



16150
24 July 2018

MEMORANDUM

From: 
A. J. Maffia, CDR
CGD Nine (dpw)

To: COMDT (CG-WWM)
Thru: CG LANTAREA (LANT-54)

Subj: 2017-2018 NINTH DISTRICT END OF SEASON ICE REPORT

Ref: (a) Domestic Icebreaking Operations Policy, COMDTINST 16151.1 (series)
(b) Ninth District Domestic Icebreaking Standard Operating Procedures Manual,
D9INST M16150.3 (series)

1. Per references (a) and (b), the Ninth District's annual domestic ice operations commenced 15 December 2017 and concluded on 09 May 2018.

2. Narrative Summary:

a. The 2017-2018 ice season was classified by the National Oceanographic Atmospheric Administration (NOAA) and the Great Lakes Environmental Research Laboratory (GLERL) as "Average," with Great Lakes ice cover percentage reaching 69% on February 11, 2018. The commencement of both domestic icebreaking operations began in mid December. Harsh, cold temperatures in late December resulted in rapid ice growth; January and February persistently provided temperature/freeze fluctuations that contributed to ice jams and made maintaining established tracks difficult.

b. Ninth District Domestic Icebreaking operations began on 15 December 2017 with the commencement of Operation Taconite. During the 145 days of icebreaking operations, the eight USCG cutters and two Canadian Coast Guard ships assigned to the operation spent a total of 6,767 hours of icebreaking to assist 888 commercial vessels transits; 386 of these transits required direct icebreaking assistance, which supported the movement of 17.3 million tons of dry bulk (iron ore, coal, stone, cement) and liquid (gasoline, diesel, heating oil) cargoes. These cargoes were valued at more than \$623 million U.S. dollars. Operation Taconite ended on 09 May 2018.

c. Sector Detroit commenced Operation Coal Shovel on 22 December 2017. During the 109 days of icebreaking operations, the four USCG cutters and two Canadian Coast Guard ships assigned to the operation spent a total of 4,752 hours of icebreaking to assist 359 commercial vessel transits; 91 of these transits required direct icebreaking assistance, which supported the movement of an estimated 7 million tons of dry bulk cargo valued at \$252 million U.S. dollars. Operation Coal Shovel secured on 08 April 2018.

d. In total, the eight USCG cutters expended 6,770 cutter resource hours in support of Ninth District icebreaking operations.

e. The efforts of the cutters would not have been possible without the assistance of our valuable partners. AIRSTA Detroit, AIRSTA Traverse City, and CG Auxiliary conducted over flights providing Tactical Commanders with real time ice conditions. U.S. and Canadian Coast Guard, and Auxiliary aviators flew an estimated 35 sorties in support of operations Taconite and Coal Shovel. This valuable aerial reconnaissance and ice analysis remained vital to operational planning and successful mission execution. NOAA and the Canadian Ice Service provided excellent forecasts and satellite imagery to further support operational planning. Lastly, our Canadian Coast Guard partners offered their expertise and services throughout the season. The participation of CCGS SAMUEL RISLEY and CCGS GRIFFON, coupled with the shore side support in Sarnia, Montreal, Ottawa, and Halifax ensured the successful execution of another icebreaking season. Additional information regarding Canadian Coast Guard support can be found in Enclosures (1) and (2).

f. The Ninth District and Canadian Coast Guard co-hosted a Great Lakes Icebreaking Conference in November 2017 in Cleveland, Ohio, along with our industry partners, laying the groundwork for a successful ice season and covering vital lessons learned from the previous season. Additionally, ice rescue training was conducted by the Ninth District RFO team with all equipped District units to ensure continued SAR capability while underway. Daily icebreaking teleconferences were held for a majority of the winter with our industry partners, which allowed the CCG and USCG to ensure the best placement of assets based on forecasted predictions and scheduled vessel movements.

3. Winter Severity:

a. While the winter of 2017-2018 may have been categorized as an average icebreaking season, environmental conditions proved to be challenging due to an Arctic blast in December that rapidly formed ice, persistent wide-swinging temperature fluctuations through January and February, high water levels in the major rivers, and a spike in ice-coverage in early April.

b. The 2017/18 winter season was noticeably colder than the previous year and the total Great Lakes ice coverage reached 69% on February 11, 2018 compared to the prior 2016/17 winter that peaked at only 14.2% in early February. Refer to Enclosure (1) climatological visuals for more detail.

c. The following summarizes the maximum ice conditions observed in key locations of the D9 AOR:

- (1) Thunder Bay: 36" plate ice with 1-2' snow cover.
- (2) Duluth-Superior: 30" plate ice with 1-2' brash accumulations.

- (3) Lake Superior (west): 24" plate ice with 3-4' windrows.
- (4) Lake Superior (east): 24" plate ice with 18-20' brash accumulations.
- (5) Whitefish Bay: 30" plate ice with 5-7' windrows.
- (6) St. Mary's River: 30" plate ice with 3-4' brash accumulations.
- (7) Straits of Mackinac: 30" plate ice with 3-5' windrows.
- (8) Green Bay (North): 30" plate ice with 1-2' snow cover.
- (9) Green Bay (South): 36" plate ice with 1-2' snow cover.
- (10) Georgian Bay: 30" plate ice with 1-2' snow cover.

4. Economic Value:

a. Estimated at \$875 million US dollars; \$623 million dollars in Operation Taconite and \$252 million dollars in Operation Coal Shovel.

b. The Lake Carriers Association is expected to publish economic data for the 2017-2018 ice season later this year.

5. Performance Standards and Data Collection:

a. 100% of Domestic Icebreaking requests met.

(1) 1,043 ice breaking service requests made.

(2) 0 requests declined.

b. Icebreaking Asset Availability:

(1) 6,770 total icebreaking operation hours.

(2) 6,216 scheduled Charlie hours.

(3) 5,924 unscheduled Charlie hours.

c. A significant challenge during the 2017/18 winter season was the large amount of lost cutter hours due to machinery casualties resulting in unscheduled Charlie periods.

d. The Great Lakes fleet experienced 5,924 lost cutter hours due to the following casualties:

- (1) BRISTOL BAY: Ship Service Diesel Generator, 28 hours.
 - (2) MACKINAW: Steering System/Propulsion Generator, 95 hours.
 - (3) MORRO BAY: Lube oil, Ship Service Diesel Generator, 110 hours.
 - (4) HOLLYHOCK: Reduction Gear/Aft Thruster, 125 hours.
 - (5) MOBILE BAY: #2 Main Diesel Engine/Steering Pump, 1,023 hours.
 - (6) NEAH BAY: Steering Pump/Thrust Bearing/ #1 Main Diesel Engine, 1,059 hours.
 - (7) ALDER: #1 and #2 Main Diesel Engine/Shaft Seal, 1,294 hours.
 - (8) BISCAYNE BAY: #1 Main Diesel Engine, 2,190 hours.
- e. A breakdown of cutter asset hours by icebreaking mission is captured in Enclosures (1) and (2).
- f. Tier 1 Waterways were open 82% of the ice season (14,142 hours of 17,280 total hours).
- (1) 17,280 hours of Tier 1 Availability (potential)
 - (a) St. Mary's River/Straits of Mackinac: 7,008 hours
 - (b) Detroit/St. Clair River System: 10, 272 hours
 - (2) 14,142 hours of Tier 1 Availability (actual)
 - (a) St. Mary's River/Straits of Mackinac: 6,558 hours
 - (b) Detroit/St. Clair River System: 7,584 hours
 - (3) Waterway restrictions and closures are outlined in the respective operational summaries below.

