



## Canada-Newfoundland and Labrador Benefits

### Annual Report 2017

Husky Energy Ref. No.: WR-ADM-RP-0051



---

## TABLE OF CONTENTS

### Contents

1.0	Introduction – 2017 Highlights.....	3
2.0	Summary of 2016 Activities .....	4
3.0	Employment Summary .....	5
4.0	Development and Delineation Drilling Program.....	10
5.0	Procurement.....	11
6.0	Research and Development .....	12
7.0	Education and Training .....	14
8.0	Technology Transfer and Supplier Development .....	17
9.0	Community Investment .....	18
10.0	Diversity.....	18
11.0	Photographs.....	19

## 1.0 Introduction – 2017 Highlights

Husky completed its 12th full year of operations on the White Rose field, safely producing approximately 5.5 million barrels of oil. To the end of 2017, the White Rose field and satellites have produced over 285 million barrels of oil. Husky recognizes the impact of the White Rose and satellite projects on the provincial economy and on local communities, and works proactively to ensure that Newfoundland and Labrador residents and members of the local supply community are full participants in the projects.

In 2017, the North Amethyst field completed its eighth year of production, producing approximately 5.2 million barrels of oil and West White Rose completed its sixth full year of production, producing approximately 1.0 million barrels of oil. Also in 2017, South White Rose Extension (SWRX) completed its second year of oil production, producing approximately 3.9 million barrels of oil.

Husky presently holds working interests ranging from 5.8 percent to 100 percent in 24 significant discovery areas in the Jeanne d'Arc Basin and Flemish Pass Basin, offshore NL and Baffin Island.

In May 2017, Husky announced a near field oil discovery at Northwest White Rose. The White Rose A-78 well was drilled approximately 11 kilometers northwest of the *SeaRose FPSO* in the first quarter of 2017 and delineated a light oil column of more than 100 meters. The discovery continues to be assessed. Husky has 93.232 percent ownership interest. A potential development could leverage the *SeaRose FPSO*, existing subsea infrastructure and the future West White Rose platform.

In June, 2016 Husky and its partner announced two oil discoveries at the Bay de Verde and Baccalieu prospects in the Flemish Pass Basin, which add to the resource base for a potential development at the Bay du Nord discovery. Husky holds a 35 percent non-operated working interest in each of the Bay du Nord, Bay de Verde, Baccalieu, Harpoon and Mizzen discoveries. The C-NLOPB issued a SDL for Bay du Nord in November 2017. The SDL 1055 covers an area of 13,149 hectares. Husky and its partner continue to assess the commercial potential of these discoveries.

In November 2017, the C-NLOPB announced that Husky was the successful bidder on a parcel of land in its 2017 land sale. The lands cover an area of 121,453 hectares in the Jeanne d'Arc Basin. The lands are adjacent to other Husky ELs in the basin, and bring Husky's ELs in the region to nine.

In May, 2017, Husky announced sanction of the West White Rose Project. This project involves construction of a stationary drilling platform. The concrete base will be built in Argentia, NL. Components of the topsides will be fabricated in Newfoundland, including the living quarters which is being built at Marystown, NL.

In 2017, Husky had 110 co-op student placements in various disciplines throughout the company (52 males and 58 females).

Quarterly updates, procurement and business opportunities are posted on the Husky website. Husky also has a West White Rose Project-specific website where Husky procurement opportunities are identified and links to contractor procurement websites are available. Husky continues to interact with local stakeholders in the White Rose and satellite projects, including maintenance of a close working relationship with the Newfoundland Ocean Industries Association (Noia). Husky regularly posts procurement opportunities with Noia through the Noia/OTANS Daily Bulletin. Again this year, Husky participated in the annual Noia conference providing two speakers to the supplier community.

## **2.0 Summary of 2016 Activities**

2017 marked the 12th full year of production from the White Rose field. A total of 5.5 million barrels of oil was produced. 2017 also marked the eighth year of production from the North Amethyst field with a total of 5.2 million barrels of oil produced and the sixth full year of production from West White Rose with 1.0 million barrels of oil produced. 2017 was the second full year of oil production from SWRX with 3.9 million barrels of oil produced.

In 2017, the *Heather Knutsen*, *Jasmine Knutsen*, *Grena Knutsen* and *Navion Hispania* transported Husky's White Rose crude. A total of 22 White Rose cargoes were completed in 2017 of which all (100% or 15.6 million bbls) was delivered to the NTL terminal at Whiffen Head.

In 2017, Husky invested over \$10.03 million in Research and Development and Education and Training on a number of initiatives, including \$50,000 to Thrive for educational programs, \$15,000 in support of the Eastern NL Science Fairs Council (ENSFC) and \$20,000 in continued support of the WRDC Techsploration Program.

