	support	land:unknown	Human Error: Overfill
1658	01/01/11	1.24	1.24	D	refined:diesel/heating oil	Endicott	production	unknown	Mechanical Failure: Other
1659	01/03/11	4.4	4.4	D	refined:diesel/heating oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1660	01/08/11	8	8	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1661	01/23/11	1.19	1.19	D	refined:diesel/heating oil	unknown	vehicle	unknown	Human Error: Vehicle Accidents
1662	02/09/11	1.45	1.45	D	crude oil	Nikaitchuq	production	unknown	Mechanical Failure: Other
1663	04/13/11	6	6	D	crude oil	North Star	production	unknown	Mechanical Failure: Valve/Seal

Spill ID	Spill Date	Minimum Oil Released (bbl)	Maximum Oil Released (bbl)	Spill Size Class	Substance Type	Oil Field	Facility Type	Affected Media	Cause
1664	05/18/11	2.95	2.95	D	crude oil	Kuparuk River	production	unknown	Mechanical Failure: Valve/Seal
1665	05/27/11	4.76	4.76	D	refined:other	unknown	support	unknown	Mechanical Failure: Other
1666	06/25/11	1.31	1.31	D	crude oil	Prudhoe Bay	production	unknown	Unknown
1667	07/21/11	1.43	1.43	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Corrosion
1668	08/14/11	1.19	1.19	D	refined:hydraulic	Oooguruk	production	unknown	Human Error: Other
1669	08/14/11	0	9.52	D	crude oil	Prudhoe Bay	production	unknown	Mechanical Failure: Other
1670	08/16/11	0	4.53	D	crude oil	Prudhoe Bay	production	unknown	Human Error: Unknown
1671	09/05/11	12.6	12.6	C	refined:diesel/heating oil	Kuparuk River	production	unknown	Human Error: Overfill

Appendix B: Exposure Variable Datasets

The following units of measure are used in the tables in Appendix B:

PrtDate:	Month-Year
DaysProd:	Number of days of production for the month
ProdOil:	Number of barrels of crude oil produced for the month
ProdWater:	Number of barrels of water produced for the month
ProdGas:	Number of thousands of cubic feet (MCF) produced for the month
ProdWells:	Number of wells that were producing in the field for the month
NGLeg:	Number of barrels of natural gas liquids produced for the month
ProdOil+NGLeg:	Number of barrels of crude oil and natural gas liquids produced for the month

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Appendices B: Production Data

Table B.1: *Badami*

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Aug-98	20	83152	0	53413	3		
Sep-98	118	223455	0	149206	6		
Oct-98	176	132002	0	91850	7		
Nov-98	177	152083	0	88738	7		
Dec-98	147	140198	0	76219	5		
Jan-99	155	102653	0	65230	5		
Feb-99	20	9776	0	5966	5		
May-99	142	142367	0	77660	5		
Jun-99	151	153123	0	101425	6		
Jul-99	168	164239	0	128054	6		
Aug-99	179	148483	0	193901	6		
Sep-99	149	113868	0	241058	6		
Oct-99	138	120339	0	339680	5		
Nov-99	122	103933	0	282049	5		
Dec-99	125	91448	0	258348	6		
Jan-00	155	90991	0	264336	6		
Feb-00	149	81664	0	322062	6		
Mar-00	154	80276	0	229855	6		
Apr-00	151	78155	0	394672	6		
May-00	158	81159	0	312509	6		
Jun-00	124	76931	0	431619	6		
Jul-00	140	81529	0	335241	6		
Aug-00	150	80903	0	533425	6		
Sep-00	124	60737	0	470216	6		
Oct-00	138	83020	0	466802	6		
Nov-00	123	67447	0	457256	6		
Dec-00	126	67548	0	338576	6		
Jan-01	112	65435	0	276254	6		
Feb-01	127	54737	0	451935	6		
Mar-01	109	62065	0	354435	6		
Apr-01	138	55354	0	461671	6		
May-01	161	62750	0	454002	6		
Jun-01	150	57517	0	390544	6		
Jul-01	158	61151	0	373240	6		
Aug-01	149	49046	0	413751	6		
Sep-01	149	52672	0	582139	6		
Oct-01	155	54968	0	357387	6		
Nov-01	162	53837	0	630730	6		
Dec-01	134	45231	0	566277	6		
Jan-02	149	44340	0	542474	5		
Feb-02	131	42159	0	497986	5		
Mar-02	144	61010	0	638394	5		
Apr-02	147	61089	0	635016	5		
May-02	155	55861	0	607965	5		
Jun-02	150	50883	0	645723	5		
Jul-02	155	42716	0	662790	5		
Aug-02	151	42126	0	589621	5		
Sep-02	148	45251	0	581058	5		
Oct-02	155	46033	0	641078	5		
Nov-02	146	40999	0	519565	5		
Dec-02	179	46804	0	609952	6		
Jan-03	159	38936	0	375059	6		
Feb-03	148	39183	0	138549	6		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Mar-03	186	42163	0	604378	6		
Apr-03	180	42212	0	621518	6		
May-03	186	40641	0	627476	6		
Jun-03	180	38766	0	632755	6		
Jul-03	168	35523	0	606492	6		
Aug-03	9	4128	0	91733	2		
Sep-03		0	0	0	0		
Oct-03		0	0	0	0		
Nov-03		0	0	0	0		
Dec-03		0	0	0	0		
Jan-04		0	0	0	0		
Feb-04		0	0	0	0		
Mar-04		0	0	0	0		
Apr-04		0	0	0	0		
May-04		0	0	0	0		
Jun-04		0	0	0	0		
Jul-04		0	0	0	0		
Aug-04		0	0	0	0		
Sep-04		0	0	0	0		
Oct-04		0	0	0	0		
Nov-04		0	0	0	0		
Dec-04		0	0	0	0		
Jan-05		0	0	0	0		
Feb-05		0	0	0	0		
Mar-05		0	0	0	0		
Apr-05		0	0	0	0		
May-05		0	0	0	0		
Jun-05		0	0	0	0		
Jul-05		0	0	0	0		
Aug-05		0	0	0	0		
Sep-05		4126	0	48596	3		
Oct-05		55387	0	304112	5		
Nov-05		47739	0	361553	5		
Dec-05		44545	0	405364	6		
Jan-06		48688	0	401815	4		
Feb-06		43256	0	346265	4		
Mar-06		39991	0	437377	4		
Apr-06		39078	0	411086	4		
May-06		43985	0	400566	5		
Jun-06		38571	0	372364	5		
Jul-06		39494	0	370783	6		
Aug-06		44408	0	486927	6		
Sep-06		41655	0	496009	6		
Oct-06		37317	0	257643	5		
Nov-06		33500	0	124304	5		
Dec-06		30545	0	97029	4		
Jan-07		32650	0	104386	5		
Feb-07		27858	0	59653	4		
Mar-07		29084	0	55165	4		
Apr-07		30727	0	53191	5		
May-07		22589	0	37839	5		
Jun-07		30020	0	46007	4		
Jul-07		27166	0	37734	4		
Aug-07		18976	0	18004	4		
Sep-07		0	0	0	0		
Oct-07		0	0	0	0		
Nov-07		0	0	0	0		
Dec-07		0	0	0	0		
Jan-08		0	0	0	0		
Feb-08		0	0	0	0		
Mar-08		0	0	0	0		
Apr-08		0	0	0	0		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
May-08		0	0	0	0		
Jun-08		0	0	0	0		
Jul-08		0	0	0	0		
Aug-08		0	0	0	0		
Sep-08		0	0	0	0		
Oct-08		0	0	0	0		
Nov-08		0	0	0	0		
Dec-08		0	0	0	0		
Jan-09		0	0	0	0		
Feb-09		0	0	0	0		
Mar-09		0	0	0	0		
Apr-09		0	0	0	0		
May-09		0	0	0	0		
Jun-09		0	0	0	0		
Aug-09		0	0	0	0		
Sep-09		0	0	0	0		
Oct-09		0	0	0	0		
Nov-09		0	0	0	0		
Dec-09		0	0	0	0		
Jan-10		0	0	0	0		
Feb-10		0	0	0	0		
Mar-10		0	0	0	0		
Apr-10		0	0	0	0		
May-10		0	0	0	0		
Jun-10		0	0	0	0		
Jul-10		0	0	0	0		
Aug-10		0	0	0	0		
Sep-10		0	0	0	0		
Oct-10		0	0	0	0		
Nov-10		34649	0	151861	5		
Dec-10		45949	0	222544	5		
Jan-11		40615	0	216287	5		
Feb-11		35272	0	143967	4		
Mar-11		43287	0	70708	6		
Apr-11		39463	0	38694	5		
May-11		43802	0	39313	5		
Jun-11		36227	0	40878	5		
Jul-11		39673	0	41030	5		

Table B.2:
Colville River

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Nov-00	135	533712	972	473199	13		
Dec-00	374	1697213	1	1515085	15		
Jan-01	442	2077820	7	2039765	17		
Feb-01	499	2049811	0	1909141	19		
Mar-01	573	2492682	0	2260212	19		
Apr-01	554	2484890	0	2528536	19		
May-01	572	2574530	77	2589488	20		
Jun-01	570	2656529	0	2452078	19		
Jul-01	590	3014930	0	2995454	20		
Aug-01	534	2722853	0	2905641	20		
Sep-01	535	2909130	476	3333957	18		
Oct-01	527	2839460	530	3401960	18		
Nov-01	642	3043615	1164	3282646	23		
Dec-01	687	3087598	3631	3257113	23		
Jan-02	734	3125700	6805	3181952	24		
Feb-02	652	2755146	5693	2989233	25		
Mar-02	686	2958980	8150	3590988	25		
Apr-02	616	2802781	10350	3738849	22		
May-02	668	2995469	12814	3977540	25		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jun-02	713	2848861	13986	3182812	25		
Jul-02	786	2943741	15196	3452565	26		
Aug-02	743	3126438	20794	3872235	27		
Sep-02	573	2372438	14245	2841874	28		
Oct-02	772	3134057	23952	3715239	28		
Nov-02	737	2790417	19369	3506960	31		
Dec-02	804	3187087	24705	3976556	29		
Jan-03	854	3093353	20221	3833673	31		
Feb-03	760	2764293	20917	3193407	33		
Mar-03	868	3256000	25728	3381844	31		
Apr-03	862	3121307	24031	3226088	30		
May-03	924	3234930	29353	3309975	33		
Jun-03	792	3045733	37681	3190130	31		
Jul-03	715	2482396	28963	2371464	33		
Aug-03	763	2840844	33386	3014018	33		
Sep-03	838	3149037	34079	3896997	30		
Oct-03	854	2772451	29235	3766898	35		
Nov-03	933	3089969	20708	3859475	35		
Dec-03	852	2732118	23466	3035427	36		
Jan-04		3251681	30250	3678782	33		
Feb-04		3032451	33587	3512862	32		
Mar-04		3343366	72891	4197208	35		
Apr-04		3166507	74527	4027131	34		
May-04		3300821	48311	3908823	35		
Jun-04		3085871	23024	3844155	34		
Jul-04		1679292	9503	2232085	34		
Aug-04		1360129	20469	1431430	34		
Sep-04		3282922	86549	4681270	36		
Oct-04		3513866	90209	4682608	40		
Nov-04		3485820	123292	4450727	39		
Dec-04		3593624	133237	4552723	42		
Jan-05		3700977	153702	4248724	43		
Feb-05		3341651	174917	3887106	44		
Mar-05		3699077	214434	4247542	43		
Apr-05		3491839	171829	3808888	42		
May-05		3699666	164190	4068588	45		
Jun-05		3327202	154472	3472632	44		
Jul-05		2941063	128905	3019483	46		
Aug-05		3876982	115573	3880801	45		
Sep-05		3815406	159942	4473076	45		
Oct-05		3971248	168297	4870722	45		
Nov-05		3920612	186617	4767630	47		
Dec-05		4027142	246166	4764951	48		
Jan-06		3964826	354174	4581784	49		
Feb-06		3530034	316014	4026510	49		
Mar-06		3924900	364527	4797141	50		
Apr-06		3769042	378517	4662525	51		
May-06		3827718	447067	4921212	49		
Jun-06		3481587	322061	4622333	51		
Jul-06		3012457	387156	3995333	51		
Aug-06		4007749	423568	4526531	54		
Sep-06		3668165	365463	4067923	52		
Oct-06		3772199	494178	4130344	54		
Nov-06		3119520	451557	3466253	54		
Dec-06		4180502	501330	4470444	57		
Jan-07		4004099	502478	4190008	58		
Feb-07		3589028	491526	3828146	56		
Mar-07		3805227	584548	4290548	59		
Apr-07		3886659	415696	4381042	59		
May-07		4305471	343270	4903965	55		
Jun-07		4063267	258274	4569464	51		
Jul-07		3796153	311608	4621036	51		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Aug-07		3286320	334538	3914261	57		
Sep-07		3785436	420011	4239303	55		
Oct-07		3804244	507295	4718539	57		
Nov-07		3540239	491329	4517053	59		
Dec-07		3602211	536795	4586778	60		
Jan-08		3396741	596435	4387042	59		
Feb-08		3044462	423745	3976704	59		
Mar-08		3518450	531301	4586851	61		
Apr-08		3322785	522305	4689164	62		
May-08		3546041	545173	4718420	61		
Jun-08		3359230	495068	4178220	62		
Jul-08		3568650	487365	4395085	64		
Aug-08		1892808	292050	2262600	66		
Sep-08		3683756	617938	4077339	65		
Oct-08		3616478	654208	4214486	64		
Nov-08		3427780	635848	4178699	66		
Dec-08		3407081	692438	4428480	66		
Jan-09		3319394	677225	4467224	67		
Feb-09		3090853	634445	4106532	68		
Mar-09		3468625	756186	4461421	69		
Apr-09		3313700	799255	4126747	70		
May-09		3330524	843705	4160515	70		
Jun-09		3112387	853764	3731668	70		
Jul-09		2901146	862369	3671026	73		
Aug-09		3227217	1055322	3599574	73		
Sep-09		3003703	1049957	3293858	72		
Oct-09		2926705	1196664	3392276	73		
Nov-09		2858252	1207558	3295433	72		
Dec-09		2851473	1248879	3569791	74		
Jan-10		2893311	1337375	3532425	75		
Feb-10		2496276	1186686	3159369	75		
Mar-10		2803245	1370244	3418979	77		
Apr-10		2971780	1290809	3285949	79		
May-10		2741068	1324587	3124096	78		
Jun-10		2440111	1158806	2479491	77		
Jul-10		2806506	1404839	2925345	78		
Aug-10		2783965	1380744	3003355	74		
Sep-10		2753069	1453343	3059408	76		
Oct-10		2812709	1640261	3109800	77		
Nov-10		2696867	1618858	2888766	78		
Dec-10		2685787	1668528	2953196	75		
Jan-11		2178489	1515356	2527059	78		
Feb-11		2311821	1557973	2453653	76		
Mar-11		2503919	1766314	2630584	78		
Apr-11		2469735	1758352	2591097	81		
May-11		2498781	1793572	2501870	80		
Jun-11		2360289	1882521	2292454	81		
Jul-11		2241713	1677866	2141393	83		