5. Operation Coal Shovel:

- a. Search and Rescue Response Requests: 0
- b. Urgent Vessel Response Requests: 5
- c. Exigent Community Service Requests: 6
- d. Vessel Direct Assists: 91 (40 U.S. & 51 Canadian)

- e. Icebreaking Service Requests: 167
- f. Waterway Restrictions: 2
- g. Waterway Closures: 0
- h. Tier 1 Availability: 74% (7,584 hours of 10,272 total hours).

6. Operation Taconite:

- a. Search and Rescue Response Requests: 0
- b. Urgent Vessel Response Requests: 3 (MISLE Case 1120412, WWM Activities 6381694 and 6400528)
- c. Exigent Community Service Requests: 1 (MISLE WWM Activity 66361509)
- d. Vessel Direct Assists: 388 (203 U.S., 183 Canadian, 2 other foreign-flagged)
- e. Icebreaking Service Requests: 876
- f. Waterway Restrictions: 21. (17-SMR / 04-Straits), totaling 227 hours of waterway restriction. MISLE WWM Activities: 6329029, 6329579, 6329610, 6332336, 6332908, 6333500, 6334270, 6337665, 6337890, 6348199, 6348200, 6348203, 6378452, 6378519, 6378864, 6387959, 6391388, 6391398, 6392116, 6392929, and 6393517.
- g. Waterway Closures: 10. (08-SMR / 02-Straits) totaling 289 hours of waterway closure. MISLE WWM Activities: 6340175, 6357705, 6380039, 6381649, 6385047, 6385438, 6387029, 6393759, 6398932, and 6399623.
- h. Planned Waterway Closures: Per 33 CFR Parts 162.117 and 165.901, the following waterways were purposely closed or restricted by the Captain of the Port Sault Sainte Marie.
 - (1) Grays Reef Passage: 05-Jan-18 to 18 Mar-18 (72 days)
 - (2) South Channel: 30-Dec-17 to 15-Mar-18 (75 days)
 - (3) Waters Btwn Mackinac Is. and St. Ignace: 10-Jan-18 to 03-Mar-18 (52 days)
 - (4) West Neebish Channel: 16-Jan-18 to 24-Mar-18 (67 days)
 - (5) Pipe Island Passage: 23-Dec-17 to 19-Mar-18 (86 days)
 - (6) Little Rapids Cut (Ice Boom): 28-Nov-17 to 24-Apr-18 (147 days)
- i. Tier 1 Availability: 94% (6,558 hours of 7,008 total hours)

7. **Statistical Summary:** The Statistical Data Summary for Operation Taconite and Coal Shovel 2017-2018 is included as Enclosure (1) & (2) respectively.
8. **Night Operations:** U.S. Coast Guard Cutters assigned to Operation Taconite and Operation Coal Shovel conducted 618 hours of icebreaking at night.
9. **Future Plans and Recommendations:**
 - a. The ongoing operational effects of losing a WTGB to SLEP will continue into 2019. CGC MOBILE BAY's absence will leave D9 without an asset homeported in the Green Bay region. D9 will request additional support from Canadian icebreaking assets when necessary.
 - b. An additional tool available for the next icebreaking season will be exploring ANT Duluth and CGC HOLLYHOCK's unmanned aircraft reconnaissance capabilities as Group-1 UAS Prototype Program Initiative (GUPPI) participants.
 - c. D9(dpw) will pursue formal authorization to send routine administrative communications via MS Outlook instead of C2OIX.
 - d. D9(dpw) is pursuing the installation of 4G connectivity on the remaining Ninth District fleet to improve reliability of data transmission.
 - e. See Enclosures (1) and (2) for additional recommendations from the Tactical Commanders.

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Enclosures: (1) 2017-2018 Operation TACONITE End of Season Ice Report
(2) 2017-2018 Operation COAL SHOVEL End of Season Ice Report

Copy: CGD One (dpw)
CGD Five (dpw)
CGC MACKINAW
CGC HOLLYHOCK
CGC ALDER
CGC MOBILE BAY
CGC BRISTOL BAY
CGC NEAH BAY
CGC BISCAYNE BAY
CGC KATMAI BAY
CGC MORRO BAY
CG Sector Buffalo
CG Sector Detroit
CG Sector Lake Michigan
CG Sector Sault Ste Marie
CG AIRSTA Traverse City
CG AIRSTA Detroit

U.S. Department of
Homeland Security

United States
Coast Guard



Commander
United States Coast Guard
Sector Sault Sainte Marie

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16150
29 May 2018

MEMORANDUM

From: M. R. Broz, CAPT
CG SECTOR Sault Sainte Marie (s)

To: CGD NINE (d)
Thru: (1) CGD NINE (dpw)
(2) CGD NINE (dp)

Subj: OPERATION TACONITE, END OF SEASON REPORT

Ref: (a) Domestic Ice Breaking Operations Policy, COMDTINST 16151.1D
(b) D9 Ice Breaking Standard Operating Procedures (SOP), D9INST M16150.2B

1. During the 2018 domestic ice-breaking season, the eight U.S. Coast Guard cutters and two Canadian Coast Guard ships assigned to Operation Taconite spent a total of 6,767 hours in the ice and assisted 888 commercial vessel transits. Of these transits, 386 (203 US, 183 CA, and 02 FF) required direct icebreaker assistance to complete their intended movements.

2. Operation Taconite commenced on 15 December 2017 and ended on 09 May 2018. Great Lakes maritime industry stakeholders estimate 17.3 million tons of dry bulk (iron ore, salt, coal, stone and cement) and liquid (gasoline, diesel, and home heating oil) cargoes received ice-breaking assistance during the 2018 winter navigation season. These cargoes, valued at more than \$623 million dollars, provided critical industrial production and power generation capability for the Great Lakes region during the 145-day operational period. In Operation Taconite's area of responsibility, U.S. Coast Guard cutters delivered 691 hours of ice breaking in Canadian waters and Canadian Coast Guard ships conducted 1,126 hours of icebreaking in the U.S. waters.