As of December 31, 2017, a total of 1161 people were reported employed on Husky's White Rose Operations of which 544 were located offshore. This includes people employed with Husky and its contractors and includes North Amethyst, West White Rose and South White Rose Extension (SWRX). Of this total, 1009 or 87 percent were residents of Newfoundland and Labrador when hired, while another 95 or 8 percent were residents of other regions of Canada at the time of hire. The number of females employed on White Rose operations was 180 or approximately 16 percent of the total workforce.

As of December 31, 2017, 429 people were reported employed on Husky's West White Rose Project, representing approximately 203,500 person hours. The number of females employed on the project was 96 or approximately 22 percent of the total workforce.

Total Newfoundland and Canadian content for expenditures on the White Rose project for the period January 1 to December 31, 2017 stands at 72.29 percent (51.72 percent NL; 20.57 percent Other Canadian).

### 3.0 Employment Summary

#### 3.1 White Rose Project

As of December 31, 2017, a total of 1161 people were reported employed on Husky's White Rose Operations of which 544 were located offshore. This includes people employed with Husky and its contractors and includes North Amethyst, West White Rose and South White Rose Extension (SWRX).

Of the total personnel, 1009 or 87 percent were residents of Newfoundland and Labrador when hired, while another 95 or 8 percent were residents of other regions of Canada at the time of hire. The number of females employed on White Rose operations was 180 or approximately 16 percent of the total workforce (Table 3.1).

**Table 3-1 White Rose Employment Summary by Location, as of December 31, 2017**



#### Atlantic Region Contractor Stats

##### Head Count By Location

White Rose - Q4 2017

Location	NL Male	NLFemale	NL Subtotal	Other Canadian Male	Other Canadian Female	Other Canadian Subtotal	Foreign Male	Foreign Female	Foreign Subtotal	Male Subtotal	Female Subtotal	Total
Foreign	1	0	1	0	0	0	24	5	29	25	5	30
Newfoundland - Offshore	475	18	493	37	0	37	13	1	14	525	19	544
Newfoundland - Onshore	373	142	515	43	13	56	13	1	14	429	156	585
Other Canadian	0	0	0	2	0	2	0	0	0	2	0	2
<b>Total</b>	<b>849</b>	<b>160</b>	<b>1,009</b>	<b>82</b>	<b>13</b>	<b>95</b>	<b>50</b>	<b>7</b>	<b>57</b>	<b>981</b>	<b>180</b>	<b>1,161</b>

**Table 3-2 Employment Summary - Husky & Major Contractors as of Dec 31, 2017**

**Atlantic Region Contractor Stats**
**Head Count By Contractor**

White Rose - Q4 2017

Contractor	NL Male	NL Female	NL Subtotal	Other Canadian Male	Other Canadian Female	Other Canadian Subtotal	Foreign Male	Foreign Female	Foreign Subtotal	Male Subtotal	Female Subtotal	Total
A Harvey	9	3	12	0	0	0	0	0	0	9	3	12
Aker Solutions	25	7	32	0	0	0	1	0	1	26	7	33
ASCO Canada Limited	6	0	6	0	0	0	0	0	0	6	0	6
Atlantic Offshore Medical Services	9	3	12	0	0	0	0	0	0	9	3	12
Atlantic Towing	28	2	30	17	8	25	1	0	1	46	10	56
Atlantic XL	1	0	1	0	0	0	0	0	0	1	0	1
Baker Hughes	3	0	3	0	0	0	0	0	0	3	0	3
Cormorant Ltd.	0	0	0	0	0	0	0	0	0	0	0	0
Cougar	30	6	36	8	0	8	0	0	0	38	6	44
Crosbie Salamis	36	3	39	3	0	3	0	0	0	39	3	42
DBC Marine Services	1	2	3	0	0	0	0	0	0	1	2	3
DOF Subsea	59	4	63	4	0	4	5	0	5	68	4	72
East Coast Catering	16	3	19	0	0	0	0	0	0	16	3	19
East Coast Tubulars	26	2	28	2	0	2	2	0	2	30	2	32
Enhanced Drilling	5	0	5	0	0	0	0	0	0	5	0	5
Expro Group Canada	4	1	5	0	0	0	0	0	0	4	1	5
FI Oilfield Services Canada ULC	9	1	10	0	0	0	0	0	0	9	1	10
Fugro Jacques GeoSurveys Inc	11	2	13	0	0	0	4	0	4	15	2	17
Halliburton	7	0	7	0	0	0	0	0	0	7	0	7
Husky	227	87	314	25	5	30	4	0	4	256	92	348
Import Tool	0	0	0	0	0	0	0	0	0	0	0	0
Maersk Seabase	29	1	30	0	0	0	0	0	0	29	1	30
Oceaneering International Ltd.	0	0	0	0	0	0	2	0	2	2	0	2
Oceans Ltd	3	2	5	0	0	0	0	0	0	3	2	5
OneSubsea	33	5	38	0	0	0	19	5	24	52	10	62
Pennecon	2	0	2	0	0	0	0	0	0	2	0	2
Provincial Airlines	1	1	2	0	0	0	0	0	0	1	1	2
Schlumberger Services	56	9	65	8	0	8	7	2	9	71	11	82
Score	6	4	10	0	0	0	1	0	1	7	4	11
SGS Canada Inc.	0	0	0	0	0	0	0	0	0	0	0	0
Siemens	9	0	9	0	0	0	1	0	1	10	0	10
SNC Lavalin	3	0	3	0	0	0	0	0	0	3	0	3
Stantec	0	0	0	0	0	0	0	0	0	0	0	0
TechnipFMC	3	1	4	0	0	0	0	0	0	3	1	4
Teekay	68	6	74	4	0	4	1	0	1	73	6	79
Terrapure Environmental	5	1	6	0	0	0	0	0	0	5	1	6
Trans Ocean	114	4	118	11	0	11	2	0	2	127	4	131
Weatherford	2	0	2	0	0	0	0	0	0	2	0	2
Workstrings Canada	3	0	3	0	0	0	0	0	0	3	0	3
<b>Total</b>	<b>849</b>	<b>160</b>	<b>1,009</b>	<b>82</b>	<b>13</b>	<b>95</b>	<b>50</b>	<b>7</b>	<b>57</b>	<b>981</b>	<b>180</b>	<b>1,161</b>