Table B.3: *Endicott*

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jul-86	2	4202	0	2632	2		4202
Aug-86	11	630	0	19626	2		630
Sep-86	30	1338	0	31090	1		1338
Oct-86	37	1961	0	52578	2		1961
Nov-86	54	1834	0	53604	2		1834
Dec-86	54	1041	0	35904	2		1041
Jan-87	33	1958	0	66123	2		1958
Feb-87	56	2048	0	67492	2		2048
Mar-87	55	2768	0	86252	2		2768

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Apr-87	50	2319	0	80301	2		2319
May-87	59	2239	0	74338	2		2239
Jun-87	50	4522	2132	57680	3		4522
Jul-87	31	1228	0	34500	1		1228
Aug-87	31	1583	0	49180	2		1583
Sep-87	30	2198	0	68339	2		2198
Oct-87	300	1964424	8705	1457992	20		1964424
Nov-87	534	3361738	24086	3011900	20		3361738
Dec-87	625	3448733	136440	3183353	25	2879	3451612
Jan-88	692	3575240	173979	3323535	27	38024	3613264
Feb-88	712	3424146	206701	2989419	27	38410	3462556
Mar-88	735	3321839	166869	2941384	27	23354	3345193
Apr-88	748	3012703	172767	2891360	27	12344	3025047
May-88	799	3051552	140931	3017690	29	42519	3094071
Jun-88	809	2946269	138063	2792212	31	47734	2994003
Jul-88	798	3046568	174543	2581397	31	52474	3099042
Aug-88	844	3089984	195595	2847360	35	11555	3101539
Sep-88	872	2950368	217765	2698158	38	52483	3002851
Oct-88	794	3065973	292398	2931322	36	43939	3109912
Nov-88	865	2942988	284371	3072753	35	60458	3003446
Dec-88	1036	3013490	375996	2747706	39	68798	3082288
Jan-89	1087	2981039	335478	2782784	37	68593	3049632
Feb-89	942	2765677	331989	2940181	39	63251	2828928
Mar-89	876	2633393	473270	3037632	37	61035	2694428
Apr-89	937	2924169	642625	2894655	41	81872	3006041
May-89	1025	3312221	649193	3533319	38	78073	3390294
Jun-89	892	3190145	772649	3832923	35	59250	3249395
Jul-89	966	2996414	757495	3471583	38	59313	3055727
Aug-89	1000	3103115	621663	3538518	38	73494	3176609
Sep-89	860	2967203	301442	3931644	37	81642	3048845
Oct-89	968	3041322	332175	3809295	34	84947	3126269
Nov-89	943	3045109	522601	3838625	37	57780	3102889
Dec-89	1051	3135125	822308	3819134	38	73989	3209114
Jan-90	1017	3291582	887085	4140066	38	81921	3373503
Feb-90	852	2914898	537187	3551959	39	66867	2981765
Mar-90	1057	3206542	863220	3755049	39	82789	3289331
Apr-90	1063	3170776	1132074	3678171	38	74839	3245615
May-90	1200	3282136	1242828	3944979	41	83472	3365608
Jun-90	1325	3110698	1144785	3592554	50	76738	3187436
Jul-90	1530	3116176	1030849	3355963	53	56065	3172241
Aug-90	1093	2354179	611271	2206161	51	18994	2373173
Sep-90	1526	3294913	1066439	3376985	53	75684	3370597
Oct-90	1559	3457983	1257820	4322783	55	93175	3551158
Nov-90	1417	3106665	1130682	3869090	55	79416	3186081
Dec-90	1556	3416305	1281277	4112305	56	83011	3499316
Jan-91	1536	3465348	1252083	4077965	54	87948	3553296
Feb-91	1420	3416321	1208167	3987862	56	84818	3501139
Mar-91	1607	3670341	1379627	4635525	56	88712	3759053
Apr-91	1562	3459346	1329133	4665790	59	82317	3541663
May-91	1679	3556102	1565968	4981344	57	102281	3658383
Jun-91	1656	3323587	1477968	5064542	59	86895	3410482
Jul-91	1756	3548741	1550279	5489762	59	94817	3643558
Aug-91	1700	3545006	1508204	5494624	58	123324	3668330
Sep-91	1682	3413150	1766838	5566835	59	121038	3534188
Oct-91	1656	3482457	1574022	5770932	59	111884	3594341
Nov-91	1551	3217164	1512419	5662715	56	106645	3323809
Dec-91	1539	3206797	1913703	7195152	58	126497	3333294
Jan-92	1651	3467835	2086574	7933957	57	118080	3585915
Feb-92	1581	3256978	1955779	7832866	58	114653	3371631
Mar-92	1689	3377471	2409361	7725919	57	128444	3505915
Apr-92	1653	3275861	2071292	7192780	59	120704	3396565
May-92	1784	3517067	2066840	8292967	60	121855	3638922

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jun-92	1770	3515594	2272239	7928871	62	120774	3636368
Jul-92	1657	3284002	2013901	6884870	61	112767	3396769
Aug-92	1825	3586028	2318558	7919680	60	123345	3709373
Sep-92	1798	3581566	2569157	8287125	62	98279	3679845
Oct-92	1775	3703032	2686066	8862379	60	147076	3850108
Nov-92	1684	3441865	2507892	8985650	58	137162	3579027
Dec-92	1752	3597685	2778370	9902402	58	135995	3733680
Jan-93	1644	3609099	3052061	9756340	57	138210	3747309
Feb-93	1416	3283293	2768064	9267147	57	130239	3413532
Mar-93	1467	3576958	3169216	10223249	59	154625	3731583
Apr-93	1261	3178880	2708261	9167898	57	137985	3316865
May-93	1357	3601085	3143609	9574117	53	129356	3730441
Jun-93	1347	3222955	2530881	8904141	54	86782	3309737
Jul-93	1352	2958963	2097255	8764060	58	90960	3049923
Aug-93	1482	3420209	2473640	10019719	59	129769	3549978
Sep-93	1412	3253799	2494254	10725872	57	131198	3384997
Oct-93	1384	3184548	2299827	11478392	56	147668	3332216
Nov-93	1409	2902804	2510842	11279228	56	140124	3042928
Dec-93	1415	3001553	2523045	11484348	55	141429	3142982
Jan-94	1497	3139629	2389793	11785089	58	134115	3273744
Feb-94	1388	2733280	2618619	10405679	55	138409	2871689
Mar-94	1386	2684727	2503229	9577645	56	112920	2797647
Apr-94	1351	2608192	2359418	8903220	54	119528	2727720
May-94	1421	3049630	2832523	9877985	60	147310	3196940
Jun-94	1330	2950136	2726706	9229748	59	132716	3082852
Jul-94	1350	2863574	2610752	8597049	53	113903	2977477
Aug-94	1309	2893778	2429444	9119264	52	65039	2958817
Sep-94	1278	2654257	2545364	8888545	55	119669	2773926
Oct-94	1443	3049665	2899695	10529780	55	127928	3177593
Nov-94	1126	2464311	2181164	7952669	58	111723	2576034
Dec-94	1447	3193373	3285281	12203082	60	161490	3354863
Jan-95	1458	2954557	3042742	11828466	58	153288	3107845
Feb-95	1359	2861606	2806860	10794189	58	141675	3003281
Mar-95	1478	3202068	3084416	11734835	57	150174	3352242
Apr-95	1401	2824896	3181945	10197097	58	135146	2960042
May-95	1418	2709507	2994268	9722738	61	76853	2786360
Jun-95	1369	2865373	3182393	10194668	61	73880	2939253
Jul-95	1431	2708323	3172359	9907136	58	6417	2714740
Aug-95	1454	2617853	3217347	10422489	61	0	2617853
Sep-95	1412	2343294	2935722	9190556	60	44263	2387557
Oct-95	1541	2680071	3478861	10646090	61	136793	2816864
Nov-95	1433	2686446	3400597	11104301	58	139859	2826305
Dec-95	1434	2778740	3570127	11600601	58	146088	2924828
Jan-96	1426	2681513	3745703	11391236	57	149130	2830643
Feb-96	1219	2606491	3501349	10904221	55	135263	2741754
Mar-96	1283	2643514	4073009	11457446	53	121845	2765359
Apr-96	1232	2403318	3634957	10187718	54	132010	2535328
May-96	1293	2312466	3918156	9354207	55	38654	2351120
Jun-96	1167	2172884	3685270	9663503	52	0	2172884
Jul-96	613	1052367	1843372	4798491	48	0	1052367
Aug-96	1355	2283275	4282034	10364775	55	0	2283275
Sep-96	1315	2055814	4668338	10742620	56	25378	2081192
Oct-96	1390	2210044	5207862	11863583	52	129460	2339504
Nov-96	1410	2126966	5530880	11593404	58	132258	2259224
Dec-96	1441	2100229	5623081	11745152	54	149852	2250081
Jan-97	1380	2094836	5413582	12213849	56	154660	2249496
Feb-97	1257	1820000	4723245	11230204	53	140973	1960973
Mar-97	1356	2005849	5272047	12343451	54	147862	2153711
Apr-97	1376	1834976	4974697	10538352	53	132794	1967770
May-97	1379	1834199	5047407	10683859	54	134828	1969027
Jun-97	1251	1649228	4356762	9158616	54	116511	1765739
Jul-97	1372	1540736	4945930	8495788	56	113718	1654454

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Aug-97	1340	1581996	4387285	8182323	53	78711	1660707
Sep-97	1322	1765041	4642961	9166290	54	122634	1887675
Oct-97	1444	1857442	5621043	10807711	57	139354	1996796
Nov-97	1383	1693443	5345458	10427737	57	125510	1818953
Dec-97	1412	1698653	5556278	11646499	53	144781	1843434
Jan-98	1380	1657858	5677845	12021052	55	145564	1803422
Feb-98	1274	1493846	4597125	10436035	57	121887	1615733
Mar-98	1361	1806009	4760007	11139530	51	136797	1942806
Apr-98	1269	1510531	4689000	10141200	53	107629	1618160
May-98	1242	1582814	5008130	10133769	54	4211	1587025
Jun-98	1203	1358161	4661834	8894020	53	106960	1465121
Jul-98	1278	1452496	5286674	9708198	51	37831	1490327
Aug-98	1213	1269567	4648127	8332016	49	114601	1384168
Sep-98	1191	1215534	4562484	8748351	52	111071	1326605
Oct-98	1345	1374005	5377349	10706546	54	125771	1499776
Nov-98	1364	1330697	5423069	10891071	58	129800	1460497
Dec-98	1444	1311467	5239789	11072716	57	123724	1435191
Jan-99	1471	1409112	5514854	12284242	58	132308	1541420
Feb-99	1348	1324031	4961180	10553926	60	123834	1447865
Mar-99	1101	1085107	3397871	7075989	64	89770	1174877
Apr-99	1049	1024186	3827627	7118795	59	88041	1112227
May-99	1248	1242178	4875977	9687699	56	119492	1361670
Jun-99	1346	1209359	5099484	11724349	58	129966	1339325
Jul-99	1335	1260614	5218908	12074790	51	118376	1378990
Aug-99	1263	1185433	5032036	11492871	52	112684	1298117
Sep-99	1267	1124012	4546169	11469674	56	105621	1229633
Oct-99	1401	1207723	5644424	13104204	58	126435	1334158
Nov-99	1422	1147850	5426881	12451108	55	115401	1263251
Dec-99	1418	1092992	5627553	12235513	56	110771	1203763
Jan-00	1338	990755	5219059	11159479	57	98831	1089586
Feb-00	1330	1054156	5218063	12092711	54	107525	1161681
Mar-00	1466	1103292	5770669	12943325	54	124367	1227659
Apr-00	1443	992427	5338693	11624948	55	114066	1106493
May-00	1502	1017302	6160617	12148376	55	116784	1134086
Jun-00	1383	996681	5469620	11545829	56	112883	1109564
Jul-00	1415	1010189	5663854	11949005	58	124279	1134468
Aug-00	1450	986657	5752349	11466200	54	129468	1116125
Sep-00	1474	923535	5396276	11189454	61	115400	1038935
Oct-00	1523	992845	6339604	12434141	57	135605	1128450
Nov-00	1493	988724	6197155	12458432	55	130906	1119630
Dec-00	1489	961476	5706946	12214658	56	127262	1088738
Jan-01	1522	970548	5838683	12387794	56	127231	1097779
Feb-01	1391	888787	5590418	11432669	55	108803	997590
Mar-01	1394	879059	5736094	11327405	55	107482	986541
Apr-01	1402	851148	5594246	11478513	56	110452	961600
May-01	1439	855030	5635447	10773795	54	109617	964647
Jun-01	1425	837466	6042239	11301171	53	111287	948753
Jul-01	1453	875232	6249333	11168865	57	107518	982750
Aug-01	1432	881945	6408969	11615611	55	105711	987656
Sep-01	1370	844082	6169793	11515767	56	110896	954978
Oct-01	1377	850412	5996164	12028914	57	103946	954358
Nov-01	1347	847635	6203035	12652062	53	108563	956198
Dec-01	1374	857750	6175318	13026580	50	113762	971512
Jan-02	1402	817095	6166696	12352784	54	108934	926029
Feb-02	1234	792522	6055712	11688375	50	106119	898641
Mar-02	1408	860125	6514132	12715347	52	120368	980493
Apr-02	1343	820420	6495825	11987580	49	114169	934589
May-02	1402	840966	6946513	12438905	52	91049	932015
Jun-02	1345	770009	6767236	11645036	51	108991	879000
Jul-02	1242	684450	6178262	10581077	55	90708	775158
Aug-02	1287	719667	6897558	10615050	49	99101	818768
Sep-02	1283	715335	6467207	10970027	51	93093	808428