3. The National Oceanographic Atmospheric Administration (NOAA), with input provided by the Great Lakes Environmental Research Laboratory (GLERL), classified the 2018 ice season as "average." An analysis of the 2017-2018 winter weather and ice thickness measurements appears in enclosure 1. Enclosure 2 contains the performance measures and statistical data summaries required by references (a) and (b). Enclosure 3 contains recommendations for process improvement.

Subj: OPERATION TACONITE END OF SEASON REPORT 16150
29 May 2018

4. My point of contact for domestic icebreaking operations is Mr. Mark Gill, the Director of Vessel Traffic Service St. Marys River. You can reach Mr. Gill at (906) 635-3299.

#

3 Enclosures

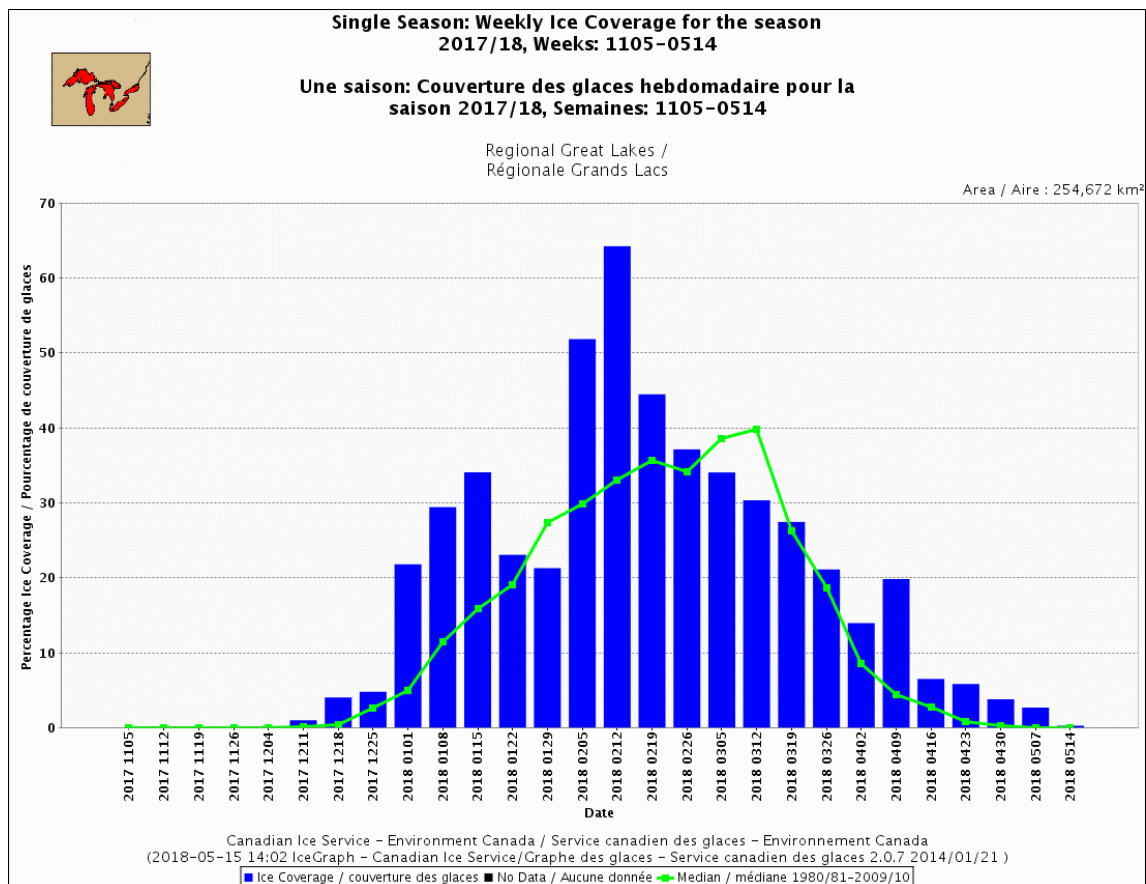
Copy: CG-5PW
All CGD NINE Sectors and Cutters
CG AIRSTA Traverse City
MSU Duluth

Weather Analysis and Ice Thickness Measurements:

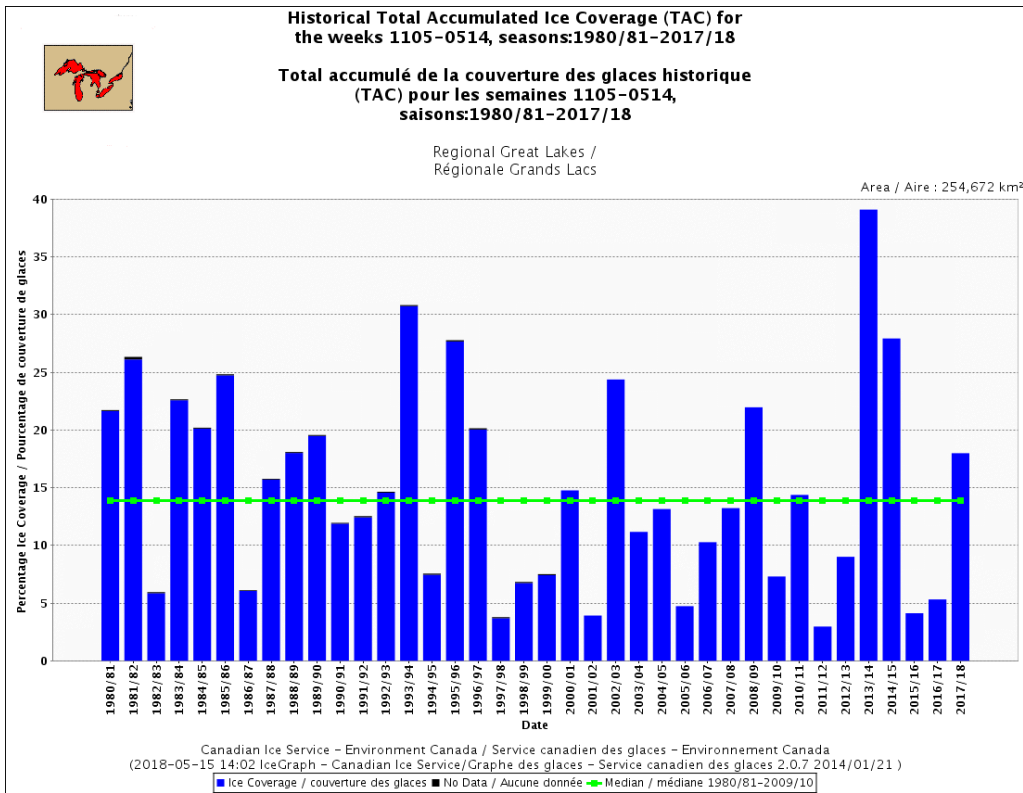
The National Oceanographic Atmospheric Administration (NOAA), with input provided by the Great Lakes Environmental Research Laboratory (GLERL), classified the 2018 ice season as “average”. Great Lakes percentage of ice cover reached 69% on February 11, 2018.