\*Note: Contractors showing "0" headcount, have reported hours for Husky work scopes, however do not meet the requirements for Full Time Equivalents and are therefore reporting a fraction of a full person.

**Table 3-3 Employment Summary of Husky and Major Contractors – By Discipline and Gender as of December 31, 2017**



### Atlantic Region Contractor Stats

#### Head Count By Occupation

White Rose - Q4 2017

Occupation	NL Male	NL Female	NL Subtotal	Other Canadian Male	Other Canadian Female	Other Canadian Subtotal	Foreign Male	Foreign Female	Foreign Subtotal	Male Subtotal	Female Subtotal	Total
Administration & Clerical	8	47	55	1	4	5	0	0	0	9	51	60
Engineers	84	27	111	10	4	14	18	2	20	112	33	145
Management	63	6	69	14	1	15	16	5	21	93	12	105
Marine Crew	184	5	189	10	0	10	3	0	3	197	5	202
Other Field Services	109	5	114	8	0	8	0	0	0	117	5	122
Professionals	102	47	149	19	4	23	0	0	0	121	51	172
Safety Coordinator	1	0	1	0	0	0	0	0	0	1	0	1
Skilled Trades	124	2	126	11	0	11	3	0	3	138	2	140
Technicians & Technologists	174	21	195	9	0	9	10	0	10	193	21	214
<b>Total</b>	<b>849</b>	<b>160</b>	<b>1,009</b>	<b>82</b>	<b>13</b>	<b>95</b>	<b>50</b>	<b>7</b>	<b>57</b>	<b>981</b>	<b>180</b>	<b>1,161</b>

**Note:** In Q4 2017, Husky employed 36 co-op students (18 female) on the White Rose project. The students are not included in the head count above because they started and ended their term outside of the reporting system period.

### 3.2 West White Rose Project

As of December 31, 2017, 429 people were reported employed on Husky's West White Rose Project. During the fourth quarter of 2017 approximately 203,500 hours were expended on the project and the total for 2017 was approximately 553,900 person hours.

The majority of person hours expended on the project during the last quarter of 2017 were by Wood; these hours are related to topsides engineering. Hours reported by Husky Energy are related to project management. Arup Canada Inc. hours were for continued CGS engineering design work. The hours reported by SDP represent continuing CGS constructability reviews and the start of early works at the Argentia graving dock to prepare the site for the CGS construction beginning this year. Similarly, the hours reported by Kiewit reflect the start and construction for living quarters in Marystown. Kvaerner hours were for engineering, analysis and planning related to marine operations. TechnipFMC hours relate to engineering of the subsea tie-back system. Hours reported by Garda World represent graving dock maintenance activities.

Ninety-nine percent of the person hours related to detailed engineering of the CGS took place in Newfoundland and Labrador in the fourth quarter of 2017 (see Arup in Table 3.4) and, overall, 64 percent of person hours expended on the project occurred in Newfoundland and Labrador.

**Table 3.4 Person Hours by Contractor – West White Rose Project Employment**

**Atlantic Region Contractor Stats**
**Hours By Contractor**

West White Rose Project - Q4 2017

Contractor	Onshore	Offshore	Subtotal	Other Canadian	Foreign	Total
Arup Canada Inc.	30,873	0	30,873	30	191	31,094
Garda World	1,560	0	1,560	0	0	1,560
Husky	14,593	0	14,593	1,532	848	16,973
Kiewit	12,456	0	12,456	0	0	12,456
Kvaerner	4,955	0	4,955	0	703	5,658
SDP	23,305	0	23,305	1,620	0	24,925
TechnipFMC	2,916	0	2,916	0	0	2,916
Wood	37,119	0	37,119	0	70,765	107,884
<b>Total</b>	<b>127,777</b>	<b>0</b>	<b>127,777</b>	<b>3,182</b>	<b>72,507</b>	<b>203,466</b>

Residents of NL comprised of 59 percent of the West White Rose Project work force, and residents of Canada comprised three percent of the work force. Women comprised approximately 22 percent of the workforce (Table 3.5).