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Oct-02	1215	624994	5611027	9646440	49	81220	706214
Nov-02	1271	659953	5982290	10657168	51	84899	744852
Dec-02	1397	770638	7195959	13148208	49	104679	875317
Jan-03	1326	741787	6967006	13019769	48	103916	845703
Feb-03	1246	658247	6405342	11631742	54	93346	751593
Mar-03	1458	805534	6632617	12868803	53	104999	910533
Apr-03	1427	849982	6519362	12357629	53	106750	956732
May-03	1522	856584	6776799	12271813	56	109052	965636
Jun-03	1501	827542	6993191	11876529	57	105620	933162
Jul-03	1472	780121	6293854	11224908	55	78284	858405
Aug-03	1471	824481	6209040	11517989	52	96935	921416
Sep-03	1388	733894	6255556	10128471	53	87010	820904
Oct-03	1541	802948	6911469	12456333	57	103954	906902
Nov-03	1443	775579	6662077	12355305	55	98637	874216
Dec-03	1470	781234	6485899	12723296	55	101056	882290
Jan-04		759870	6674936	12865278	55	102746	862616
Feb-04		664489	6122119	12113023	56	91578	756067
Mar-04		792545	6766434	12784764	54	102944	895489
Apr-04		762554	7091566	12079384	57	101584	864138
May-04		743312	6689761	12170498	57	105708	849020
Jun-04		641813	6761430	10875109	56	99487	741300
Jul-04		579221	6290527	10274979	58	87724	666945
Aug-04		249162	2801497	4597459	54	33573	282735
Sep-04		517077	4762755	7993452	62	2313	519390
Oct-04		611037	6796532	11977017	64	78583	689620
Nov-04		603166	6577172	11868776	60	94772	697938
Dec-04		588723	7032520	11556303	57	70398	659121
Jan-05		642021	7371154	12434223	58	98753	740774
Feb-05		515965	6125419	11589138	56	83186	599151
Mar-05		540697	6077114	12396364	58	86463	627160
Apr-05		538021	6589146	11799633	61	84379	622400
May-05		551579	6064713	11995932	59	87317	638896
Jun-05		478874	4873786	10147490	53	70536	549410
Jul-05		569032	6150346	11208512	57	78124	647156
Aug-05		540757	7072622	11004312	56	83442	624199
Sep-05		524631	6514229	11164785	61	78435	603066
Oct-05		521622	6325384	12012733	59	72578	594200
Nov-05		520309	5796281	12418391	56	78858	599167
Dec-05		528588	5986711	12163590	56	77304	605892
Jan-06		514626	5917961	12209662	54	80184	594810
Feb-06		457449	5494849	11056917	54	65181	522630
Mar-06		495225	5905206	11948801	57	70654	565879
Apr-06		474201	5732944	11298926	56	78564	552765
May-06		510696	6578047	12037591	56	88485	599181
Jun-06		492606	6596859	11063701	60	80522	573128
Jul-06		469039	6411335	10686948	59	71111	540150
Aug-06		169361	2177477	3980069	54	23406	192767
Sep-06		181437	2316072	3123912	56	5314	186751
Oct-06		522144	7237623	11873870	56	77120	599264
Nov-06		414950	5915979	11325767	55	53261	468211
Dec-06		478746	6866528	12445930	55	79900	558646
Jan-07		464030	6279734	12844009	53	79491	543521
Feb-07		415895	5681465	11641034	54	72293	488188
Mar-07		428387	5843978	12787402	53	76863	505250
Apr-07		417542	5917097	11604832	54	72534	490076
May-07		447967	6284664	12622423	55	75978	523945
Jun-07		400784	6135454	11257485	53	70784	471568
Jul-07		356537	6107896	9904684	54	60183	416720
Aug-07		206158	3407902	5967450	48	3788	209946
Sep-07		379086	6174299	11029836	56	63366	442452
Oct-07		399006	6564545	13035981	55	75651	474657
Nov-07		371120	6720165	12487708	55	74480	445600

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Dec-07		328665	5670915	13353641	53	67816	396481
Jan-08		347815	4747057	11363326	54	55685	403500
Feb-08		362590	5451834	11720850	56	56213	418803
Mar-08		405198	5637669	12625276	58	66396	471594
Apr-08		402267	5195479	11214597	57	64441	466708
May-08		422028	5726135	11629441	59	69881	491909
Jun-08		400259	5189782	11806913	57	70127	470386
Jul-08		443031	5644194	11275770	58	73279	516310
Aug-08		403952	5351961	11482550	57	66674	470626
Sep-08		357959	4839616	8786432	56	36112	394071
Oct-08		394192	6263473	11465713	60	66440	460632
Nov-08		403662	6115099	11865184	60	67102	470764
Dec-08		390113	6220357	11372250	59	53183	443296
Jan-09		381469	6405751	11794580	57	46234	427703
Feb-09		334817	6065936	10639338	57	53507	388324
Mar-09		346091	5914964	11985996	53	56749	402840
Apr-09		328148	5377809	9911488	52	50677	378825
May-09		380713	5512637	10844805	57	41399	422112
Jun-09		373655	5303859	9869008	58	49912	423567
Jul-09		85657	1276100	2352422	60	9430	95087
Aug-09		379751	5066779	10134743	60	29534	409285
Sep-09		395937	5997158	10926570	58	37394	433331
Oct-09		395198	6205759	10902187	59	33602	428800
Nov-09		433910	5912816	11259758	59	33454	467364
Dec-09		374586	5292377	7451823	59	32611	407197
Jan-10		384541	6221627	11453465	58	37698	422239
Feb-10		353179	5552714	10758419	59	35770	388949
Mar-10		373333	5725646	11428753	59	34716	408049
Apr-10		356952	5518799	10948383	57	36354	393306
May-10		332003	5330601	10916445	56	31669	363672
Jun-10		366768	5815528	10702195	58	39937	406705
Jul-10		370591	6087363	11002875	56	42866	413457
Aug-10		346143	6068873	10889120	54	36881	383024
Sep-10		311362	5365394	9968307	55	34058	345420
Oct-10		324064	6081920	11114844	57	34646	358710
Nov-10		341200	5888574	11172176	56	32935	374135
Dec-10		323124	5882051	11505583	53	28721	351845
Jan-11		260827	5026142	9755989	55	25065	285892
Feb-11		320293	5626496	10625332	52	36906	357199
Mar-11		332063	6221559	11477924	53	43810	375873
Apr-11		308484	5753806	10507456	55	39427	347911
May-11		306014	5567047	11089344	51	35632	341646
Jun-11		800	0	106880	10	0	800
Jul-11		161617	2538611	3914926	49	34	161651

Table B.4:
Kuparuk River

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
April-70	3	5942	0	2079	1		5942
December-81	572	1091519	0	614757	40		1091519
January-82	1271	2503598	0	1225600	41		2503598
February-82	1130	2219665	6946	1004211	45		2219665
March-82	1398	2856849	14310	1489203	47		2856849
April-82	1385	2757084	18024	1531110	48		2757084
May-82	1396	2896582	14292	1878153	47		2896582
June-82	1373	2767490	12643	2007392	49		2767490
July-82	1343	2667455	15259	1952625	48		2667455
August-82	1471	2777346	22348	2132820	50		2777346
September-82	1483	2657034	27175	2143054	53		2657034
October-82	1577	2729407	13731	2497275	59		2729407

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
November-82	1665	2784984	2895	2542702	60		2784984
December-82	1787	2788500	825	2584660	65		2788500
January-83	2010	3190218	26642	3601542	77		3190218
February-83	1981	2839044	440460	3461032	81		2839044
March-83	2253	3017413	943946	3943817	79		3017413
April-83	2313	2966754	1187369	3460325	87		2966754
May-83	2289	3394427	1427669	3603567	86		3394427
June-83	2138	3240028	1471477	3311815	90		3240028
July-83	2326	3671323	1541444	3559314	84		3671323
August-83	2152	3303882	1570176	3229950	80		3303882
September-83	2232	3427449	1562114	3855742	81		3427449
October-83	2238	3311741	1547314	3809368	85		3311741
November-83	2278	3687435	1532194	4122761	89		3687435
December-83	2586	3832378	1576138	4437112	98		3832378
January-84	2735	3987034	1569628	4754843	101		3987034
February-84	2690	3810570	1481659	4659126	107		3810570
March-84	2768	3804304	1530918	4711810	103		3804304
April-84	2650	3353687	1517237	4331834	106		3353687
May-84	2899	3376000	1498519	4153440	121		3376000
June-84	2611	3296272	1340416	3402499	110		3296272
July-84	2667	3354021	1298952	3498668	111		3354021
August-84	2679	3173586	1309672	3764635	115		3173586
September-84	2751	3368424	1750315	3958622	115		3368424
October-84	3484	4058336	1914077	5258013	163		4058336
November-84	4494	4951266	1794497	6941371	177		4951266
December-84	5403	5674198	1849489	8032829	198		5674198
January-85	5259	5379315	1756953	7948990	201		5379315
February-85	5361	5799215	1420538	7941558	210		5799215
March-85	6066	6672050	1924712	8907039	237		6672050
April-85	5837	6475707	1982041	8408577	237	86625	6562332
May-85	6698	6822471	1917566	8373673	258	62749	6885220
June-85	7051	6400314	1861378	7852810	273	75481	6475795
July-85	7375	6745381	2070842	7345859	282	70048	6815429
August-85	8205	7251450	1838877	8499524	310	91909	7343359
September-85	8029	7142342	2096480	8720980	303	86904	7229246
October-85	8354	7295113	1933710	9667966	320	86616	7381729
November-85	7512	6456759	952017	9997564	309	97378	6554137
December-85	7253	6811877	928105	10747822	271	103483	6915360
January-86	7398	7211560	1146760	11491663	263	119111	7330671
February-86	6991	6965743	990488	10110627	280	101090	7066833
March-86	7877	8091172	1342687	11121030	274	107901	8199073
April-86	7745	8387035	1110065	10420161	285	104352	8491387
May-86	7938	8451440	800939	9705759	281	111588	8563028
June-86	7858	8103849	901279	8453754	277	97005	8200854
July-86	8393	8152884	1151678	8103480	283	74462	8227346
August-86	8306	7494816	971429	7319648	296	63776	7558592
September-86	8133	7107444	862084	7610062	291	71629	7179073
October-86	8743	8019485	1010883	9504711	292	80871	8100356
November-86	8880	7764709	1102962	10087891	315	63573	7828282
December-86	9319	8449796	1330180	11068846	326	76593	8526389
January-87	9418	9199782	1481827	12037811	322	95546	9295328
February-87	8532	7978691	1491211	11289202	313	84681	8063372
March-87	9546	9113763	1788096	12016109	324	105881	9219644
April-87	9159	8683041	2112396	11370332	319	104848	8787889
May-87	9347	8942755	2429958	10442481	313	110002	9052757
June-87	9152	8707775	2468156	9325038	311	106683	8814458
July-87	9045	8212446	3121183	7919835	321	115060	8327506
August-87	9141	8052409	3896342	8351873	332	89156	8141565
September-87	9095	7644574	4172314	8724464	335	112562	7757136
October-87	9712	8458782	3718445	10470353	340	108070	8566852
November-87	9476	8548419	3780789	11328651	337	111913	8660332
December-87	9883	8905459	3749855	11812853	336	112388	9017847

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
January-88	9957	8867132	3647908	11750428	333	116236	8983368
February-88	9299	9157192	4187780	11059306	329	108605	9265797
March-88	9684	9633655	4406430	11233067	322	30863	9664518
April-88	9160	9115025	4166425	10266916	318		9115025
May-88	9362	9558835	4571209	9884308	320		9558835
June-88	8928	8775735	4217820	7915767	316		8775735
July-88	8929	8555795	4478686	7726248	320		8555795
August-88	9269	9246483	4470858	8353723	321		9246483
September-88	9156	9014197	3954663	9014062	322		9014197
October-88	9849	9769720	4513292	10786246	333		9769720
November-88	9652	9620563	4456765	11249758	337		9620563
December-88	9981	9576204	4952464	10642930	333		9576204
January-89	10013	9862438	5268888	10128580	329		9862438
February-89	8873	8744920	5024536	8558171	331		8744920
March-89	8681	8474755	5110685	8657395	327		8474755
April-89	8714	8763786	5180129	8260394	329		8763786
May-89	9395	9419619	5009032	9243331	331		9419619
June-89	8859	8659131	4079717	7667183	324		8659131
July-89	9297	9196761	5661727	7670629	324		9196761
August-89	9271	9283859	5714254	8254078	324		9283859
September-89	9183	9317370	5902509	8604239	321		9317370
October-89	9627	9616412	6174968	9556380	324		9616412
November-89	9236	9027454	6084876	9976501	322		9027454
December-89	9595	9403863	5958029	10942060	327		9403863
January-90	9753	9212232	6208759	10843047	329		9212232
February-90	8867	8667157	5985157	10688690	329		8667157
March-90	9716	9486309	6696853	10830753	330		9486309
April-90	9253	8878921	6368780	9788737	321		8878921
May-90	9160	8910080	6261043	9363601	321		8910080
June-90	8902	8413981	6035745	8200908	322		8413981
July-90	9361	8776472	5579721	8307255	326		8776472
August-90	9666	8972253	5937228	9267175	340		8972253
September-90	9466	8924457	6450748	9262475	338		8924457
October-90	9863	9595847	6569104	10467816	345		9595847
November-90	9197	8420506	5644818	9451773	345		8420506
December-90	9515	8947960	6471377	10106500	343		8947960
January-91	9611	8897229	6660014	10069859	338		8897229
February-91	9157	9162916	7641158	10478639	341		9162916
March-91	10082	10153852	8703049	12049768	344		10153852
April-91	9636	9396918	7901528	10705330	339		9396918
May-91	9922	9559324	8238073	10218849	342		9559324
June-91	9543	9002270	8061162	9231417	340		9002270
July-91	9669	9336049	8572946	9203855	341		9336049
August-91	9743	9428976	7642472	9219626	344		9428976
September-91	9551	9397629	7229880	9676873	339		9397629
October-91	10224	10060288	7685853	10692449	348		10060288
November-91	10049	9484641	7887774	10673902	356		9484641
December-91	10243	9690731	8152501	10986560	353		9690731
January-92	10636	10375249	8690275	11660833	355		10375249
February-92	9683	9304642	8538356	10860394	354		9304642
March-92	10661	10075151	10057426	11462619	367		10075151
April-92	10575	9650607	10161725	10825563	370		9650607
May-92	10540	10019661	10231634	9906975	363		10019661
June-92	9962	9471196	9309657	9138374	354		9471196
July-92	10106	9693360	8986487	9014887	351		9693360
August-92	10046	9603028	7982305	8924990	352		9603028
September-92	10090	9521607	7831588	9627296	370		9521607
October-92	10696	10144607	7980538	9732469	377		10144607
November-92	10631	10125952	9156100	10206102	374		10125952
December-92	11012	10520965	9848843	11406239	371		10520965
January-93	10886	9950730	9701812	11185061	365		9950730
February-93	9801	9046966	9336356	10165499	369		9046966