The following table summarizes the maximum ice conditions observed in key locations of the Operation Taconite area of responsibility.

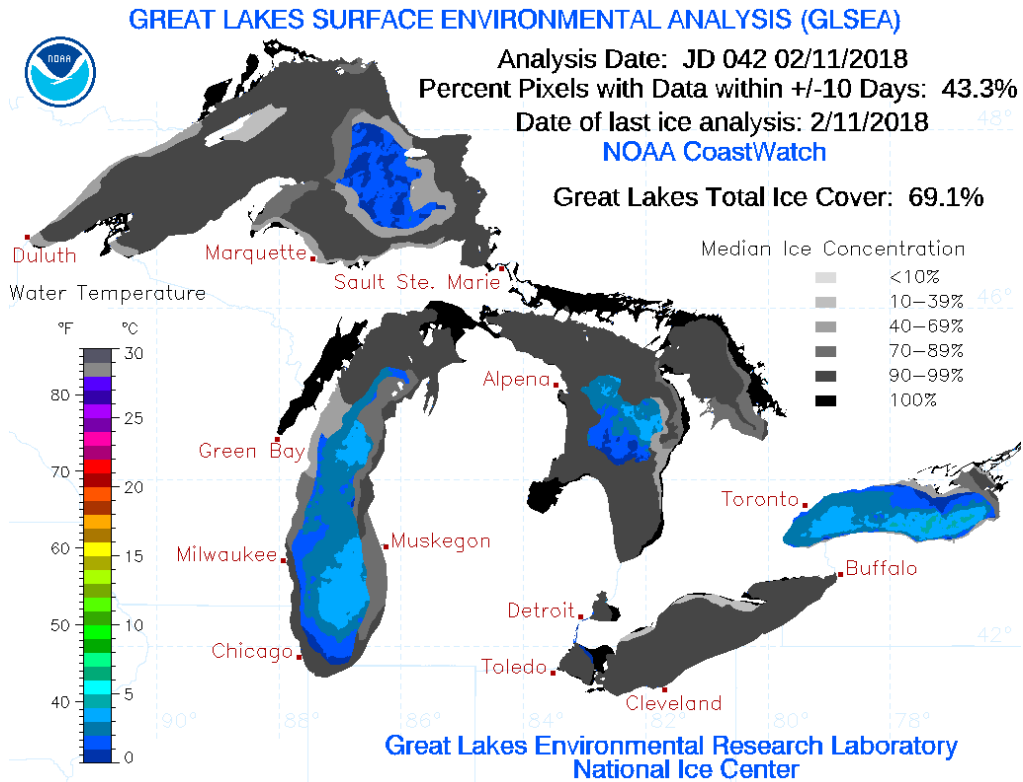
- a. Thunder Bay: 36” plate ice with 1-2’ snow cover.
- b. Duluth-Superior: 30” plate ice with 1-2’ brash accumulations.
- c. Lake Superior (west): 24” plate ice with 3-4’ windrows.
- d. Lake Superior (east): 24” plate ice w/ 18-20’ (MARQ) brash accumulations.
- e. Whitefish Bay: 30” plate ice with 5-7’ windrows.
- f. St. Marys River: 30” plate ice with 3-4’ brash accumulations.
- g. Straits of Mackinac: 30” plate ice with 3-5’ windrows.
- h. Green Bay (North): 30” plate ice with 1-2’ snow cover.
- i. Green Bay (South): 36” plate ice with 1-2’ snow cover.
- j. Georgian Bay: 30” plate ice with 1-2’ snow cover.



**Single Season: Weekly Ice Coverage
Compared to the Median (1981-2010)**
Chart produced by the Canadian Ice Service



Great Lakes Total Accumulated Ice Coverage 1980-2018
Chart produced by the Canadian Ice Service



2018 Great Lakes Maximum Percentage of Ice Coverage
Chart produced by NOAA/GLERL

1. Performance Measures:

- a. Search and Rescue Response Requests: None.
- b. Urgent Vessel Assistance Requests: Three events (MISLE Case 1120412, WWM Activities 6381694 and 6400528).
- c. Exigent Community Service Requests: One event (MISLE WWM Activity 6361509).
- d. Icebreaking Service Requests: The Incident Commander (IC) received 876 requests for ice breaking assistance none was declined.
- e. Vessel Transits Assisted: Op Taconite resources assisted 888 vessel transits. Of the total transits assisted, 386 vessels (203 U.S., 183 CA, and 02 FF) required direct ice breaking assistance to complete their intended movements.
- f. Waterway Restrictions: There were twenty-one events (17-SMR / 04-Straits), totaling 227 hours of waterway restriction. MISLE WWM Activities: 6329029, 6329579, 6329610, 6332336, 6332908, 6333500, 6334270, 6337665, 6337890, 6348199, 6348200, 6348203, 6378452, 6378519, 6378864, 6387959, 6391388, 6391398, 6392116, 6392929, and 6393517.
- g. Waterway Closures: There were ten events (08-SMR / 02-Straits) totaling 289 hours of waterway closure. MISLE WWM Activities: 6340175, 6357705, 6380039, 6381649, 6385047, 6385438, 6387029, 6393759, 6398932, and 6399623.
- h. Tier 1 Availability: St Marys River 93%; 3272 of a possible 3504 hours.
Straits of Mackinac 94%; 3286 of a possible 3504 hours.
 1. Extended Navigation Season: St Marys River 89% (815/912) / Straits 92% (835/912)
 2. Closed Navigation Season: St Marys River 99% (1166/1176) / Straits 88% (1039/1176)
 3. Spring Break Out: St Marys River 91% (1291/1416) / Straits 100% (1412/1416)
- i. Planned Waterway Closures: Per 33 CFR Parts 162.117 and 165.901, the following waterways were purposely closed or restricted by the Captain of the Port Sault Sainte Marie.
 1. Grays Reef Passage: 05-Jan-18 to 18 Mar-18 (72 days)
 2. South Channel: 30-Dec-17 to 15-Mar-18 (75 days)
 3. Waters Btwn Mackinac Is. and St. Ignace: 10-Jan-18 to 03-Mar-18 (52 days)
 4. West Neebish Channel: 16-Jan-18 to 24-Mar-18 (67 days)
 5. Pipe Island Passage: 23-Dec-17 to 19-Mar-18 (86 days)
 6. Little Rapids Cut (Ice Boom): 28-Nov-17 to 24-Apr-18 (147 days)

**Enclosure (2):
To Sector Sault Sainte Marie memo 16150 of 29 May 2018**

2. Statistical Summary:

a. Aerial Support:

HH60	01 Sortie
CG Auxiliary	06 Sorties
CCG Dash-8	02 Sorties

b. Cutter Employment:

Area 4A (Lake Huron / Georgian Bay / North Channel) - 12 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Mackinaw	00/000/012/00/00/000	00 00 00
Totals	00/000/012/00/00/000	00 00 00