The majority of positions in Q4 2017 were associated with engineering supported by administration, management, and technicians/technologists (Table 3.6).

**Table 3.5 Head Count by Contractor – West White Rose Project**

**Atlantic Region Contractor Stats**
**Head Count By Contractor**

West White Rose Project - Q4 2017

Contractor	NL Male	NL Female	NL Subtotal	Other Canadian Male	Other Canadian Female	Other Canadian Subtotal	Foreign Male	Foreign Female	Foreign Subtotal	Male Subtotal	Female Subtotal	Total
Arup Canada Inc.	22	13	35	4	0	4	22	3	25	48	16	64
Garda World	1	4	5	0	0	0	0	0	0	1	4	5
Husky	23	14	37	1	2	3	3	0	3	27	16	43
Kiewit	34	4	38	0	0	0	0	0	0	34	4	38
Kvaerner	8	2	10	0	0	0	1	0	1	9	2	11
SDP	39	10	49	3	2	5	1	0	1	43	12	55
TechnipFMC	5	2	7	0	0	0	0	0	0	5	2	7
Wood	59	11	70	0	0	0	107	29	136	166	40	206
<b>Total</b>	<b>191</b>	<b>60</b>	<b>251</b>	<b>8</b>	<b>4</b>	<b>12</b>	<b>134</b>	<b>32</b>	<b>166</b>	<b>333</b>	<b>96</b>	<b>429</b>

The majority of positions in Q4 2017 were associated with engineering supported by administration, management, and technicians/technologists (Table 3.6).