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
March-93	11075	10157277	10955204	11218560	370		10157277
April-93	10757	9704449	10506849	10384425	375		9704449
May-93	10840	9925258	10605792	10058651	370		9925258
June-93	10479	9573277	9784921	9135588	364		9573277
July-93	10742	9450943	9446399	8814064	371		9450943
August-93	10836	9778221	9516632	9303024	368		9778221
September-93	9968	8740670	8040993	8390810	374		8740670
October-93	10989	9625710	8675898	9552580	377		9625710
November-93	10596	9415243	9017835	10599061	379		9415243
December-93	11297	9797224	10399106	11791255	378		9797224
January-94	11236	9626111	10580535	11699983	380		9626111
February-94	10187	8558684	9831385	10379978	381		8558684
March-94	11349	9690583	11286315	11784068	377		9690583
April-94	10788	8878567	9681631	10177875	384		8878567
May-94	11335	9724720	10622396	10120966	382		9724720
June-94	11036	9288098	10469491	9277318	378		9288098
July-94	11242	9308316	10569936	8963311	379		9308316
August-94	11312	9347952	10261287	8942263	382		9347952
September-94	11240	9152249	10394208	9234695	397		9152249
October-94	11962	9693695	11564598	9933150	398		9693695
November-94	10771	8680604	10445298	9273115	393		8680604
December-94	11930	9845434	11937629	10486634	393		9845434
January-95	11693	9271071	12050350	9880657	395		9271071
February-95	10792	8777215	10869224	9641864	391		8777215
March-95	11742	9424842	11906535	10100520	391		9424842
April-95	11367	8787614	10925717	9004775	389		8787614
May-95	11802	9205063	11342452	9396219	394		9205063
June-95	11569	8736635	11079518	8549626	396		8736635
July-95	11710	8697074	10874733	8558248	396		8697074
August-95	11875	8773418	10918967	9116811	395		8773418
September-95	11485	8483427	10877988	8970293	392		8483427
October-95	11984	9079975	10946780	10161058	399		9079975
November-95	11523	8760792	10899159	9498664	395		8760792
December-95	11885	9001911	11618507	9539589	391		9001911
January-96	11939	8670463	11562314	9072613	398		8670463
February-96	11419	8313657	11332820	9074826	401		8313657
March-96	12202	8721420	12607770	9579397	400		8721420
April-96	11737	8281772	12305211	8993168	406		8281772
May-96	12130	8444060	12764227	9187327	413		8444060
June-96	11746	8202510	12383942	8652698	414		8202510
July-96	12068	8288629	12398963	9124121	415		8288629
August-96	12012	7572022	11401537	8153610	416		7572022
September-96	12017	8232833	12285734	8441891	417		8232833
October-96	12595	8395732	13847805	9628130	420		8395732
November-96	12286	7997615	13286174	8974239	421		7997615
December-96	12763	8322292	14145569	8923274	426		8322292
January-97	12822	8371022	14219408	9469588	426		8371022
February-97	11657	7634234	13021258	8759156	426		7634234
March-97	12821	8463145	14258500	9147610	427		8463145
April-97	12436	8013815	13447874	8674711	428		8013815
May-97	12341	8079630	11736127	8451778	431		8079630
June-97	11438	7214900	10497206	7472322	429		7214900
July-97	12441	7836437	12545078	7941246	433		7836437
August-97	12766	7743045	12614218	8348513	432		7743045
September-97	12454	7888000	14210753	8672215	437		7888000
October-97	13195	8426187	15814069	9529505	439		8426187
November-97	12688	8004987	14909039	9189951	439		8004987
December-97	13305	8303471	16784078	9988037	442		8303471
January-98	13390	8380433	16721195	10660283	442		8380433
February-98	12149	7544127	14878950	9631725	444		7544127
March-98	13449	8216285	16905020	10382127	446		8216285
April-98	12556	7727489	15254788	9629725	447		7727489

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
May-98	13016	7999004	15970848	10099579	441		7999004
June-98	12575	7591009	14963595	8833178	445		7591009
July-98	13246	8153348	15814989	9382346	447		8153348
August-98	13095	8078641	15342390	9778845	451		8078641
September-98	12889	7786074	14561268	9769438	449		7786074
October-98	13493	8453614	15955338	11147307	455		8453614
November-98	13219	8027762	15213302	11265200	461		8027762
December-98	13982	8323135	15698503	11737733	467		8323135
January-99	14152	8405043	16755981	12341740	473		8405043
February-99	12567	7331571	15262613	10471509	477		7331571
March-99	14419	8834111	17453573	12096468	481		8834111
April-99	13599	8023164	16250019	11314679	487		8023164
May-99	14067	8408877	17478607	11111015	473		8408877
June-99	13514	7526500	15733793	9682792	482		7526500
July-99	13700	7791447	16478345	9621396	469		7791447
August-99	13787	7663369	16646709	9685793	470		7663369
September-99	13197	7173836	15174818	9270491	480		7173836
October-99	14370	8118237	17024434	11471713	479		8118237
November-99	14044	7675971	17307864	11769079	482		7675971
December-99	14562	8089280	18082802	12441726	481		8089280
January-00	14341	7735648	17649712	11575657	481		7735648
February-00	13514	7340218	16843843	11490265	483		7340218
March-00	13968	7453878	16629404	11140811	479		7453878
April-00	13883	7340838	16569390	11180706	480		7340838
May-00	14149	7302960	16132994	10937476	477		7302960
June-00	13610	6747586	14493550	9396079	473		6747586
July-00	14006	6903920	15370268	9732627	477		6903920
August-00	14404	7027360	16554598	10146811	480		7027360
September-00	14106	6754319	16562213	9946626	492		6754319
October-00	14987	7317473	18232136	10948112	500		7317473
November-00	14808	7149432	18534903	10774015	504		7149432
December-00	15180	7256330	18870160	10747733	504		7256330
January-01	15108	7043035	18663471	10338448	504		7043035
February-01	13599	6327326	16822262	9739852	495		6327326
March-01	15219	7041103	18570302	11171704	505		7041103
April-01	14605	6770609	17241018	10392403	499		6770609
May-01	15043	6852727	17803869	10313426	502		6852727
June-01	14488	6477039	17648308	9592230	498		6477039
July-01	14783	6560199	17846244	9437546	500		6560199
August-01	15008	6621381	18013499	9676334	504		6621381
September-01	14520	6275498	16658986	9282707	502		6275498
October-01	14392	6350327	17606440	10144671	502		6350327
November-01	14934	6551027	19056726	10565334	508		6551027
December-01	15494	6911567	18793632	10878312	513		6911567
January-02	15356	6848815	18314314	10865391	512		6848815
February-02	13756	6004777	16264902	9439397	512		6004777
March-02	15407	6780887	18246432	10841776	514		6780887
April-02	14701	6507807	16538970	10240017	508		6507807
May-02	14953	6488731	15482659	9605767	508		6488731
June-02	14671	6349151	15745750	9269241	510		6349151
July-02	14941	6180637	15606394	9026732	520		6180637
August-02	15440	6581922	15623630	9407106	520		6581922
September-02	15134	6430109	15049494	9405285	521		6430109
October-02	15674	6463595	15561410	10102339	518		6463595
November-02	14061	5843324	14344219	9504062	522		5843324
December-02	15456	6897958	15118312	11271192	512		6897958
January-03	15190	6723498	14326889	10867826	508		6723498
February-03	13839	5906920	13488338	9576863	508		5906920
March-03	15382	6659874	14947239	10660675	512		6659874
April-03	14905	6450719	14036062	10398487	517		6450719
May-03	15593	6855042	15009010	11069554	515		6855042
June-03	14756	6516457	14647125	9799243	514		6516457

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
July-03	14546	6427012	13927906	9915447	512		6427012
August-03	15469	6726261	16704423	10862539	511		6726261
September-03	14999	6349479	15580521	10147145	514		6349479
October-03	15516	6441376	16123805	10777579	523		6441376
November-03	14859	6048488	15826986	10949017	517		6048488
December-03	15531	6294119	16539401	11860130	520		6294119
January-04		6174169	15925807	11380638	524		6174169
February-04		5797616	15291309	10787123	521		5797616
March-04		6194313	16657552	11610825	527		6194313
April-04		5876473	15988491	10648943	526		5876473
May-04		5999362	16356594	10556982	540		5999362
June-04		5936685	16933827	9940273	540		5936685
July-04		5783190	15981982	9446253	538		5783190
August-04		5476264	14175938	8836032	500		5476264
September-04		6098892	16793604	10247213	541		6098892
October-04		6312255	17641943	10842480	545		6312255
November-04		5964118	17728000	10259393	547		5964118
December-04		6167975	19420135	10825100	538		6167975
January-05		5854010	19239467	10413369	534		5854010
February-05		5491243	18195455	9890221	552		5491243
March-05		5899474	19580496	10522229	551		5899474
April-05		5839165	19688663	10802338	549		5839165
May-05		5724251	19508747	10183308	543		5724251
June-05		5409920	18819862	9995072	548		5409920
July-05		5437972	19642577	9927867	549		5437972
August-05		5491629	19674140	9844780	542		5491629
September-05		5255029	19470944	9359109	541		5255029
October-05		5438008	20536231	9692764	545		5438008
November-05		5199480	17920589	9244899	539		5199480
December-05		5297737	18614679	9446636	544		5297737
January-06		5368095	18797946	9567922	543		5368095
February-06		4843434	16517458	8444419	551		4843434
March-06		5370523	18593630	9901164	551		5370523
April-06		5318991	17904206	9425899	547		5318991
May-06		5616431	18344801	9639294	550		5616431
June-06		5322210	17138467	9357916	550		5322210
July-06		5347748	17067871	9282863	552		5347748
August-06		5569552	17694845	9880022	549		5569552
September-06		5150373	17632466	9438023	552		5150373
October-06		5110999	17690050	9431036	544		5110999
November-06		4377626	15480010	8369585	542		4377626
December-06		5085961	17909955	9657005	550		5085961
January-07		5238728	18483628	10008824	550		5238728
February-07		4644587	16523009	8700375	541		4644587
March-07		5249614	18455295	10303049	528		5249614
April-07		4928357	17028894	9748961	532		4928357
May-07		4982097	17392054	9904958	542		4982097
June-07		4606772	16665165	9235470	529		4606772
July-07		4952588	16654539	9602382	529		4952588
August-07		4340433	15236064	9553229	524		4340433
September-07		4468131	15672096	9124096	496		4468131
October-07		4631167	16160590	9401683	523		4631167
November-07		4570478	15924318	8723772	529		4570478
December-07		4798058	16801263	9791014	533		4798058
January-08		4680698	17133062	9965463	528		4680698
February-08		4414132	15862004	9057859	537		4414132
March-08		4747806	17067307	9734050	515		4747806
April-08		4546805	16290108	9161834	530		4546805
May-08		4665656	16728640	8991317	539		4665656
June-08		4237926	14727480	7126084	539		4237926
July-08		4063505	14146099	8568636	535		4063505
August-08		3819854	13801667	8276234	435		3819854

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
September-08		3993010	14305874	8420506	528		3993010
October-08		4730744	16659160	9885984	530		4730744
November-08		4562591	16339673	9356458	536		4562591
December-08		4538826	17050400	9244695	538		4538826
January-09		4462354	15682460	8392602	539		4462354
February-09		4205425	15006968	8275199	537		4205425
March-09		4615388	16660457	9205719	541		4615388
April-09		4386430	15096493	8232882	544		4386430
May-09		4446600	15704908	8054877	548		4446600
June-09		4157673	14322904	7510393	546		4157673
July-09		4235892	13965899	8000304	534		4235892
August-09		4368714	15793887	8647454	541		4368714
September-09		4238697	15246927	8498589	541		4238697
October-09		4279371	15736437	8709419	533		4279371
November-09		4089259	15652246	8148008	523		4089259
December-09		4248508	17077648	9009631	521		4248508
January-10		4183084	17154671	8611186	521		4183084
February-10		3751850	14736040	7567273	517		3751850
March-10		4058461	15862585	8252408	512		4058461
April-10		3893899	16075407	8482583	515		3893899
May-10		3789753	15968130	8075935	523		3789753
June-10		3848337	15984441	7678031	515		3848337
July-10		3953195	15969813	7855925	511		3953195
August-10		3983217	15695508	7801573	517		3983217
September-10		3901827	15262540	7877579	525		3901827
October-10		4005915	16302309	8576015	517		4005915
November-10		3594184	14872087	8095834	521		3594184
December-10		3754493	15537972	8238642	513		3754493
January-11		3065131	12989974	6790423	510		3065131
February-11		3387848	14044867	7259918	504		3387848
March-11		3913918	16538519	8370844	514		3913918
April-11		3686777	15697342	7982434	507		3686777
May-11		3916771	16321393	8234651	519		3916771
June-11		3683934	14674912	6972167	510		3683934
July-11		3723446	15041044	6424266	512		3723446