Area 4B (Lake Huron / Alpena / Calcite Hbr) 55 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Bristol Bay	00/000/055/00/00/000	00 00 00
Totals	00/000/055/00/00/000	00 00 00

Area 5A (Straits of Mackinac) - 989 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Mackinaw	039/048/029/01/00/120	02 10 00
Hollyhock	068/050/053/00/00/164	03 04 00
Bristol Bay	005/041/000/00/00/028	01 02 00
Mobile Bay	029/080/027/00/00/143	11 08 00
Biscayne Bay	002/029/000/00/00/027	01 01 00
Neah Bay	001/005/000/00/00/000	01 00 00
Totals	144/253/109/01/00/482	19 25 00

Area 5B (Charlevoix / Grand Traverse Bay) - 16 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Bristol Bay	004/012/000/00/00/000	02 00 00
Totals	004/012/000/00/00/000	02 00 00

Area 6A (Whitefish Bay) – 1,477 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Pierre Radisson	089/095/000/00/00/137	19 32 00
Samuel Risley	049/253/057/00/00/180	10 19 00
Mackinaw	050/164/073/00/00/238	20 13 01
Bristol Bay	000/024/012/00/00/023	00 00 00
Morro Bay	009/000/000/00/00/009	00 02 00
Totals	197/536/148/00/00/596	49 66 01

Area 6B (St Marys River - 2755 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Pierre Radisson	000/008/000/000/00/0016	00 00 00
Samuel Risley	033/090/048/000/00/0071	02 04 00
Mackinaw	156/166/101/040/00/0298	55 22 00
Hollyhock	003/004/019/000/00/0030	00 01 00
Bristol Bay	099/133/000/044/00/0191	26 16 01
Mobile Bay	045/111/093/011/00/0156	13 10 00
Biscayne Bay	037/104/016/017/00/0134	13 04 00
Neah Bay	041/071/049/010/00/0032	03 05 00
Morro Bay	023/081/083/012/00/0079	04 02 00
Totals	437/768/409/134/00/1007	116 64 01

Area 7 (Eastern Lake Superior / Marquette / Keweenaw) – 55 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Mackinaw	008/016/000/00/00/000	01 00 00
Alder	000/000/004/00/00/000	00 00 00
Morro Bay	017/010/000/00/00/000	01 00 00
Totals	025/026/004/00/00/000	02 00 00

Area 8A (Duluth, Superior, Two Hbrs, Silver Bay, Apostle Islands) - 180 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Alder	05/047/022/00/00/076	01 00 00
Morro Bay	01/003/001/25/00/000	01 00 00
Totals	06/050/023/25/00/076	02 00 00

Area 8B (Thunder Bay, Ont) - 679 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Alder	29/197/026/00/00/207	00 13 00
Morro Bay	18/037/030/00/00/135	00 10 00
Totals	47/234/056/00/00/342	00 23 00

Area 9 (Green Bay, Escanaba, Marinette) - 549 Hrs of Cutter Support

Cutter	DAVA PI FR FC MC	US CA FF
Mackinaw	03/028/014/00/00/113	01 00 00
Hollyhock	27/006/012/00/00/000	03 00 00
Mobile Bay	61/080/032/00/00/141	03 00 00
Bristol Bay	05/015/000/00/00/012	06 05 00
Totals	96/129/058/00/00/266	13 05 00

Area 10A (Lake Michigan-West Milwaukee) No Cutter Activity**Area 10B (Lake Michigan-South Calumet-Gary-Indiana-Burns Hbrs) No Cutter Activity****Area 10C (Lake Michigan-East Ludington) No Cutter Activity**

Op Taconite Totals

Cutter	DA	VA	PI	FR	FC	MC	US	CA	FF	Total Hrs in the Ice
Pierre Radisson	089	103	000	00	00	0153	19	32	00	0345
Samuel Risley	082	343	105	00	00	0251	12	23	00	0781
Mackinaw	256	422	229	41	00	0769	79	45	01	1717
Alder	034	244	052	00	00	0283	01	13	00	0613
Hollyhock	098	060	084	00	00	0194	06	05	00	0436
Mobile Bay	135	271	158	11	00	0440	30	23	00	1015
Bristol Bay	113	280	012	44	00	0254	32	18	01	0703
Biscayne Bay	039	133	016	17	00	0161	14	05	00	0366
Morro Bay	068	131	114	37	00	0232	06	14	00	0582
Neah Bay	042	076	049	10	00	0032	04	05	00	0209
Totals	956	2063	819	160	00	2769	203	183	02	6767

3. Night Operations: U.S. Coast Guard cutters and Canadian Coast Guard ships assigned to Operation Taconite conducted 200 hours of nighttime ice breaking.

4. Sufficiency/Adequacy of Icebreaking Assets: Unsatisfactory.

Seasonal Lost Cutter Hours			
Cutter	Casualty Related	Other - Logistics	Casualty (Unsked Charlie)
BRISTOL BAY	28 hrs	00	JW Leak/SSDG
MACKINAW	95 hrs	00	Kongsberg Steering System/Prop Generator
MORRO BAY	110 hrs	00	Cracked L/O Pipe/Underwater Hull Noise/SSDG
HOLLYHOCK	125 hrs	00	L/O leak to Reduction Gear/Aft Thruster
MOBILE BAY	1023 hrs	00	#2 MDE/Steering Pump
NEAH BAY	1059 hrs	00	Steering Pump/Fwd Thrust Bearing/#1 MDE
ALDER	1294 hrs	00	# 1 & #2 MDE/Shaft Seal
BISCAYNE BAY	2190 hrs	00	#1 MDE
TOTAL	5924 hrs	00	Lost Cutter Hours

5. MISLE Summary:

Waterway Closures	Date Closed	Date Opened	Authority	Rmks
6314051	11/28/17	04/24/18	33 CFR 161.11	<p>281450Z NOV 2017: The US Army Corps of Engineers commissioned Little Rapids Cut Lighted Ice Buoy 98B (LLNR 14105). The LIB marks the upstream end of the ice boom on the eastern side of the river, restricting the channel width to 385 ft. Due to the channel restriction, VTS ST Marys River directs no meeting or overtaking between LT 98 (LLNR 14100) and Mission Point Obstruction LT "C" (LLNR 14145).</p> <p>010045Z JAN 2018: Heavy concentrations of brash in Little Rapids Cut (Frechette to Six Mile) endangers vessels trying to meet. Due to the expansive ice, VTS St Marys River directs no meeting or overtaking from Mission Point Obstruction LT "C" (LLNR 14145) to Six Mile Point.</p> <p>221300Z JAN 2018: With the Soo Locks closed and warmer temperatures easing conditions, VTS SMR retracted the zone to its original area. Due to the channel restriction created by the ice boom, VTS St Marys River directs no meeting or overtaking between LT 98 (LLNR 14100) and Mission Point Obstruction LT "C" (LLNR 14145).</p> <p>241500Z Apr 2018. USACE removed the final segments of the ice boom along with LIB 98B. VTS SMR rescinded the traffic measure.</p>
6327923	12/23/17	03/19/18	33 CFR 165.901	Pipe Island Channel - Due to the early onset of ice, VTS SMR closed Pipe Island Channel until further notice. Pipe Island Course becomes an alternating one-way route.
6332708	01/05/18	03/18/18	33 CFR 165.901	Grays Reef Passage - COTP SSM closed Grays Reef Passage until further notice.
6332727	12/20/17	03/15/18	33 CFR 165.901	South Channel - COTP SSM closed South Channel until further notice.
6334537	01/10/18	03/03/18	33 CFR 165.901	Moran Bay - COTP SSM closed the waters btwn Mackinac Island and St Ignace until further notice.
6338968	01/16/18	03/24/18	33 CFR 165.901	West Neebish Channel - VTS SMR closed the West Neebish Channel until further notice.
6345265	01/27/18	03/14/18	33 CFR 165.901	Southern Green Bay - COTP LM closed the southern Green Bay RNA until further notice.