**Table 3.6 Summary by Occupation – West White Rose Project**

**Atlantic Region Contractor Stats**
**Head Count By Occupation**

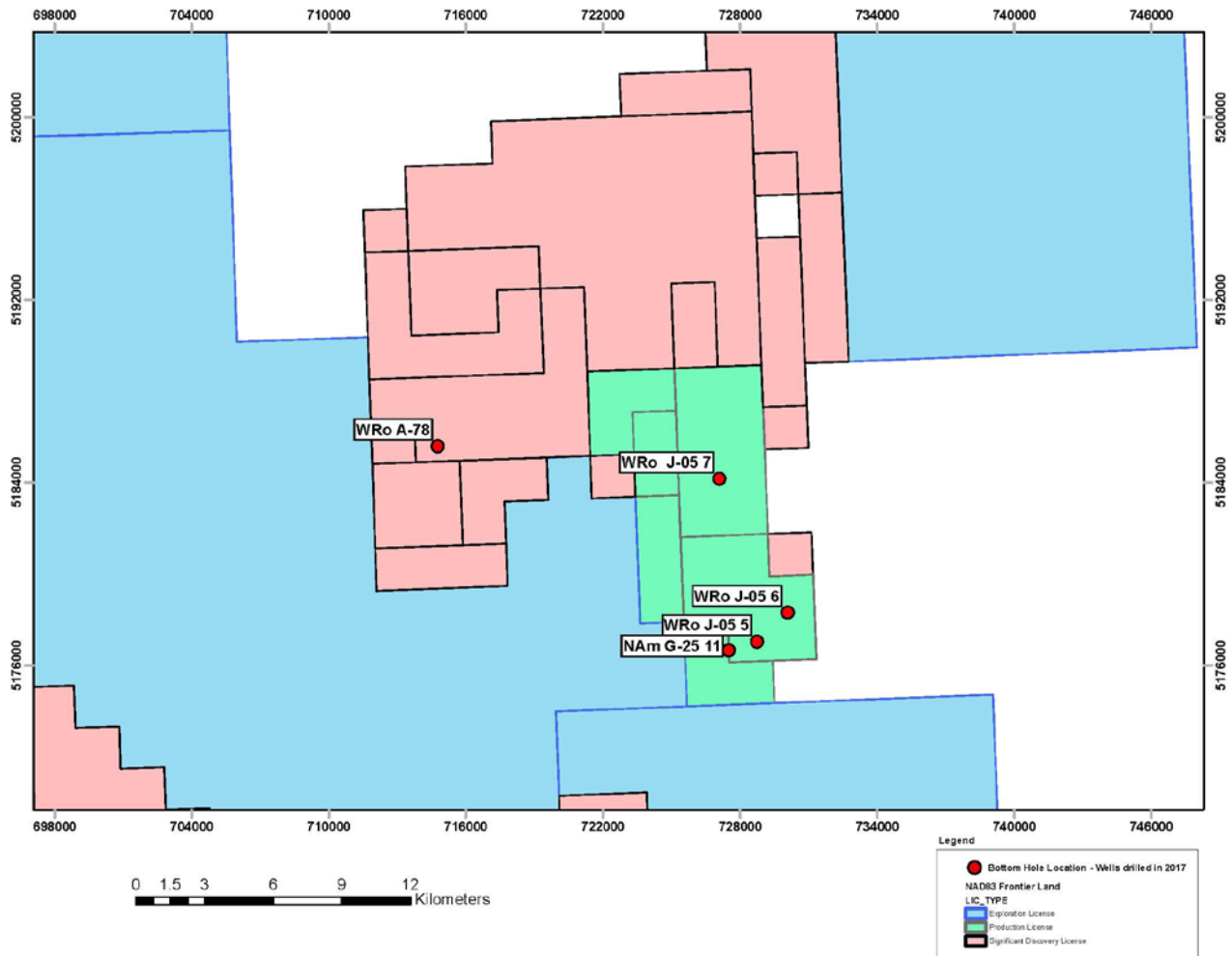
West White Rose Project - Q4 2017

Occupation	NL Male	NL Female	NL Subtotal	Other Canadian Male	Other Canadian Female	Other Canadian Subtotal	Foreign Male	Foreign Female	Foreign Subtotal	Male Subtotal	Female Subtotal	Total
Administration & Clerical	3	12	15	0	0	0	0	6	6	3	18	21
Engineers	77	15	92	5	3	8	68	12	80	150	30	180
Management	29	6	35	2	0	2	10	0	10	41	6	47
Other Field Services	7	3	10	0	0	0	0	0	0	7	3	10
Professionals	21	15	36	1	1	2	11	4	15	33	20	53
Skilled Trades	28	1	29	0	0	0	0	0	0	28	1	29
Technicians & Technologists	26	8	34	0	0	0	45	10	55	71	18	89
<b>Total</b>	<b>191</b>	<b>60</b>	<b>251</b>	<b>8</b>	<b>4</b>	<b>12</b>	<b>134</b>	<b>32</b>	<b>166</b>	<b>333</b>	<b>96</b>	<b>429</b>

Note: In Q4 2017, Husky employed 7 co-op students (3 female) on the West White Rose Project.

#### 4.0 Development and Delineation Drilling Program

During 2017, Husky completed three production wells (North Amethyst G-25 10, White Rose J-05 5, and White Rose J-05 7), a water injection well at South White Rose (J-05 6), and the A-78 exploration well. An additional production well was spud at North Amethyst (G-15 11) towards the end of 2017, and will be completed in 2018.




**Figure 4-1 Map of Husky Wells Drilled in 2017**

## 5.0 Procurement

During 2017 a total of 22 new contracts and five contract extensions valued at over \$250,000 were awarded. Table 5.1 provides a summary of these contracts.