Table B.5:
Milne Point

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
May-85	15	0	8000	0	1		
Jun-85	30	0	33182	0	1		
Jul-85	5	0	4277	0	1		
Nov-85	210	205489	12730	78246	10		
Dec-85	520	498430	238417	174728	24		
Jan-86	623	529804	506233	181227	26		
Feb-86	585	478758	602871	149251	25		
Mar-86	712	548544	722153	206099	25		
Apr-86	665	479595	478370	171181	23		
May-86	515	396754	396671	153661	21		
Jun-86	595	442471	549177	158048	20		
Jul-86	603	320860	532182	107878	21		
Aug-86	594	301911	517553	103601	20		
Sep-86	552	285195	495533	99619	21		
Oct-86	587	327853	485925	105028	19		
Nov-86	564	297034	468011	103261	19		
Dec-86	551	299887	483431	104997	20		
Jan-87	77	39997	76803	11130	19		
Mar-89	12	0	148056	0	2		
Apr-89	255	241477	471347	69250	14		
May-89	421	306748	879199	79358	16		
Jun-89	446	289644	722015	93407	18		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jul-89	419	260336	728974	62108	16		
Aug-89	532	426491	675743	102511	24		
Sep-89	668	517014	699965	121536	25		
Oct-89	740	548596	681281	126249	26		
Nov-89	792	533599	996916	170676	28		
Dec-89	810	591425	1062141	153081	29		
Jan-90	864	614876	1159956	211650	29		
Feb-90	781	551309	982630	152665	29		
Mar-90	856	604416	1075860	249753	29		
Apr-90	834	563667	973420	224356	30		
May-90	865	593367	984341	234999	31		
Jun-90	834	520961	930339	218829	31		
Jul-90	833	553007	862803	236022	31		
Aug-90	864	515994	1016794	252798	30		
Sep-90	863	522205	1101875	222608	31		
Oct-90	902	521414	1049222	219199	31		
Nov-90	845	501625	1003703	239102	34		
Dec-90	897	565297	345838	256511	31		
Jan-91	915	592388	1033416	267456	34		
Feb-91	914	557898	867602	270461	37		
Mar-91	1063	624903	997641	294605	40		
Apr-91	1248	647942	893576	308679	45		
May-91	1298	659628	872346	313563	46		
Jun-91	1249	621681	893872	289839	49		
Jul-91	1295	642059	869575	322907	51		
Aug-91	1330	669455	669165	342128	50		
Sep-91	1298	632414	919812	369341	48		
Oct-91	1443	659371	1061904	362390	51		
Nov-91	1322	581128	1192159	307600	49		
Dec-91	1203	568983	1081512	310401	42		
Jan-92	1231	602641	1076071	320487	44		
Feb-92	1156	554932	951959	337186	45		
Mar-92	1267	608124	1040951	317239	44		
Apr-92	1253	599875	1033296	338402	45		
May-92	1281	614750	999010	348501	44		
Jun-92	1234	583968	973656	317903	42		
Jul-92	1309	607594	962507	304023	43		
Aug-92	1250	568075	1028843	255426	43		
Sep-92	1215	553831	1076307	259399	43		
Oct-92	1221	555601	1065542	260656	42		
Nov-92	1208	531903	1034376	243975	44		
Dec-92	1288	565185	1058624	247046	43		
Jan-93	1262	548763	1132345	244663	43		
Feb-93	1131	494610	1013423	249517	41		
Mar-93	1252	543365	1140763	277844	43		
Apr-93	1201	529852	1053423	276430	44		
May-93	1193	535707	1063120	276480	41		
Jun-93	1216	561037	870927	308861	42		
Jul-93	1247	603191	882768	310931	43		
Aug-93	1221	590629	947609	315973	43		
Sep-93	1178	553880	697383	302720	42		
Oct-93	1251	583143	759612	298982	46		
Nov-93	1323	616804	701873	323701	46		
Dec-93	1395	602728	721820	298525	46		
Jan-94	1390	580416	806147	299592	47		
Feb-94	1152	450271	808800	256192	47		
Mar-94	1201	472585	898201	313822	40		
Apr-94	1172	455766	702642	323036	44		
May-94	1292	565903	633062	389740	43		
Jun-94	1269	574424	537346	368500	43		
Jul-94	1353	589715	632583	382749	46		
Aug-94	1393	576674	543606	292981	47		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Sep-94	1423	582593	513180	346994	50		
Oct-94	1485	574468	642613	360831	52		
Nov-94	1430	590557	542061	330875	52		
Dec-94	1542	663968	691329	374268	53		
Jan-95	1531	666789	881229	408846	53		
Feb-95	1410	654966	806224	369565	52		
Mar-95	1626	783206	895149	417418	55		
Apr-95	1637	793755	794998	470054	57		
May-95	1709	792839	757660	454669	58		
Jun-95	1601	728641	745073	389142	57		
Jul-95	1566	705417	548831	423199	57		
Aug-95	1759	751457	1003056	363889	59		
Sep-95	1500	669342	361407	367500	53		
Oct-95	1703	737886	1003850	452204	59		
Nov-95	1719	708282	915226	500444	60		
Dec-95	1468	698487	935485	491282	53		
Jan-96	1489	853198	843547	488475	50		
Feb-96	1327	803760	759281	438462	49		
Mar-96	642	397402	383617	260590	48		
Apr-96	103	30738	53943	23707	30		
May-96	1397	1014853	864902	361089	75		
Jun-96	2079	1428710	1035138	623123	79		
Jul-96	2330	1501381	1223896	779324	82		
Aug-96	2452	1683037	1162813	825824	86		
Sep-96	2494	1606180	1476713	745199	91		
Oct-96	2684	1676440	1445621	817968	92		
Nov-96	2650	1490875	1660146	766663	93		
Dec-96	2821	1613811	1594590	753251	96		
Jan-97	2812	1615720	1676677	820720	98		
Feb-97	2695	1507126	1576445	777286	101		
Mar-97	3062	1637082	1663266	849149	103		
Apr-97	3011	1574428	1875097	905770	104		
May-97	3071	1622150	1874475	873919	107		
Jun-97	2974	1539023	1788595	773488	109		
Jul-97	3060	1561639	2171944	857643	109		
Aug-97	2854	1472047	2226746	883581	111		
Sep-97	2929	1581636	2310792	936413	106		
Oct-97	3052	1626812	2426553	950927	104		
Nov-97	3018	1560013	2363445	921664	107		
Dec-97	3227	1655631	2683822	993040	110		
Jan-98	3245	1714912	2623310	948114	111		
Feb-98	3001	1528262	2495327	753390	120		
Mar-98	3486	1764408	2840912	866681	120		
Apr-98	3305	1678496	2736863	814354	122		
May-98	3460	1802859	2692746	871817	120		
Jun-98	3319	1711858	2638420	753174	123		
Jul-98	3567	1825669	2600231	871489	125		
Aug-98	3462	1783257	2515360	886942	125		
Sep-98	3245	1602977	2228236	787912	126		
Oct-98	3284	1705339	2506549	828872	125		
Nov-98	3430	1678051	2476503	953091	125		
Dec-98	3245	1622827	2035193	801030	118		
Jan-99	3385	1689718	2120437	865638	119		
Feb-99	3105	1455877	2423949	708944	122		
Mar-99	3732	1752390	3086046	866001	124		
Apr-99	3369	1620559	3010829	743928	123		
May-99	3597	1752150	3079645	860302	120		
Jun-99	3196	1512434	2742538	647372	119		
Jul-99	3499	1708524	3098518	788008	120		
Aug-99	3511	1730877	3177002	851928	119		
Sep-99	3231	1530232	2941893	874300	117		
Oct-99	3425	1674582	3140200	835903	115		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Nov-99	3322	1613691	2925439	771255	115		
Dec-99	3416	1643043	2980569	774228	115		
Jan-00	3324	1592076	2881016	815162	113		
Feb-00	3185	1538627	2730280	739152	116		
Mar-00	3470	1659134	3065274	805940	119		
Apr-00	3469	1630563	2943223	776962	119		
May-00	3534	1684611	2968229	818733	118		
Jun-00	3395	1574274	2765731	727051	119		
Jul-00	3582	1649472	2876685	876575	120		
Aug-00	3507	1626932	2915543	912103	119		
Sep-00	3225	1497486	2556336	756189	118		
Oct-00	3396	1558044	3062926	867200	121		
Nov-00	3186	1504923	2608208	774075	123		
Dec-00	3400	1553010	2887300	818061	119		
Jan-01	3427	1576966	2865902	879714	118		
Feb-01	3235	1486193	2607517	743503	126		
Mar-01	3712	1692621	3058130	935162	126		
Apr-01	3702	1611972	2665921	869646	131		
May-01	3557	1607225	2474912	873480	132		
Jun-01	3738	1617911	2789681	926720	133		
Jul-01	3901	1659017	3083224	943018	134		
Aug-01	3832	1638406	3106441	969118	133		
Sep-01	3517	1552518	2888839	914336	130		
Oct-01	3548	1603198	2753085	950357	131		
Nov-01	3683	1651596	2761886	1021341	130		
Dec-01	3795	1641338	2651118	999065	133		
Jan-02	3833	1636325	2696165	989956	134		
Feb-02	3321	1428284	2267430	849789	130		
Mar-02	3680	1523547	2481711	839155	127		
Apr-02	3563	1534304	2427249	849829	134		
May-02	3740	1572535	2775295	886138	129		
Jun-02	3820	1524917	3089513	858580	133		
Jul-02	3736	1484091	3024262	796317	128		
Aug-02	3602	1473192	2647410	790923	125		
Sep-02	3504	1592963	2998985	739858	129		
Oct-02	3736	1722467	2930421	892803	129		
Nov-02	3488	1535958	3079703	889998	128		
Dec-02	3801	1634187	3197835	966923	125		
Jan-03	3441	1516571	2481617	856473	131		
Feb-03	3418	1431181	2752177	890724	128		
Mar-03	3840	1638248	2755607	1044611	128		
Apr-03	3670	1572992	2705429	1072598	131		
May-03	3887	1639108	2901020	1060962	131		
Jun-03	3697	1536879	2700835	1057566	131		
Jul-03	2994	1230841	2333991	718094	125		
Aug-03	3667	1619286	2953800	980031	132		
Sep-03	3873	1636038	2895473	950969	137		
Oct-03	4059	1725553	3031242	1022636	138		
Nov-03	3882	1595870	2814998	988084	135		
Dec-03	3820	1564467	2562478	911033	137		
Jan-04		1535237	2544997	914496	135		
Feb-04		1473768	2778102	961916	136		
Mar-04		1588111	2995671	1057586	132		
Apr-04		1489944	2923552	937111	136		
May-04		1564505	3430768	985982	136		
Jun-04		1590852	3443389	931349	138		
Jul-04		1532919	3313542	886464	135		
Aug-04		1572078	3102531	933231	136		
Sep-04		1576402	2945166	999891	136		
Oct-04		1629929	3136802	1053542	142		
Nov-04		1572839	3097389	982031	136		
Dec-04		1624730	3236676	1046567	140		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jan-05		1532030	3289202	987669	134		
Feb-05		1223435	2697686	808750	133		
Mar-05		1464269	3000514	998473	134		
Apr-05		1386374	2840797	979968	137		
May-05		1516747	3167656	1027496	142		
Jun-05		1332964	3061836	943167	136		
Jul-05		1031290	2205207	708229	134		
Aug-05		1203228	2357135	775573	135		
Sep-05		1369192	3001381	1013812	132		
Oct-05		1276674	3153693	974101	133		
Nov-05		1283853	3095237	1004957	138		
Dec-05		1383868	3342301	1081996	142		
Jan-06		1306466	3552149	1059675	139		
Feb-06		1028447	3182747	789883	134		
Mar-06		1289936	3708906	916863	137		
Apr-06		1248431	3495036	836888	132		
May-06		1242924	3887600	847092	134		
Jun-06		1163604	3521343	781688	127		
Jul-06		763503	2764330	572746	128		
Aug-06		1196667	3609032	831801	126		
Sep-06		1163428	3548313	770637	130		
Oct-06		1024509	3614444	657152	116		
Nov-06		848789	3369121	537501	112		
Dec-06		1007179	3549919	614946	113		
Jan-07		968165	3673628	587074	113		
Feb-07		831632	3073925	497488	110		
Mar-07		851742	3628612	494047	99		
Apr-07		960355	3369434	438920	104		
May-07		1174365	3420416	580773	128		
Jun-07		1140970	4090225	627611	128		
Jul-07		1182533	4139219	743315	134		
Aug-07		807315	2903797	484595	135		
Sep-07		1025132	3441573	541274	133		
Oct-07		1140702	3947573	673841	142		
Nov-07		1098650	4017340	715142	139		
Dec-07		1067414	4238710	721749	144		
Jan-08		1083595	4305714	738314	143		
Feb-08		947049	3532781	576857	143		
Mar-08		1053645	4019393	649662	141		
Apr-08		1051047	3801866	675703	139		
May-08		1104590	3945411	693865	141		
Jun-08		847394	2772528	488143	139		
Jul-08		910551	3669777	523905	132		
Aug-08		969132	4004192	622972	135		
Sep-08		949123	4084599	600351	135		
Oct-08		988039	4274593	634311	143		
Nov-08		953825	3936717	602425	135		
Dec-08		937939	3952019	656628	131		
Jan-09		936367	3855544	651259	133		
Feb-09		853735	3484902	538854	134		
Mar-09		923457	3998538	642555	135		
Apr-09		898439	3840591	653905	129		
May-09		945502	3806654	723769	132		
Jun-09		886043	3399486	656929	129		
Jul-09		750945	2942498	452713	131		
Aug-09		844705	3750152	521376	129		
Sep-09		862681	3575546	578609	129		
Oct-09		907565	3966279	617976	131		
Nov-09		881909	3745668	573219	128		
Dec-09		863905	3800814	574903	122		
Jan-10		823962	3834107	496757	126		
Feb-10		742674	3246650	446876	125		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Mar-10		891111	3746854	492984	131		
Apr-10		891033	3765213	511034	131		
May-10		759654	3798173	449464	128		
Jun-10		679756	2997297	380461	130		
Jul-10		816232	3678365	452313	128		
Aug-10		864671	3991739	510278	131		
Sep-10		822756	3776511	508620	130		
Oct-10		792428	3711714	488954	124		
Nov-10		807772	3873011	548317	122		
Dec-10		833640	4082839	569900	121		
Jan-11		557685	3803658	439059	120		
Feb-11		711221	3830812	498619	113		
Mar-11		780234	4092895	557606	114		
Apr-11		757475	3910888	517776	118		
May-11		752345	4404632	485636	116		
Jun-11		688677	4075139	482117	112		
Jul-11		637772	3404724	356334	111		