Waterway Controls	Date Activated	Date Rescinded	Authority	Rmks
6327880	12/17/17	5/16/18	33 CFR 207.440	171200Z Dec 17: MacArthur Lock Closure - USACE closed the MacArthur Lock for winter maintenance. 161600Z May 18: MacArthur Lock reopened after winter maintenance. MISLE WWM Act 6327880
6314051	1/1/18	1/22/18	33 CFR 161.11	Expand One Way at Little Rapids Cut - 010045Z Due to excessive brash, expanded VTS Measure at Lil Rapids Cut to Six Mile PT
6334490	1/8/18	1/22/18	33 CFR 161.11	Upper River - At BRBAYs recommendation, due to unstable ice VTS SMR directs no Mtg or Overtaking btwn Gros Cap and LT 26.
6340586	1/14/18	1/22/18	33 CFR 161.11	Draft Restriction - Due to excessive brash accumulations, VTS SMR placed a draft restriction of 26'6" on commercial vessels who wish to transit the West Neebish Channel.
6340586	3/19/18	4/6/18	33 CFR 161.11	191200Z: Having sampled ice in the lower West Neebish Channel, VTS St Marys River restored the draft restriction for down bound vessels to transit the West Neebish Channel until ice conditions improved. 261200Z VTS St Marys River raised the draft restriction for the West Neebish Channel to 27'. 061400Z Apr 18: With the ice plug destroyed, VTS SMR rescinded the draft restriction for the West Neebish Channel.
6338946	1/15/18	3/25/18	33 CFR 207.440	Poe Lock Closure - USACE closed the Poe Lock for winter maintenance.

Waterway Events	DTG Start	DTG Ended	Restriction Time	Rmks
6327878	12/15/2017		N/A	Commenced Op Taconite
6329029	261400Z DEC 17	261530Z DEC 17	1 hrs 30 mins	In the SMR: JOSEPH L BLOCK (U/B in ballast) beset at Sweets Pt delays SAGINAW (U/B in ballast).
6329579	280320Z DEC 17	281750Z DEC 17	14 hrs 30 mins	In the SMR: WALTER J MCCARTHY (U/B in ballast) beset at Johnsons Pt delays seven vessels.
6329610	280905Z DEC 17	282005Z DEC 17	11 hrs 00 mins	In the SMR: EDGAR B SPEER (D/B iron ore) beset at Sawmill Pt delayed four vessels.
6332336	032345Z JAN 18	041600Z JAN 18	16 hrs 15 mins	In the SMR: WALTER J MCCARTHY (D/B iron ore) beset at LT 26 delayed BURNS HBR (D/B iron ore).
6332908	051115Z JAN 18	051850Z JAN 18	7 hrs 35 mins	In the SMR: MESABI MINER (D/B iron ore) beset at LT 26 delayed CALUMET (D/B iron ore) and MICHIPICOTEN (U/B in ballast).
6333500	052230Z JAN 18	070130Z JAN 18	27 hrs 00 mins	In the Straits: PHILIP R CLARKE (E/B in ballast) beset at White Shoal delayed four vessels (1 E/B and 3 W/B).

6334270	070900Z JAN 18	072210Z JAN 18	13 hrs 10 mins	In the SMR: MICHIPICOTEN (D/B iron ore) beset at Gros Cap delayed three d/b vessels.
6337665	140600Z JAN 18	141700Z JAN 18	11 hrs 00 mins	In the SMR: JOSEPH L BLOCK (D/B iron ore) beset at Gros Cap delayed 1 vessel.
6337890	1421115Z JAN 18	151800Z JAN 18	21 hrs 45 mins	In the SMR: ANGLIAN LADY/PML IRONMASTER (D/B Steel Coils) beset at Frechette Pt delayed four vessels.
6348270	181000Z JAN 18	182300Z JAN 18	N/A	In the SMR: SUGAR ISLANDER II secured ferry service until their route was free of ice. I/C redirected CGC BISCAYNE BAY to conduct preventative ice breaking in support of the ferry.
6340175	181240Z JAN 18	201415Z JAN 18	49 hrs 35 mins	In the Straits: I/C redirected BBAY to attend to the Sugar Island Ferry. This forced five vessels (2 e/b and 3 w/b) to halt their progress. 191658Z BBAY enroute the Straits suffered a casualty to their #1 MDE. CGC MACKINAW recalled their crew and sailed from SEC SSM for the Straits. 201415Z The cutter arrived and freed the restricted vessels.
6348199	290345Z JAN 18	292145Z JAN 18	18 hrs 00 mins	In the Straits: ALGOWOOD (E/B salt for Milwaukee) / ALGOSTEEL (E/B in ballast for Goderich) forced to wait for MACKINAW to reach the Straits. Because of MOBAY's casualty, there was only one asset available to cover the SMR and Straits. The resultant 18 hrs delay was due to insufficient asset coverage of a Tier 1 waterway.
6348200	011400Z FEB 18	012330Z FEB 18	9 hrs 30 mins	In the SMR: ALGOCANADA (U/B gas/diesel for Soo, ONT) beset at Sweets Pt. CGC MOBILE BAY is escorting the ALGOWOOD (E/B in ballast for Goderich). CGC MACKINAW is in Sturgeon Bay for VCG engagement. The resultant 9 hrs 30 mins delay was due to insufficient asset coverage of a Tier 1 waterway.
6348203	021800Z FEB 18	031200Z FEB 18	18 hrs 00 mins	In the Straits: ALGOSTEEL (W/B salt for Milwaukee) anchored east of Round Island Passage waiting for an escort. CGC MOBILE BAY is assisting the ALGOCANADA (gas/diesel for Soo, ONT). CGC MACKINAW is moored Sturgeon Bay for VCG engagement. The resultant 18 hrs delay was due to insufficient asset coverage of a Tier 1 waterway.