**Table 5-1 Procurement Summary for 2017**

Husky East Coast Operations Procurement Summary			2017 Q1				
Description	Vendor Name	Vendor Location	Range	NL	CDN	FOR	Total
<b>New Contracts</b>							
Short term vessel charter (Maersk Clipper/Cutter)	Maersk Supply Service Canada Ltd.	St. John's	C	65%	1%	34%	100%
Short term vessel charter (Atlantic Kingfisher)	Atlantic Kingfisher Limited Partnership	St. John's	B	96%	4%	0%	100%
Ad-hoc support vessel requirement (Scotian Sea)	Secunda Canada LP	St. John's	C	67%	30%	3%	100%
Tubing Conveyed Perforating Equipment and Services	Schlumberger Canada Limited	St. John's, NL	F	42%	8%	50%	100%
Atlantic Kingfisher Charter	Atlantic Towing	St. John's	I	91%	9%	0%	100%
Well Site Survey Services	Fugro Geosurveys	St. John's	D	60%	5%	35%	100%
WWRP Topsides Transport services	Dockwise Shipping B.V	Netherlands	L	0%	0%	100%	100%
WWRP Topsides Installation services	Excalibur Marine Contractors	Switzerland	N	0%	0%	100%	100%
Topsides Fabrication	Kiewit Offshore Services	Ingleside, TX	O	0%	0%	100%	100%
Living Quarters Fabrication	Kiewit Offshore Services	Marystown, NL	N	100%	0%	0%	100%
Subsurface Study	Cardiff University	Cardiff, Wales (UK)	B	1%	1%	98%	100%
Consulting Services	Avara Solutions Inc.	St. John's, NL	A	40%	60%	0%	100%
Freight Forwarding and Customs Clearance	P.F. Collins Customs Broker Limited	St. John's, NL	G	40%	18%	42%	100%
IOD/SAS Equipment and Services	Schlumberger Canada Limited	St. John's, NL	B	42%	8%	50%	100%
Fault Seal and Trap Analysis	Schlumberger Canada Limited	Calgary, AB	A	0%	82%	18%	100%
Seismic Reprocessing	WesternGeco Canada (Schlumberger Canada Limited)	Calgary, AB	B	0%	100%	0%	100%
Medical Services	Atlantic Offshore Medical Services	St. John's, NL	G	94%	6%	0%	100%
Iceberg Towing Nets	Egersund Trawl AS	Norway	C	0%	0%	100%	100%
Standby Vessel Verification Trials	Fisheries & Marine Institute of Memorial University of Newfoundland	St. John's, NL	B	100%	0%	0%	100%
Casing and Liner Equipment	Import Tool	St. John's, NL	A	35%	57%	9%	100%
Telecommunications	Atlantic XL	St. John's, NL	B	100%	0%	0%	100%
HVAC System Maintenance	Dawe Enterprises Ltd.	Coley's Point, NL	A	100%	0%	0%	100%
<b>Contract Extensions</b>							
Sampling Services	Geotech Services (20106) Inc.	St. John's, NL	C	86%	14%	0%	100%
Marine Fuel	Irving Oil Commercial GP	St. John's, NL	O	18%	42%	40%	100%
Subsea Equipment	Oceaneering International Inc.	Houston, TX	H	0%	0%	100%	100%
Offshore Accommodations / Catering	East Coast Catering	St. John's	I	100%			100%
OEM Swivel / Turret and Inspection	SBM Atlantia	Houston Texas	L			100%	100%
<b>Cost Range Code Legend</b>							
A = 250,001 - 500,000 \$	E = 2,000,001 - 3,000,000 \$	I = 10,000,001 - 15,000,000 \$	M = 50,000,001 - 75,000,000 \$				
B = 500,001 - 1,000,000 \$	F = 3,000,001 - 5,000,000 \$	J = 15,000,001 - 20,000,000 \$	N = 75,000,001 - 100,000,000 \$				
C = 1,000,001 - 1,500,000 \$	G = 5,000,001 - 7,500,000 \$	K = 20,000,001 - 30,000,000 \$	O = Over 100,000,001 \$				
D = 1,500,001 - 2,000,000 \$	H = 7,500,001 - 10,000,000 \$	L = 30,000,001 - 50,000,000 \$					

## 6.0 Research and Development

Husky's investment in Newfoundland and Labrador executed R&D was over \$7.0 million in 2017. R&D expenditures include engagement with a wide spectrum of local companies and academic institutions.

### 7.1 Ongoing R&D Projects

A number of Husky directed or sponsored R&D initiatives noted in the 2016 Annual Report continued into 2017, including:

#### **Memorial University**

- MITTACS student sponsor for process safety.
- NSERC/Husky industry chair for safety at sea recognizing present capacity and to promote the development of simulation technologies to improve operational safety leading to a more robust, inherent safe design, of offshore facilities.
- Corrosion under Insulation – Dr. Faisal Khan with NL R&D Corporation.

#### **Petroleum Research (PRNL)**

- Offshore personnel transfer – Phase II.
- Dynamic positioning operations in sea ice.
- Effects of seismic activity on shrimp behavior – Phase II pilot survey.
- Effectiveness of virtual environments to improve onboard drills and exercises.
- Seeding activity associated with integrity management:
  - Remotely operated monitoring tool.
  - Liquid repellent surface.
  - Enhanced integrity through live 3D reconstruction and simulation project.

#### **C-CORE**

- Ice impact on wellheads: Re-analysis of future prospect using a stand-alone XMT.
- Enhanced satellite radar based iceberg detection and sea ice monitoring.
- *Henry Goodrich* MODU operations in sea ice.
- Development of an iceberg profiling road map using AUV technology.

**Radiant360**

- Development of mobile computing technology to develop integrated operations applications for the piping system, process safety metrics:
  - Development of piping and pressure vessel integrity management and risk model.
  - Extension of the *SeaRose FPSO* integrity system for subsea assets.
  - Development of SIL equipment application.
  - Deployment of SCE application to other Husky operations in Canada.

**Statoil Led R&D**

- Collaboration with Statoil to study physical environmental conditions in the frontier NL offshore area is continuing within the thematic of metocean and ice remote sensing for strategic and tactical support for future operations.

**Husky Led R&D**

- Collaboration with Avara to mature the proof of concept associated with the stand-alone XMT. Work included FEA analysis of the completion string and reliability analysis of the completion system.
- Collaborative research with TechnipFMC associated with the development of innovative technologies for stranded oil and gas resources such as a lean drilling platform, the Mark II, which would be designed as a non-operated concrete gravity platform.

**7.2 New R&D Projects**

Husky's R&D program continued to grow with initiation of a number of new R&D projects during 2017. Notable new projects include:

**Petroleum Research (PRNL)**

- Development of research themes in relation to:
  - Gas and CO<sup>2</sup> emissions.
- Seeding activity associated with integrated Operations:
  - Radiant 360 / IBM MAID (Maintenance Advisor Implementation Demonstration in Newfoundland and Labrador) based on EX equipment data using Cognitive intelligence Watson.
  - Deloitte RPA proof of concept using computer robot to mimic a repetitive manual process.
- Supercluster of Innovation:
  - Development of a proposal to ISED to create a cluster of innovation founded on digitalization of the ocean to support productivity and

sustainability objectives.