Table B.6: *Northstar*

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Oct-01	1	363	0	746	1		
Nov-01	54	353070	1260	762654	2		
Dec-01	56	912119	5826	1922666	2		
Jan-02	78	1106393	4025	2371951	3		
Feb-02	86	1011221	2192	1808454	4		
Mar-02	134	1554091	2214	3005458	5		
Apr-02	92	1092774	384	2348619	5		
May-02	132	1083388	1231	2496116	6		
Jun-02	173	1827325	3719	4470141	6		
Jul-02	176	1772269	9527	4919165	7		
Aug-02	185	1846220	17402	5563595	6		
Sep-02	158	1356555	13963	3661002	6		
Oct-02	174	1858524	34269	5589003	6		
Nov-02	168	1678500	28861	5417074	6		
Dec-02	184	1715393	34674	5965072	6		
Jan-03	183	1514557	25583	5356036	8		
Feb-03	243	1992106	56022	6167624	9		
Mar-03	274	1955963	84264	6971443	9		
Apr-03	210	1355557	49375	4659382	10		
May-03	330	2067781	72340	6605755	12		
Jun-03	351	2141501	67223	7109864	12		
Jul-03	353	1907547	61206	6473155	12		
Aug-03	322	1904771	66209	5811839	13		
Sep-03	300	2064610	89999	4394750	13		
Oct-03	341	2325081	111597	6451658	11		
Nov-03	289	1908148	113186	5490566	12		
Dec-03	265	1830400	97225	5369485	11		
Jan-04		2439547	174855	7259210	11		
Feb-04		1140067	86573	3445664	12		
Mar-04		2252145	173380	7421939	11		
Apr-04		1901916	162910	6659911	13		
May-04		2336229	190675	9943734	13		
Jun-04		2188374	239292	9447001	14		
Jul-04		2165121	264002	10317879	13		
Aug-04		1538797	200058	6349335	15		
Sep-04		2289965	307306	10332264	14		
Oct-04		2306964	354728	10253492	14		
Nov-04		2213766	313590	10962097	14		
Dec-04		2305586	349690	11990356	15		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jan-05		2109271	354312	11672464	15		
Feb-05		1776800	335507	10627633	15		
Mar-05		2154353	380660	14825845	15		
Apr-05		1919552	346068	10978257	16		
May-05		2105717	413007	11590302	16		
Jun-05		1806669	375435	10744494	16		
Jul-05		1887425	380222	11671906	16		
Aug-05		1784859	372258	11581644	17		
Sep-05		1465798	295092	9481543	15		
Oct-05		1903993	397141	12726195	16		
Nov-05		1801744	347268	13434655	16		
Dec-05		1705302	364049	12796467	16		
Jan-06		1530173	363681	10926024	15		
Feb-06		1447093	327237	11464556	15		
Mar-06		1648749	369565	14316934	16		
Apr-06		1702146	421578	13335391	17		
May-06		1657701	431233	10675022	18		
Jun-06		1685150	519368	9759987	19		
Jul-06		1592567	468606	11256486	18		
Aug-06		1734864	500356	12362526	19		
Sep-06		1596114	467763	11993090	19		
Oct-06		1567650	453767	12313859	18		
Nov-06		1309825	385569	11261758	19		
Dec-06		1405060	394729	12526887	19		
Jan-07		1463628	409611	13663451	19		
Feb-07		756686	220438	7628999	19		
Mar-07		1027759	286638	8848702	18		
Apr-07		1370536	401683	13942270	19		
May-07		1350293	449762	14139768	19		
Jun-07		1213452	406461	13304126	18		
Jul-07		1191333	450420	13185047	18		
Aug-07		1159748	462743	13144272	17		
Sep-07		1034464	424963	11817630	18		
Oct-07		1074591	424023	12847021	18		
Nov-07		1101552	436338	13769631	18		
Dec-07		1133231	462628	14853989	17		
Jan-08		1038773	452231	13713042	17		
Feb-08		969355	418239	13437750	18		
Mar-08		984132	422155	14698702	17		
Apr-08		862573	380766	12461714	18		
May-08		900341	355880	11084093	19		
Jun-08		1069595	400196	15290660	19		
Jul-08		1061809	437573	15806393	20		
Aug-08		968720	428577	15367466	20		
Sep-08		962903	457196	15819424	19		
Oct-08		891022	442627	14755436	18		
Nov-08		896801	467237	16976455	18		
Dec-08		834400	461124	16546930	19		
Jan-09		734951	454450	13694104	15		
Feb-09		657671	422715	11715823	15		
Mar-09		745229	463656	14144712	15		
Apr-09		718863	456302	14027882	14		
May-09		717921	459385	14578050	14		
Jun-09		704609	451686	14374139	18		
Jul-09		673682	452388	15038466	18		
Aug-09		702718	520121	15390938	16		
Sep-09		284348	210337	5861098	16		
Oct-09		667345	509155	15178614	18		
Nov-09		675202	483358	16264621	18		
Dec-09		697659	501254	17350017	18		
Jan-10		691552	529857	17659592	19		
Feb-10		621382	504827	15955105	18		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Mar-10		629371	446367	17423516	18		
Apr-10		466784	402751	12910452	18		
May-10		514953	459181	13556790	17		
Jun-10		522950	514382	13828377	16		
Jul-10		406329	433247	11463586	15		
Aug-10		190328	178735	5423048	18		
Sep-10		514405	543546	15113283	17		
Oct-10		527081	540749	16306718	17		
Nov-10		463183	500430	13069382	17		
Dec-10		584774	528504	17742968	17		
Jan-11		426549	401265	13509255	17		
Feb-11		507843	472271	16664779	17		
Mar-11		546946	511387	18477036	16		
Apr-11		465837	477890	16625760	17		
May-11		480403	506594	17365156	17		
Jun-11		408305	469244	15035450	16		
Jul-11		396122	476920	15591893	16		

Table B.7:
Prudhoe Bay

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Apr-69	6	6096	6	4950	1		6096
Jun-69	7	15705	0	18061	1		15705
Oct-69	19	30536	72	25732	1		30536
Nov-69	30	111620	0	91026	1		111620
Dec-69	29	113420	0	103187	1		113420
Jan-70	31	120869	16	111998	1		120869
Feb-70	28	108964	215	99002	1		108964
Mar-70	31	124230	238	115671	1		124230
Apr-70	32	112825	240	110576	2		112825
May-70	47	123762	204	127124	3		123762
Jun-70	30	79936	145	71338	1		79936
Jul-70	31	76512	149	66989	1		76512
Aug-70	51	129706	132	99420	2		129706
Sep-70	30	47646	187	42768	1		47646
Oct-70	31	83753	155	60537	1		83753
Nov-70	41	100564	153	69321	2		100564
Dec-70	32	84705	172	61942	2		84705
Jan-71	31	84776	251	62841	1		84776
Feb-71	28	76640	0	56932	1		76640
Mar-71	31	85933	0	61479	2		85933
Apr-71	30	82485	0	58578	1		82485
May-71	39	86743	20	107813	2		86743
Jun-71	33	82439	68	70847	2		82439
Jul-71	67	191620	0	136037	3		191620
Aug-71	38	87912	0	62170	2		87912
Sep-71	38	103058	0	75327	2		103058
Oct-71	31	103255	0	74653	1		103255
Nov-71	30	102397	0	74238	1		102397
Dec-71	31	69554	0	47992	1		69554
Jan-72	31	66115	0	45685	1		66115
Feb-72	29	61042	0	41875	1		61042
Mar-72	31	61634	0	42651	1		61634
Apr-72	30	73224	0	51476	1		73224
May-72	31	59147	0	43832	1		59147
Jun-72	32	57135	0	42030	2		57135
Jul-72	37	66309	0	48427	3		66309
Aug-72	58	123767	0	87748	3		123767
Sep-72	52	118380	0	83575	2		118380
Oct-72	50	85436	0	58094	2		85436
Nov-72	40	86852	0	65024	2		86852

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Dec-72	31	63106	0	47519	1		63106
Jan-73	31	67616	0	51388	1		67616
Feb-73	28	61256	0	46616	1		61256
Mar-73	31	68021	0	50199	1		68021
Apr-73	30	65440	0	48426	1		65440
May-73	31	67910	0	49410	1		67910
Jun-73	30	75464	0	55843	1		75464
Jul-73	31	65728	0	49888	1		65728
Aug-73	31	65072	0	47430	1		65072
Sep-73	33	88783	0	67591	2		88783
Oct-73	31	79395	0	56356	1		79395
Nov-73	30	79510	0	58600	1		79510
Dec-73	31	159503	0	117713	1		159503
Jan-74	34	166362	0	126134	2		166362
Feb-74	28	172090	0	129756	1		172090
Mar-74	39	161665	0	128618	2		161665
Apr-74	35	161704	0	130809	2		161704
May-74	37	168937	0	142208	2		168937
Jun-74	41	147795	0	130076	2		147795
Jul-74	40	148462	0	126479	2		148462
Aug-74	64	194767	57	217058	3		194767
Sep-74	65	199182	23	198206	3		199182
Oct-74	67	239665	62	239578	3		239665
Nov-74	59	205372	73	226153	2		205372
Dec-74	61	203875	31	227171	2		203875
Jan-75	62	223199	31	256391	2		223199
Feb-75	51	203434	23	225165	2		203434
Mar-75	31	217895	0	160153	1		217895
Apr-75	30	213941	0	157247	1		213941
May-75	56	212946	43	225555	2		212946
Jun-75	78	164295	48	194046	3		164295
Jul-75	57	165725	48	195455	2		165725
Aug-75	70	224476	47	242198	3		224476
Sep-75	63	210192	53	243321	3		210192
Oct-75	61	302997	49	327117	2		302997
Nov-75	60	354699	56	379489	2		354699
Dec-75	62	375760	31	440210	2		375760
Jan-76	87	385366	31	426846	3		385366
Feb-76	84	333450	58	393663	3		333450
Mar-76	83	386506	57	428319	4		386506
Apr-76	87	388682	119	407734	3		388682
May-76	92	374268	84	383268	3		374268
Jun-76	90	337444	82	350510	3		337444
Jul-76	62	337615	84	365777	2		337615
Aug-76	93	405504	258	394588	3		405504
Sep-76	97	421085	312	433017	5		421085
Oct-76	98	422796	176	466305	6		422796
Nov-76	93	395821	150	419527	6		395821
Dec-76	84	415912	139	607359	3		415912
Jan-77	115	396786	95	517176	4		396786
Feb-77	114	357598	38	850189	8		357598
Mar-77	98	402653	0	776411	10		402653
Apr-77	83	349299	8	829474	8		349299
May-77	155	560181	0	2286260	27		560181
Jun-77	633	4157904	50	5191532	66		4157904
Jul-77	1041	6977233	45	6593715	83		6977233
Aug-77	2081	15182345	310	12017570	95		15182345
Sep-77	2535	21438155	652	16319617	91		21438155
Oct-77	2689	21792048	1123	16565342	97		21792048
Nov-77	2588	21410918	107	16345329	100		21410918
Dec-77	3092	22232760	0	16642909	105		22232760
Jan-78	3271	22681912	377	16956040	113		22681912

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Feb-78	3068	20050392	242	15238980	122		20050392
Mar-78	3794	31275382	5019	23833624	126		31275382
Apr-78	3934	34280116	37819	26603242	144		34280116
May-78	4171	35205728	65948	26821485	141		35205728
Jun-78	3988	34915139	84992	25973158	147		34915139
Jul-78	4191	35832061	106572	26870788	149		35832061
Aug-78	4367	36535601	131647	27806855	149		36535601
Sep-78	4227	35541940	150185	27842688	152		35541940
Oct-78	4473	37382052	185785	29934313	153		37382052
Nov-78	4297	36407510	307095	29119188	149		36407510
Dec-78	4558	37570709	250324	30965333	152		37570709
Jan-79	4627	37950336	471900	32284725	156		37950336
Feb-79	4088	31829122	304645	28209261	150		31829122
Mar-79	4893	38018820	620038	33684278	165		38018820
Apr-79	4932	36738604	466090	32340340	172		36738604
May-79	5145	38133683	809117	33964042	177		38133683
Jun-79	4824	33881254	599878	32531531	191		33881254
Jul-79	5432	39892813	633797	36931303	189		39892813
Aug-79	5305	40765598	849438	38860872	198		40765598
Sep-79	5141	39695161	622798	34544208	201		39695161
Oct-79	5459	42552890	604448	40134426	205		42552890
Nov-79	5804	45165655	933245	44397796	203		45165655
Dec-79	5910	43788415	1182619	44591994	197		43788415
Jan-80	5992	47337634	1445996	47787402	205		47337634
Feb-80	5679	44299884	1137119	45651851	207		44299884
Mar-80	6315	47908745	1269707	49157032	219		47908745
Apr-80	6268	46411270	1206525	47740479	219		46411270
May-80	6647	47298496	1244069	50316945	227		47298496
Jun-80	6303	45742874	1051036	48091772	232	21706	45764580
Jul-80	6590	46941762	1029575	52595887	225	37207	46978969
Aug-80	6709	47001173	1172760	50030882	225	41227	47042400
Sep-80	6553	45515357	904967	50518681	233	36848	45552205
Oct-80	6697	46230025	1187679	53247351	238	39705	46269730
Nov-80	6487	43980836	1052740	48851143	245	41298	44022134
Dec-80	6935	46726125	1117376	53158139	238	35639	46761764
Jan-81	7044	46909224	1366413	54428444	244	38775	46947999
Feb-81	6384	42828813	1226209	47990123	251	38151	42866964
Mar-81	7093	47506626	1457948	54645191	251	37624	47544250
Apr-81	6526	45677326	1067027	51987107	244	42975	45720301
May-81	6836	46343593	1366230	56409146	255	38820	46382413
Jun-81	7111	46324475	1279242	53820172	260	36871	46361346
Jul-81	7376	47107366	1225527	50191268	261	37445	47144811
Aug-81	7107	47116544	1054165	51454099	270	31820	47148364
Sep-81	7092	45759305	1018824	57459930	261	29587	45788892
Oct-81	7415	46889952	1346339	60328075	275	35227	46925179
Nov-81	6345	45987092	1069515	53191937	251	41547	46028639
Dec-81	6906	46722187	1160653	55865257	253	41162	46763349
Jan-82	7487	47945992	1135320	59777192	257	43583	47989575
Feb-82	6832	43436772	1415937	54915202	258	38762	43475534
Mar-82	7968	47405155	1353749	59316303	274	50486	47455641
Apr-82	7337	45760456	1192709	58441525	291	79069	45839525
May-82	7610	47724216	1174474	62358308	284	64583	47788799
Jun-82	7353	44939084	1185321	59099282	305	48778	44987862
Jul-82	8120	48027598	1207254	64314619	314	27741	48055339
Aug-82	8493	47469839	1063472	66643739	330	27075	47496914
Sep-82	8408	46218858	931205	66913139	320	27042	46245900
Oct-82	8919	47835119	1157295	69561759	327	27331	47862450
Nov-82	8579	45247377	1439266	66453994	321	28635	45276012
Dec-82	9795	47086153	1916184	69462615	338	36894	47123047
Jan-83	9951	48235339	2079474	69399931	358	45146	48280485
Feb-83	9056	43231375	2193357	59546957	363	0	43231375
Mar-83	10282	48531983	2652042	71137805	357	22370	48554353