6357705	171300Z Feb 18	211800Z Feb 18	101 hrs 00 mins	In the Straits at 170800R, CGC HOLLYHOCK identified a lube oil leak on the supply side of their reduction gear. Attempts to affect temporary repairs were unsuccessful. While the cutter waited for parts to arrive, ALGOSTEEL (E/B in ballast) was forced to hove to in the ice near the western ice edge. With resources to the south conducting operations to prevent flooding and other assets in scheduled or unscheduled maintenance periods, there was no other asset available to assist the ALGOSTEEL. The delay to the vessel's progress is in MISLE WWM Act 6357705. The restriction lasting more than 24 hrs constitutes a waterway closure. The closure extends into the next reporting period. 202000Z: CGC BRISTOL BAY departed from Op Coal Shovel AOR to assist the hindered vessel. 211800Z: CGC BRISTOL BAY arrived on scene and commenced the escort of the ALGOSTEEL. The resultant delay to the vessel was 101 hrs (36 + 65).
6361509	151300Z Feb 18	282300Z Feb 18	N/A	221300Z: VTS SMR rcvd a rqst from Beaver Island Community Leaders (Bud Martin 231-448-2397 / 231-448-2007) to assist SHAMROCK/Tank Barge from Manistique to Beaver Island. The tank barge is loaded with gas/diesel to replenish the island communities dwindling supply. Due to lack of asset availability, I/C delayed the execution of the escort until 27 Feb 2018. CGC MACKINAW and CGC MOBILE BAY will be the attending ice breaking resources. 27 Feb: CGC MOBILE BAY conducted the breakout of St James Hbr. 282300Z: SHAMROCK rptd safely moored at Beaver Island.
6378519	241541Q Mar 18	241818Q Mar 18	3 hrs 37 mins	241541Z: MICHIGAN/GREAT LAKES (W/B gas/diesel) and CASON J CALLAWAY (E/B in ballast) rptd being beset north of Grays Reef Passage. With no asset available to assist, I/C classified the incident as a waterway restriction. 241818Z: A shift of the wind to the south opened the field of ice restricting both vessels. Each were able to free themselves and continue without further hindrance. In total, the vessels were delayed 3 hr 37 mins.
6378452	260610Z Mar 18	261305Z Mar 18	6 hrs 55 mins	260610Z: STEWART J CORT (U/B in ballast) hove to in the ice at Mud Lake Jct LT. CGC MACKINAW working the turns ahead of the WALTER J MCCARTHY (U/B in ballast) asked Soo Tfc to stop vessel movement to facilitate their track work. The resultant stoppage affected 2 u/b vessels. 261305Z: CGC MACKINAW freed the Walter J McCarthy enabling STEWART J Cort to proceed. The resultant 7 hr delay affected 2 u/b vessels.

6378864	260820Z Mar 18	261620Z Mar 18	5 hrs 00 mins	261100Z I/C asked THUNDER BAY (D/B ore for Nanticoke) to delay their sailing from the SE Pier due to the JAMES R BARKER being stopped at Moon Island. 261600Z CGC MOBILE BAY freed the beset vessel restoring movement to the d/b procession. The resultant 5 hrs delay affected 2 d/b vessels; MISLE WWM Act 6378864.
6380039	270145Z Mar 18	171555Z Mar 18	13 hrs 10 mins	270145Z, VTS St Marys River closed the traffic mgmt system to safeguard vessels from shifting ice until assets reestablish up and down bound tracks. CGS SAMUEL RISLEY and CGC BRISTOL BAY are working the lower river to reestablish tracks. Six down bound and four up bound vessels are currently impacted. 271555Z With tracks restored, VTS ST Marys River reopened the Tfc Mgmt Area to two-way movement. Seven down bound and four up bound vessels affected by the 13 hrs 10 mins waterway closure; MISLE WWM Act 6380039.
1120412	280356Z Mar 18	290300Z Mar 18	N/A	280356Z Sector Sault Sainte Marie received notification from a concerned citizen on Beaver Island of a 42ft tribal fishing tug (F/V WAABI'MAANT) with 02 POB that was out of fuel and beset in the ice approximately 1/2NM from the entrance of Beaver Island Harbor. The crew was out of food however, they have a wood stove on board and there are no medical concerns. Sector Sault Sainte Marie assumed SMC in the alert phase, placed the vessel on a one-hour communication schedule, and directed CGC HOLLYHOCK to assist. 282200Z: CGC HOLLYHOCK arrived on scene deployed their ice rescue team to rig a towline. Once in a side tow, the cutter maneuvered towards the shore, passed the towline to shoreline residents who pulled the fishing vessel to the beach using a backhoe. MISLE Case 1120412 documents the urgent vessel assistance request.
6381949	300130Z Mar 18	301400Z Mar 18	12 hrs 30 mins	300130Z: Due to shifting fields of shore ice, VTS St. Marys River closed the St. Marys River from Mud Lake Junction to Lime Island until further notice. Four d/b vessels are affected. 301400Z CGC MOBILE BAY reestablished two-way tracks. VTS SMR opened the VTS Area to two-way movement. 5 d/b and 2 u/b affected by the 12 hrs 30 min closure. MISLE WWM Act 6381649
631694	30120Z Mar 18	300311Z Mar 18	N/A	300120Z: FRONTENAC (D/B) stopped ivo Pt Aux Frenes beset by a broken plate of shore ice. I/C directed CGC MOBILE BAY to sail from Lime Island to assist the prevent vessel from being pushed out of the channel. 300311Z: FRONTENAC was freed and safely underway.