- Cross ocean industry engagement to create synergies and R&D projects.

## VMT

- Continued updates to emergency evacuation model in sea ice and simulations.

## Husky R&D (led or support)

- Collaborative research with TechnipFMC and C-CORE to develop an engineering alternative to a weak link system for flowlines.
- Collaborative research with C-CORE, Arup and others to mature the WWRP design basis.
- Collaborative research with TechnipFMC to develop a hull coating methodology and product to apply in situ on the *SeaRose FPSO*.
- Collaborative research with the Marine Institute and Notus to develop an ice net for use in high sea states.

## 7.3 Future Initiatives in R&D

Husky's investment in collaborative R&D in Newfoundland and Labrador continues to contribute to the growth of local R&D capacity and capability.

Husky supports initiatives which motivate innovation in safety practices, efficiency, and reliability of offshore exploration and production operations, while continuing to advance the technological feasibility of future offshore developments. A combination of direct investments in R&D, addressing strategic challenges unique to its business needs and opportunities, participation on collaborative R&D, and targeting more generic industry and regional operation challenges, helps maintain Husky's diverse R&D portfolio.

Husky remains committed to its role as a strategic industry partner to enable Newfoundland and Labrador innovators to successfully leverage additional funding from agencies such as InnovateNL and ACOA Atlantic Innovation Fund, toward advanced technology demonstration and commercialization of projects. Husky's contribution incorporates a blend of direct financial investment and participation through mentoring, which includes access to subject matter experts and operational resources.

## 7.0 Education and Training

Education and training remains a key area for Husky, and continues to provide an opportunity to contribute to the development of the local offshore industry. Through the period of January 1st to December 31st, 2017, direct non-regulatory training expenditure by Husky and its contractors related to the White Rose and North Amethyst projects totaled over \$3.5 million.

Husky will continue to invest in education and training to assist personnel in developing key skills and knowledge for professional and personal development. Husky's regard for the health, safety and wellbeing of the people who support Husky's operations remains paramount, and will be reflected in training associated with implementation of elements of Husky's Operational Integrity Management System, including a behavioral based safety management system

Below is a description of the major initiatives in education and training undertaken in relation to the White Rose project in 2017.

## 8.1 Husky Energy

Husky continued its strong commitment to the Memorial University of Newfoundland and College of the North Atlantic co-operative education programs in 2017. Husky continued to be an important employer of co-operative education students working in various disciplines, hiring 110 students in 2017. Total expenditure on co-operative education for 2017 by Husky was over \$2.4 million. Husky views this program as an important tool for building local capabilities in the offshore oil and gas sector and will continue to support this program in the future.

Husky renewed its commitment to influencing education and career choices of young adults in Newfoundland and Labrador through a \$20,000 contribution to Techsploration in 2017, the 15th year that Husky has provided funding. The Techsploration program is delivered by the Women in Resource Development Corporation (WRDC) in St. John's. The program introduces career opportunities in the trades and technologies to female Grade 9 students in an effort to interest them in the sciences before selecting courses for their secondary program. In addition to funding, Husky supports the efforts of several female employees who volunteer their time to be mentors for this program. This included a school visit (including presentation and speed networking activity), tours of a vessel (the *Osprey*) and of Husky's offices (where several other female staff joined for lunch to provide an overview of their careers), and participation in the two-day Techsplorers event.

Husky also continued to work closely with Women in Science and Engineering (WISE) in 2017 through provision of \$25,000 for summer student positions. As part of this program, female Husky employees also hosted a Husky Day on August 16 for the SSEP students which provided an opportunity for participants to meet with other females in non-traditional jobs as well as taking a tour of OneSubsea and Cougar Helicopters.

In 2017 Husky also provided \$10,000 in scholarships to Memorial University, College of the North Atlantic and the Coalition of Persons with Disabilities, \$3,000 to Memorial University's Faculty of Business Administration Associates Program and \$2,000 to the Marine Institute's Mate ROV Competition.

## 8.2 Husky Personnel Training

During 2017, Husky personnel received locally-based training from various educational facilities including Pore Pressure Prediction training at a cost of over \$35,000, Implementing Predictive Maintenance Programs and Machine Health Management training at a cost of over \$33,500, Fracturing Fundamentals for Non-fracers at a cost of over \$17,000 and Insights Learning and Development training at a cost of \$22,500.