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Apr-83	10192	46605041	2791605	69193727	374	3164	46608205
May-83	9761	46006153	2622726	66784560	394	0	46006153
Jun-83	9229	45346386	1204595	66449481	375	24485	45370871
Jul-83	9443	47435840	1259389	72369475	353	26885	47462725
Aug-83	9538	47296410	1444481	69913955	374	24871	47321281
Sep-83	9962	46688678	1673346	66603083	371	31329	46720007
Oct-83	10180	48382906	2175089	71009930	376	41083	48423989
Nov-83	8863	45921109	2527517	66078708	366	45265	45966374
Dec-83	9993	47242424	2715288	70660135	390	46435	47288859
Jan-84	10052	48349907	2812201	70630282	373	57878	48407785
Feb-84	9376	45078732	2915415	65702895	378	64550	45143282
Mar-84	9611	42874742	2632273	61879561	396	55734	42930476
Apr-84	10857	47797604	3632407	69445495	419	54745	47852349
May-84	11502	49362298	3561463	73522953	443	1298	49363596
Jun-84	10351	44679126	3558593	71314214	416	9106	44688232
Jul-84	10926	47308872	2686804	73288318	425	14068	47322940
Aug-84	11614	48383801	2942853	72857517	445	20224	48404025
Sep-84	11334	47703869	3818398	69442535	440	8673	47712542
Oct-84	12104	47898608	3721966	71634417	443	15388	47913996
Nov-84	11864	46820447	3403452	70138517	458	9939	46830386
Dec-84	13181	45988114	4539196	77160712	477	5487	45993601
Jan-85	12380	44052760	4526381	71118266	487	1618	44054378
Feb-85	12874	45333314	5170988	72966766	495	5267	45338581
Mar-85	14137	49542756	5663351	81744402	490	290	49543046
Apr-85	12213	45486904	4164695	74638826	488	16083	45502987
May-85	13599	50197271	4581467	79091147	497	11780	50209051
Jun-85	13820	48529852	5388729	76460611	496	426	48530278
Jul-85	13729	48128294	5796868	78891973	514	4021	48132315
Aug-85	13279	47216688	5505737	75935951	518	8970	47225658
Sep-85	14267	47725359	5696363	78652553	511	5	47725364
Oct-85	15199	48795594	6341375	81132489	524	784	48796378
Nov-85	14353	46037011	5938422	81180908	528	1281	46038292
Dec-85	14711	48611015	6993961	86701696	522	5609	48616624
Jan-86	14888	48756336	8437042	86169218	523	55092	48811428
Feb-86	13670	44593439	8471265	81562514	519	15653	44609092
Mar-86	14962	47517044	9912945	89114675	545	7454	47524498
Apr-86	14266	44762013	7989967	80593368	560	880	44762893
May-86	15690	49374964	10353824	86451511	573	1287	49376251
Jun-86	14883	46615931	10394000	77281511	593	21635	46637566
Jul-86	15249	49027112	11023475	77406115	609	25808	49052920
Aug-86	14617	46931798	9947672	70264067	607	21947	46953745
Sep-86	14702	44675027	10105553	66922615	602	29464	44704491
Oct-86	17095	49955391	11580539	87805096	605	14156	49969547
Nov-86	16603	47048493	11142306	87644670	630	20697	47069190
Dec-86	17409	45874619	12689344	87751094	638	15745	45890364
Jan-87	18531	51847411	14703876	99929970	655	153851	52001262
Feb-87	16798	42287238	13291430	91355123	652	690287	42977525
Mar-87	18566	50496217	16171789	100165396	671	1147985	51644202
Apr-87	18164	49712907	16045254	99629716	666	526949	50239856
May-87	18754	51033033	17406575	109067548	671	1265115	52298148
Jun-87	18728	47809574	17543627	108341527	676	1537536	49347110
Jul-87	19344	49607120	18839953	108519213	688	1561180	51168300
Aug-87	19187	49788347	18427886	107367328	702	1566021	51354368
Sep-87	18737	47320529	18211084	102909213	691	1520199	48840728
Oct-87	19707	49843957	18644925	117592360	709	1664821	51508778
Nov-87	19701	48848622	19327781	120776516	719	1690087	50538709
Dec-87	20425	49648658	19519061	127778425	722	1743855	51392513
Jan-88	20614	48217307	20887203	126843245	735	1717605	49934912
Feb-88	18628	46181169	19607275	112825845	716	1625867	47807036
Mar-88	19657	50429033	21825547	125956342	714	1680521	52109554
Apr-88	18328	47475534	18583869	111849135	711	1350132	48825666
May-88	19213	48585781	19168880	127468024	723	1761553	50347334

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jun-88	19081	46526929	20405951	120610649	730	1688366	48215295
Jul-88	20095	47837433	21526548	121717735	742	1642957	49480390
Aug-88	20423	48663236	22802330	123776544	730	1701948	50365184
Sep-88	19983	47358135	22546831	125217687	731	1753449	49111584
Oct-88	20655	48242755	21791272	133417280	750	1798817	50041572
Nov-88	20083	47011048	22542084	134483249	743	1765532	48776580
Dec-88	20942	47979505	23583845	135496159	764	1794686	49774191
Jan-89	20898	46545525	21820932	133219375	762	1751039	48296564
Feb-89	18876	42616862	20794379	118501655	764	1548261	44165123
Mar-89	18905	39804423	22110041	115377846	775	1479793	41284216
Apr-89	19791	43492736	23656881	124486419	777	1580589	45073325
May-89	20515	46812393	25209370	132888296	746	1813983	48626376
Jun-89	18948	42504707	21295746	123004556	742	1679134	44183841
Jul-89	18774	39694894	18933333	118799952	747	1526506	41221400
Aug-89	20235	43865551	23695390	123885192	746	1640438	45505989
Sep-89	19608	42192245	23025246	121954852	758	1471158	43663403
Oct-89	20842	43862945	25579117	132376594	777	1734818	45597763
Nov-89	20405	43631061	25189770	133781318	758	878017	44509078
Dec-89	21276	44654173	27041019	139322285	772	917416	45571589
Jan-90	21698	43888513	26897088	139628999	778	960647	44849160
Feb-90	19197	38356514	24511580	116707766	768	1473305	39829819
Mar-90	21992	42371342	27765090	136242005	800	1626626	43997968
Apr-90	21125	41090905	26743478	131868969	803	1262440	42353345
May-90	21566	41567079	27471129	135776355	799	1685101	43252180
Jun-90	19017	35513269	20986715	124851623	817	1346984	36860253
Jul-90	20637	38853583	25686369	126610885	826	1428037	40281620
Aug-90	21203	40640204	26649511	128311080	855	1535190	42175394
Sep-90	19550	37080707	26759588	116052922	829	1107376	38188083
Oct-90	22235	43560227	30542948	142733253	839	1771970	45332197
Nov-90	21248	39116281	27196259	136443071	861	1485200	40601481
Dec-90	22266	42770718	29354619	153827024	849	1615534	44386252
Jan-91	22362	43054283	30480125	164292186	830	1751713	44805996
Feb-91	20279	39144435	28984647	153134974	827	1720054	40864489
Mar-91	22690	42747192	32861585	169062033	846	1999700	44746892
Apr-91	22239	39140665	29270940	152379513	857	1902815	41043480
May-91	23037	39713418	31034373	151681145	859	1950805	41664223
Jun-91	22361	38477505	29026797	153641334	868	1886306	40363811
Jul-91	22691	40226324	30506197	159699859	855	1990636	42216960
Aug-91	21974	38784041	26295855	155565851	869	1777511	40561552
Sep-91	22556	38920269	30922752	149161840	887	1577790	40498059
Oct-91	23697	41592078	32798434	165449542	880	2156285	43748363
Nov-91	22698	38416263	30773627	156729334	886	1959819	40376082
Dec-91	23172	38498839	32048145	162399810	888	1970164	40469003
Jan-92	23670	39688724	33758255	173152056	882	2136284	41825008
Feb-92	22844	38066537	33670990	171645611	881	2042337	40108874
Mar-92	24547	39955102	36323056	180007984	889	2142106	42097208
Apr-92	23478	37454102	33443638	176417434	888	2060527	39514629
May-92	24186	36793398	33691419	171662653	890	2147450	38940848
Jun-92	23529	36276746	34778269	164577222	894	2076051	38352797
Jul-92	24249	36468307	35722435	167416985	887	2075830	38544137
Aug-92	23922	35671962	34628984	165613013	907	2089426	37761388
Sep-92	24557	36123551	37123999	175702536	905	2114843	38238394
Oct-92	25378	36873599	38255978	184665873	914	2212659	39086258
Nov-92	24244	34873310	36116627	179454682	916	2096991	36970301
Dec-92	25464	36859232	38526281	195307671	917	2171846	39031078
Jan-93	25548	35941366	39284506	193100364	913	2245080	38186446
Feb-93	22952	31660796	34692588	173499881	919	2078074	33738870
Mar-93	26125	35312031	38687577	195460624	926	2287585	37599616
Apr-93	24881	33021450	38597498	180515045	921	2230354	35251804
May-93	25278	33332069	40009508	183111261	924	2229629	35561698
Jun-93	23012	31087638	39717384	165365396	920	2077713	33165351
Jul-93	24238	30537258	39487752	163783676	917	1488654	32025912

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Aug-93	24971	32567318	41368386	179173877	912	2190215	34757533
Sep-93	24040	30488509	36568648	172234661	925	1969818	32458327
Oct-93	25380	35487957	39785235	204269363	940	2152082	37640039
Nov-93	24609	36206915	36430972	216051666	934	2159839	38366754
Dec-93	25766	37325860	38423367	228209660	928	2162364	39488224
Jan-94	25482	36839786	38691194	229146852	903	2184022	39023808
Feb-94	22394	31862098	33959058	201175514	923	1925875	33787973
Mar-94	25011	34959339	37884401	222460540	926	1990725	36950064
Apr-94	24468	31887603	33797690	199157774	932	1771766	33659369
May-94	25056	34243175	38353560	209560664	935	2099241	36342416
Jun-94	22571	31401333	35870108	188181005	924	1968971	33370304
Jul-94	23461	32253654	35703200	194472460	927	1969223	34222877
Aug-94	23842	32317558	37928978	192970065	914	1994086	34311644
Sep-94	23180	31669288	36790985	188556190	935	2035466	33704754
Oct-94	25521	35063750	39861499	234007501	933	1934020	36997770
Nov-94	24679	32491467	36659068	230012138	946	2141757	34633224
Dec-94	25845	35656882	40325260	259173534	952	2367122	38024004
Jan-95	25400	34609776	41092903	253199814	938	2367569	36977345
Feb-95	22974	30701010	36713721	232025369	927	2162028	32863038
Mar-95	24831	32535317	42102163	241308012	923	2330463	34865780
Apr-95	24115	31660229	37274148	232089479	934	2275827	33936056
May-95	25143	33095085	40234746	241081951	924	2406745	35501830
Jun-95	23986	30963980	38431180	224794414	922	2262719	33226699
Jul-95	23799	29972880	38522001	220013461	900	2125010	32097890
Aug-95	24138	30862153	40686939	228344646	910	2471210	33333363
Sep-95	22904	28509222	34012005	218934634	935	2250025	30759247
Oct-95	24780	31884223	40244232	245764616	918	2519993	34404216
Nov-95	23919	30723873	35676471	249715686	913	2665147	33389020
Dec-95	24978	31698522	38270796	267357918	913	2591130	34289652
Jan-96	25136	31181337	38880313	256275776	945	2691244	33872581
Feb-96	23640	30039425	38256543	243961346	936	2699401	32738826
Mar-96	25274	32020538	42476440	259170534	955	2901933	34922471
Apr-96	23524	29062707	39669895	236594134	925	2654695	31717402
May-96	22907	28539984	36077683	216129277	924	2358805	30898789
Jun-96	23196	29575754	40103196	224103551	923	2423883	31999637
Jul-96	23229	28735651	39598858	221599718	949	2339120	31074771
Aug-96	22439	28419465	37529224	229195839	948	2423295	30842760
Sep-96	23287	28984608	40599364	234920052	931	2726804	31711412
Oct-96	23973	30078055	40757673	252600155	942	2954213	33032268
Nov-96	23782	29369068	41167067	250183268	940	2931563	32300631
Dec-96	24734	29981667	41416354	261453922	931	3078519	33060186
Jan-97	24736	29585381	42344469	260943643	940	3056952	32642333
Feb-97	22465	26802613	38403762	240838092	935	2861074	29663687
Mar-97	24108	28044779	42352824	251797984	935	2907293	30952072
Apr-97	23682	27458949	41435233	246438323	940	2807692	30266641
May-97	24132	27827447	43259674	247032533	928	2769800	30597247
Jun-97	23272	26392348	41816801	231758095	931	2497501	28889849
Jul-97	23261	26423807	40568144	228924388	932	2605061	29028868
Aug-97	23088	25397040	38780786	215637114	956	2416280	27813320
Sep-97	22657	26112588	39661784	229677440	961	2627749	28740337
Oct-97	23422	26988456	39057004	250129614	953	2811257	29799713
Nov-97	23402	26134028	39440192	246437507	946	2797220	28931248
Dec-97	24786	27337727	42132953	268378583	948	3042799	30380526
Jan-98	23610	25324963	41465192	263554906	928	2918703	28243666
Feb-98	21856	23209464	37274579	233568176	928	2638714	25848178
Mar-98	23743	25074475	38597498	250527441	940	2808594	27883069
Apr-98	22219	24142375	37943493	240946396	946	2737325	26879700
May-98	22631	23987090	33846153	251240516	954	2792801	26779891
Jun-98	22264	22378497	37355059	231734606	937	2523191	24901688
Jul-98	22900	23372049	40255112	229019582	911	2466648	25838697
Aug-98	22865	22894708	38761740	228054769	933	2510823	25405531
Sep-98	20994	20987298	35618780	212438165	935	2442507	23429805