## 8.3 Other Training Initiatives

- Maersk spent over \$35,000 on work term students studying Nautical Science, Marine Engineering and the Bridge Watch Program from the Marine Institute.
- Teekay spent over \$39,000 on its training program for Marine Institute cadets on board the shuttle tankers servicing the *SeaRose FPSO*.
- Atlantic Towing spent over \$95,000 on work term students from the Marine Institute and College of the North Atlantic.
- Cougar Helicopters spent over \$34,000 on work term students from College of the North Atlantic and Eastern College.
- Arup Canada spent over \$29,000 on work terms students from Memorial University.



## 8.0 Technology Transfer and Supplier Development

Husky considers investments to develop Newfoundland and Labrador's technological, industrial and economic capacity to be strategic to the sustainable growth of Husky's Atlantic Region. Developing the technologies that can support improvements in safety, performance, and productivity for the Grand Banks environment is key to supporting future activity in the region.

Husky acknowledges that the emergence of new digital technologies, their adoption and the intelligent exploitation of data can make our industry more competitive and safer.

### Ice Design R&D Program

Husky continues to be a key collaborator in PRNL's Ice Management Joint Industry Program along with Rutter, TechnipFMC, C-CORE and the Marine Institute. Projects within this program are advancing technologies and positioning Newfoundland and Labrador companies, such as Rutter and C-CORE, as world leaders in ice intelligence and management technology. These initiatives serve to advance Newfoundland and Labrador's international reputation as a "gateway to the Arctic". These initiatives also recognize the need for our technology providers to be internationally competitive.

Tools which are gaining maturity and have received Husky support include:

- Development of iceberg profiling technology to advance offshore design, support safe towing and mature ice drift models through the characterization of iceberg profiles. New research in relation to unmanned autonomous vehicles began with C-CORE in 2017.
- Validation of NRC pressurized ice model for the Grand Banks.
- Continuation of Dynamic Positioning in Sea Ice 5-year JIP with our operating partners.
- Development of a harsh environment ice net instrumented to enhance safe ice management capability in high sea states.
- Review of the weak link design basis and development of an alternative engineered restraining solution for use in future flowlines.

Implementation of a Common Operations platform for ice management overlaying multiple datasets, drift models and met ocean data to improve operation awareness and decision making.

### Engagement with Research Institutes

Husky continued to participate as an advisor on a number of steering committees to provide industry perspective and guidance in a number of areas including:

- Research Advisory Committee for Husky Energy Chair in Oil and Gas Research at Memorial University of Newfoundland.
- Membership in the Canadian Standards Association group engaged in standards review and the harmonization of ISO standards to Canadian requirements.

## 9.0 Community Investment

In the Atlantic Region, Husky focused its efforts on preserving relationships with key community partners and supporting initiatives that will build stronger communities by supporting diversity, inclusion, and education. Many of our contributions were payments under existing agreements that were previously announced. However, in 2017 Husky supported new commitments such as:

- \$100,000 to Thrive—Community Youth Network for continued support of their GED program for at-risk youth.
- \$100,000 to Easter Seals to support their “I Can Too” program, a classroom based program that teaches primary students about inclusion.
- \$15,000 to Memorial University’s Student Orientation and Readiness Program, a mid-summer orientation program that helps set students up for success.
- \$10,000 to Earth Rangers for delivery of a school-based conservation program.

In addition to these major gifts, Husky also supported other local community organizations including \$7,500 to the Jimmy Pratt Memorial Outreach Centre, \$7,500 to the Newfoundland Symphony Orchestra and our internal Husky Has Heart fundraising campaign which raised over \$25,000 for Kids Eat Smart, Single Parent Association and Parkinsons NL.

## 10.0 Diversity

Husky continued to work closely with its sub-contractors to advance the various initiatives identified within the Diversity Plan. More than 90 people (employees, contractors and representatives from community partners) attended Husky’s Diversity Forum in February 2018. This year’s forum included a Husky Energy update, a keynote speaker (Karen Winsor, NOIA Board Member), and guest panelist discussed the theme of the day, Small Steps - Big Impacts. Roundtable discussions for this event focused providing examples of small actions that resulted in big impacts to further diversity and inclusion in the workplace, and in the oil and gas industry as a whole. A report on diversity-related activities in 2017 will be submitted under separate cover.

**11.0 Photographs**



**Husky staff provide mentorship in the Junior Achievement Program—January 2017**



**Husky hosts its Annual Diversity Forum – January 2017**



**Husky employees attend Energy Day as part of Oil and Gas Week  
February 2017**



**Husky offers facility tours and education for Techsploration  
participants March 2017**



**Techsploration participants on a vessel tour – March 2017**



**Husky Energy Eastern Science and Technology Fair – April 2017**



**Science Fair finalists present their projects to Husky employees – May 2017**



**Husky donates to Thrive GED program – May 2017**



**Co-op students participate in student mentoring program – June 2017**



**Husky volunteers attend Engineering Solutions: Design, Empower, Impact at the Mundy Pond Boys and Girls Club August 2017**



**WISE students visit Husky office for 'Husky Day' to learn about company operations various industry professions – August 2017**