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Oct-98	24170	24492428	42126169	252695010	957	2898234	27390662
Nov-98	22941	22939541	39995864	252724867	914	2818171	25757712
Dec-98	24257	23834220	40683904	268483425	918	2901540	26735760
Jan-99	24013	23497800	39556490	272606493	890	2889252	26387052
Feb-99	21376	19920302	34847004	234591309	908	2448471	22368773
Mar-99	23963	22534396	40440245	268388962	909	2596760	25131156
Apr-99	22762	20091987	37554180	236037650	904	2600455	22692442
May-99	23670	21244394	41883061	246392829	913	2762916	24007310
Jun-99	21107	17733092	34946514	203043987	894	2340765	20073857
Jul-99	21004	18868267	34076718	222215731	922	2219677	21087944
Aug-99	22602	19725169	40137760	220675836	900	2400791	22125960
Sep-99	20203	17211924	35945449	200114027	900	2176326	19388250
Oct-99	24181	21058705	42370606	260979408	933	2825190	23883895
Nov-99	23414	19245056	38461379	242050632	907	2602473	21847529
Dec-99	24939	20961628	43606716	277678386	924	2915933	23877561
Jan-00	24673	20407834	43507103	276107172	920	2885811	23293645
Feb-00	23092	19003496	39988148	259230537	916	2693814	21697310
Mar-00	24728	20100583	42120191	275279992	918	2836287	22936870
Apr-00	23721	19305589	40951620	263537072	920	2743814	22049403
May-00	23819	18939071	42195859	257488530	912	2746290	21685361
Jun-00	22201	17494923	39484091	229421229	906	2410461	19905384
Jul-00	22751	17767108	39737891	229827573	882	2331368	20098476
Aug-00	23231	17739630	40728828	232582758	910	2440271	20179901
Sep-00	22244	16710326	35947857	226544335	906	2301352	19011678
Oct-00	24768	19074973	42239941	263200132	936	2735796	21810769
Nov-00	24134	18437718	39731888	260182624	934	2696140	21133858
Dec-00	25014	18871067	40734000	272014039	921	2754357	21625424
Jan-01	24845	18140621	42158373	259111168	937	2591794	20732415
Feb-01	22519	16192898	36618636	234775246	930	2341457	18534355
Mar-01	25609	18543614	41727007	277180433	938	2738619	21282233
Apr-01	24620	17210377	40730890	248674298	959	2486915	19697292
May-01	24215	17084439	39865999	240456278	943	2503194	19587633
Jun-01	21923	15832686	31516410	225250737	895	2212339	18045025
Jul-01	22480	15858522	33812937	223884307	904	2202383	18060905
Aug-01	22530	16167301	35769220	230671526	914	2320898	18488199
Sep-01	20225	14603701	30449165	213035107	896	2055324	16659025
Oct-01	21465	14981628	34291239	213348488	896	2144451	17126079
Nov-01	24042	17173978	40556667	262117296	929	2551179	19725157
Dec-01	25314	17971760	43452378	271322867	925	2721444	20693204
Jan-02	24916	17535604	41717010	262764795	934	2599831	20135435
Feb-02	22619	15935084	38111283	247673277	911	2449931	18385015
Mar-02	24383	17409470	42357051	267509200	927	2655378	20064848
Apr-02	23654	16456126	39437815	250148084	942	2432988	18889114
May-02	23611	17018762	39458135	250599584	930	2443131	19461893
Jun-02	22344	16224464	38204002	233836232	919	2257856	18482320
Jul-02	21203	14787021	37373415	210209594	892	1942328	16729349
Aug-02	21751	15172645	36385290	229041217	924	2109743	17282388
Sep-02	18450	13165049	31762225	213717217	898	1912510	15077559
Oct-02	22664	15711026	38783471	251194546	880	2169589	17880615
Nov-02	20766	13835730	35141086	229820160	885	2082942	15918672
Dec-02	23762	16207353	41896260	274192816	890	2594201	18801554
Jan-03	23087	15966385	41022412	269267112	876	2542007	18508392
Feb-03	21355	14796402	36636770	252348385	853	2322117	17118519
Mar-03	23703	16434881	39452484	275595593	884	2509351	18944232
Apr-03	21972	14876467	36617533	246213431	875	2262885	17139352
May-03	21844	15098632	33555595	237344895	890	2184893	17283525
Jun-03	20988	14770418	36681072	233475914	887	2054100	16824518
Jul-03	22203	15006078	38932809	223541176	877	1845635	16851713
Aug-03	21823	14534598	36764239	237614147	893	1856514	16391112
Sep-03	21436	14181383	37591962	233849103	844	1832949	16014332
Oct-03	22707	15120985	39133935	250637053	861	1712730	16833715
Nov-03	22420	14722300	39291824	251223256	866	2294577	17016877

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Dec-03	23342	15635286	41694980	278160544	843	2592357	18227643
Jan-04		15307679	41754815	279146397	855	2466164	17773843
Feb-04		14247110	37935568	264825744	842	2399954	16647064
Mar-04		15426799	40778023	283089219	861	2583212	18010011
Apr-04		14583506	41522214	261568282	863	2429232	17012738
May-04		14503276	42615930	260553782	870	2383097	16886373
Jun-04		13453710	40677401	226043976	854	1993358	15447068
Jul-04		12715740	38799843	217078872	853	1868051	14583791
Aug-04		10844956	34631832	213037113	847	1633901	12478857
Sep-04		11687123	37804688	225822320	854	1940933	13628056
Oct-04		13976487	44439012	256911215	846	2293151	16269638
Nov-04		13971526	43876956	267775264	841	2400165	16371691
Dec-04		14295630	44518142	279953097	828	2399403	16695033
Jan-05		14012960	45278788	273696350	823	2449368	16462328
Feb-05		12774909	40020014	252637238	847	2230819	15005728
Mar-05		14164351	45295593	276414589	824	2082880	16247231
Apr-05		13041146	43236628	249016574	860	1463199	14504345
May-05		13456347	46407894	255524379	840	1658301	15114648
Jun-05		11979474	40124364	224161989	857	1557022	13536496
Jul-05		11659294	40331970	219016473	892	1478832	13138126
Aug-05		12399030	42974144	228799463	842	1851492	14250522
Sep-05		11427116	38982769	232281970	866	1821580	13248696
Oct-05		12960797	38736301	254117632	831	2124086	15084883
Nov-05		12866552	38027892	267342595	783	1849742	14716294
Dec-05		12370228	37752948	253583669	769	2065027	14435255
Jan-06		12490994	37268513	259080522	758	2230548	14721542
Feb-06		11131691	34523253	234156721	759	2035076	13166767
Mar-06		10011151	29776828	257379783	773	2078893	12090044
Apr-06		10926492	32426120	250746636	749	1962316	12888808
May-06		11420041	35691457	246645524	780	1969011	13389052
Jun-06		10727705	36392028	218168149	745	1775264	12502969
Jul-06		9351475	27969468	200413536	723	1507211	10858686
Aug-06		5997192	14544489	117180947	692	814088	6811280
Sep-06		7361368	15768986	129142387	612	902519	8263887
Oct-06		9580189	22556100	209984339	749	1240762	10820951
Nov-06		9049494	28840480	197243774	723	1517358	10566852
Dec-06		11648727	34297733	261707370	755	2147058	13795785
Jan-07		11270358	34759575	259744101	734	2123869	13394227
Feb-07		10373234	32309568	241228883	748	1957199	12330433
Mar-07		11275457	36169909	267289231	720	2103826	13379283
Apr-07		10283886	34157330	240657377	755	1867307	12151193
May-07		10968134	36110260	252478357	764	1905330	12873464
Jun-07		9510525	33942627	195149007	756	1469043	10979568
Jul-07		10227827	35111718	218521703	752	1569362	11797189
Aug-07		9689032	23678076	217583225	726	1417960	11106992
Sep-07		8042604	26107401	210547796	741	1489250	9531854
Oct-07		10151104	34385580	244735868	699	1794208	11945312
Nov-07		11072994	37623681	249511994	751	1925216	12998210
Dec-07		11403166	37102379	267115873	752	1962706	13365872
Jan-08		11057869	38069612	271547645	761	1954323	13012192
Feb-08		10376272	36442178	248530435	772	1828105	12204377
Mar-08		11403153	40392086	268279607	756	1706381	13109534
Apr-08		10442829	37506328	233239661	763	1805507	12248336
May-08		10163414	36766876	225660669	743	1646284	11809698
Jun-08		9266552	30951432	207448363	770	1409535	10676087
Jul-08		9311572	30589161	197337035	754	989081	10300653
Aug-08		8405113	30076848	171351067	780	1199363	9604476
Sep-08		10042739	33738980	219473441	805	1678223	11720962
Oct-08		11033143	36562717	245637355	760	1858004	12891147
Nov-08		11073763	38450808	254993003	785	1907058	12980821
Dec-08		11101206	39332066	258531957	778	2016847	13118053
Jan-09		10668702	37607705	249510733	765	1890864	12559566

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Feb-09		10140390	36715515	246604135	779	1900763	12041153
Mar-09		11385399	37286114	268418227	786	2082095	13467494
Apr-09		9674340	33441146	240553144	799	1416771	11091111
May-09		10906509	38809679	239961162	802	1761671	12668180
Jun-09		7567867	28288700	207683336	837	1456709	9024576
Jul-09		8077560	16512142	206013339	786	1276946	9354506
Aug-09		7770093	21163003	171013610	644	316256	8086349
Sep-09		10225184	35754414	220389141	813	1608205	11833389
Oct-09		10678209	39536508	229498788	813	1637011	12315220
Nov-09		10393397	37789415	236445726	812	1827141	12220538
Dec-09		10671659	42745598	232873952	777	1892419	12564078
Jan-10		10280880	39107109	237709182	769	1879530	12160410
Feb-10		9263893	31642733	228149849	751	1684988	10948881
Mar-10		10631949	35652182	258068910	794	1891563	12523512
Apr-10		9916316	35406099	227179776	759	856647	10772963
May-10		8931768	31982293	203826214	757	1557627	10489395
Jun-10		7556847	24614281	186977690	737	1364557	8921404
Jul-10		7846220	28103050	163379930	698	567012	8413232
Aug-10		7893430	25869492	167832655	748	638415	8531845
Sep-10		9431457	32366474	218971978	810	1330241	10761698
Oct-10		10061502	37325848	243183875	786	1835608	11897110
Nov-10		9664433	37821304	239568017	768	1790045	11454478
Dec-10		10157314	37750269	263934192	794	1976789	12134103
Jan-11		7303647	29247788	194022302	784	1102062	8405709
Feb-11		9180641	36400019	226752922	798	1624977	10805618
Mar-11		10077026	40340114	252937084	831	1772068	11849094
Apr-11		9739900	39251136	238633682	804	1713103	11453003
May-11		9282592	37594844	221274231	780	1578879	10861471
Jun-11		8670641	28825688	216042670	787	1468847	10139488
Jul-11		6047193	23603515	150434343	744	956202	7003395

Table B.8: *Nikaitchuq*

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jan-11		700	5226	151	2		
Feb-11		126221	990	13823	7		
Mar-11		193251	13894	29676	9		
Apr-11		151850	30355	28716	10		
May-11		200708	36977	26861	10		
Jun-11		191245	27816	28176	11		
Jul-11		210698	39973	30986	12		

Table B.9: *Oooguruk*

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jan-04	0	0	0	0	0		
Feb-04	0	0	0	0	0		
Mar-04	0	0	0	0	0		
Apr-04	0	0	0	0	0		
May-04	0	0	0	0	0		
Jun-04	0	0	0	0	0		
Jul-04	0	0	0	0	0		
Aug-04	0	0	0	0	0		
Sep-04	0	0	0	0	0		
Oct-04	0	0	0	0	0		
Nov-04	0	0	0	0	0		
Dec-04	0	0	0	0	0		
Jan-05	0	0	0	0	0		
Feb-05	0	0	0	0	0		
Mar-05	0	0	0	0	0		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Apr-05	0	0	0	0	0		
May-05	0	0	0	0	0		
Jun-05	0	0	0	0	0		
Jul-05	0	0	0	0	0		
Aug-05	0	0	0	0	0		
Sep-05	0	0	0	0	0		
Oct-05	0	0	0	0	0		
Nov-05	0	0	0	0	0		
Dec-05	0	0	0	0	0		
Jan-06	0	0	0	0	0		
Feb-06	0	0	0	0	0		
Mar-06	0	0	0	0	0		
Apr-06	0	0	0	0	0		
May-06	0	0	0	0	0		
Jun-06	0	0	0	0	0		
Jul-06	0	0	0	0	0		
Aug-06	0	0	0	0	0		
Sep-06	0	0	0	0	0		
Oct-06	0	0	0	0	0		
Nov-06	0	0	0	0	0		
Dec-06	0	0	0	0	0		
Jan-07	0	0	0	0	0		
Feb-07	0	0	0	0	0		
Mar-07	0	0	0	0	0		
Apr-07	0	0	0	0	0		
May-07	0	0	0	0	0		
Jun-07	0	0	0	0	0		
Jul-07	0	0	0	0	0		
Aug-07	0	0	0	0	0		
Sep-07	0	0	0	0	0		
Oct-07	0	0	0	0	0		
Nov-07	0	0	0	0	0		
Dec-07	0	0	0	0	0		
Jan-08	0	0	0	0	0		
Feb-08	0	0	0	0	0		
Mar-08	0	0	0	0	0		
Apr-08	0	0	0	0	0		
May-08	0	0	0	0	0		
Jun-08		63102	1495	35753	1		
Jul-08		37055	473	16350	1		
Aug-08		0	0	0	0		
Sep-08		48643	2350	26700	2		
Oct-08		159057	2060	82437	2		
Nov-08		169284	396	90727	3		
Dec-08		194209	5214	132509	3		
Jan-09		183983	7629	128458	4		
Feb-09		215327	6719	174257	4		
Mar-09		169840	751	104031	4		
Apr-09		125240	525	135709	2		
May-09		167186	74	122613	4		
Jun-09		210633	1193	138737	5		
Jul-09		261907	111	161530	5		
Aug-09		268288	1588	143560	5		
Sep-09		290239	1069	164108	6		
Oct-09		265829	351	163207	6		
Nov-09		263604	0	176540	6		
Dec-09		284007	437	191931	7		
Jan-10		274525	3268	144679	6		
Feb-10		264689	4935	193073	6		
Mar-10		319606	15161	231844	7		
Apr-10		361394	2751	295277	8		
May-10		263091	3724	160556	7		

RptDate	DaysProd	ProdOil	ProdWater	ProdGas	ProdWells	NGLeg	ProdOil+NGLeg
Jun-10		312727	2541	212737	9		
Jul-10		363330	4605	272307	9		
Aug-10		297798	19145	228555	10		
Sep-10		380768	42359	285162	10		
Oct-10		331529	47754	278197	10		
Nov-10		268271	54269	229273	11		
Dec-10		282905	78676	215919	11		
Jan-11		217300	77196	166803	12		
Feb-11		238732	90465	177179	12		
Mar-11		226253	68855	188208	13		
Apr-11		243463	132024	252298	13		
May-11		252159	112808	286920	14		
Jun-11		234755	118584	316556	14		
Jul-11		218365	140529	328019	15		