6385047	041545Z Apr 18	041915Z Apr 18	3 hrs 30 min	041545Z: Due to low visibility (snow), VTS ST Marys River closed the VTS Area from Soo Locks to Lime Island. 041915Z: Visibility improved, VTS SMR reopened the VTS area to down bound movements. CGC MACKINAW had to work the Middle Neebish Channel before the up bound traffic was safe to move. One down bound and two up bound vessels affected by the 3 hrs 30 mins waterway closure (MISLE WWM Act 6385047).
6385438	042130Z Apr 18	051330Z Apr 18	16 hrs 00 mins	042130Z: Due to high winds, shifting ice plates, and unstable ice conditions, VTS St Marys River closed the VTS Area from Gros Cap Reef Light to Lime Island. 051000Z: CGS PIERRE RADISSON started down from Whitefish Bay to assess the upper river channel conditions while CGC MACKINAW readied the lower river. 051330Z: MACKINAW called for the vessels to begin moving. With tracks reestablished, VTS SMR reopened the traffic mgmt area to two-way movements. The resultant 16 hrs waterway closure affected eleven down bound and seven up bound vessels (MISLE WWM Act 6385438).
6387029	062100Z Apr 18	091523Z Apr 18	66 hrs 23 mins	062100Z: Strong northwesterly winds and blowing snow made conditions in Whitefish Bay unsafe. VTS SMR secured DOMICE operations in Whitefish Bay. CGC MACKINAW hove to at Gros Cap for the night. CGS PIERRE RADISSON stayed at the government dock (Soo ONT) due to poor visibility and strong winds at the locks. 071000Z: CGS PIERRE RADISSON sailed from the government dock. 071100Z: CGC MACKINAW got underway from Gros Cap. 072200Z: CGC MACKINAW, scheduled to refuel at Sector, departed Whitefish Bay with the MESABI MINER under escort. CGS PIERRE RADISSON remained on scene to work the up bound vessels up into the open lake. 080900Z: Having cleared four up bound vessels the previous day, PIERRE RADISSON led four additional up bound vessels into the one-way track. Unable to develop a two-way track under the present wind conditions, the decision was made to pull JOYCE L VANEKENVORT out of the down bound procession and have her travel alongside the beset up bound vessels. One by one, PIERRE RADISSON assisted the up bound vessels up into the open waters of Lake Superior. 081900Z, PIERRE RADISSON, assisted by CGC MORRO BAY, freed the TIM S DOOL and one by one positioned eight other down bound vessels into the established track. Overnight, the vessels sequenced with up bound vessels through the locks. 091523Z: The last of the down bound vessels cleared the locks. The 66 hrs 23 mins Tier 2 waterway closure affected a total of twelve down bound and seventeen up bound vessels (MISLE WWM Act 6387029).

6387959	091523Z Apr 18	092325Z Apr 18	8 hrs	091523Z: EDGAR B SPEER (U/B in ballast) could not make the turn at Stribling Pt. The vessel coming to a stop halted the progress of three trailing vessels. 2325Z MORRO BAY freed the EDGAR B SPEER and restored movement to the up bound procession. Five vessels affected by the 8 hr waterway restriction. (MISLE WWM Act 6387959).
6391388	141005Z Apr 18	141350Z Apr 18	3 hrs 45 min	141005Z: CLYDE S VANEKENVORT stopped at Mud Lake JCT by a shifting plate of ice. Unable to advance, two up bound vessels were unable to proceed. 141350Z CGC BRISTOL BAY freed the beset vessel restoring movement to the up bound procession. The resultant 3 hrs 45 min restriction affected 3 up bound vessels. MISLE WWM Act 6391388
6391398	141040Z Apr 18	141633Z Apr 18	5 hrs 53 mins	141040Z: Electing to stop for day light AM SPIRIT, BURNS HBR and ALGOMA GUARDIAN were unable to enter the ice field at Whitefish Point. JOYCE L VAN EKENVORT arrived and stopped because of the ice. 141633Z PIERRE RADISSON arrived and freed the four beset vessels. The resultant 5 hrs and 53 min restriction affected 4 down bound vessels. MISLE WWM Act 6391398
6392116	160050Z Apr 18	161230Z Apr 18	11 hrs 40 mins	160050Z: BURNS HBR and ALGOMA GUARDIAN were unable to complete the turn at Lime Island. Because of the waterway restriction, SAGINAW halted their progress. 161230Z: CGC MORRO BAY freed the beset vessels restoring movement to the down and up bound processions. The 11 hrs 40 mins restriction affected three down and four up bound vessels. MISLE WWM Act 6392116
6392929	170050Z Apr 18	171230Z Apr 18	11hrs 40 mins	162050Z: OAKGLEN unable to advance into the track north of Gros Cap Reef LT. This vessel stopping forced FRONTENAC, THUNDER BAY, JAMES R BARKER, AM CENTURY, ALGOMA TRANSPORT to halt their progress. 171230Z: CGC MACKINAW freed OAKGLEN restoring movement to the up bound procession. Six up bound vessels affected by the 11 hrs 40 mins waterway restriction. MISLE WWM Act 6392929
6393517	171545Z Apr 18	172035Z Apr 18	4 hrs 50 min	171545Z: FRONTENAC was unable to advance into the established track north of Gros Cap Reef LT. The vessel stopping forced AM CENTURY and FEDERAL YOSHIMA to halt their progress. 172035Z: FRONTENAC freed themselves and moved into CGS SAMUEL RISLEYs track. The 4 hrs 50 min restriction affected four up bound vessels. MISLE WWM Act 6393517

6393759	180030Z Apr 18	181000Z Apr 18	9 hrs 30 mins	180030Z Due to high winds and shifting plate ice, VTS SMR closed the Middle Neebish Channel to up bound movement. 181000Z, with conditions improved, VTS SMR rescinded the closure. The nine hrs 30 mins closure affected five up bound vessels. MISLE WWM Act 6393759
6398932	250315Z Apr 18	251045Z Apr 18	7 hrs 30 mins	240315Z: Due to shifting plate in the Upper River, VTS SMR closed the traffic mgmt system from the Soo Locks to Gros Cap Reef LT. 251045Z CGS SAMUEL RISLEY broke up the plates hindering movement, restoring the up and down bound processions. The resultant seven-hour 30 mins closure affected three down bound and eight up bound vessels (MISLE 6398932).
6400528	260030Z Apr 18	160300Z Apr 18	N/A	260030Z: On the strength of a NW wind, a large flow of ice broke free from Mud Lake and drifted across the channel at Pt Aux Frenes. The thick fast moving plate of ice threatened to force EVENS SPIRIT and JOHN D LEITCH out of the channel. 260300Z: CGC BRISTOL BAY broke through the shifting plate and freed each vessel, allowing them to return safely to the channel. With the two vessels freed, CGC BRISTOL BAY anchored. VTS SMR closed the waterway to further movements until the winds subsided and the field of ice stabilized.
6399623	260215Z Apr 18	261100Z Apr 18	8 hrs 45 mins	260215Z At the recommendation of CGC BRISTOL BAY, due to shifting plate ice IVO Pt Aux Frenes VTS St Marys River closed the VTA area from Mud Lake Junction LT to Lime Island until further notice. 1000Z With the plates of ice stabilized, VTS SMR opened the service area to down bound movements. 1100Z VTS SMR rescinded the tfc measure. The 8 hrs 45 mins closures affected 6 u/b and 10 d/b vessels.

MISLE waterway management activities documenting “ice and wx analysis”, “industry outreach”, and “tfc management tasks” performed by the sector staff are not listed in this summary but are available upon request.

Sector Sault Sainte Marie offers the following recommendations for process improvement:

1. Logistics Functions Needing Your Support:

a. Lost Cutters Hours. Op Taconite endured 5,924 hours of lost cutter support due to mechanical failures. The losses encumbered domestic ice breaking operations and were responsible for decreased Tier 1 and Tier 2 availabilities. Although the amount of lost cutter hours was abnormally high, a few of the mechanical failures are worth reviewing.

- WTGBs suffered 74% (4410 hrs) of the reported mechanical failures.
- 27% of the WTGB failures occurred on post-SLEP cutters.
- WLBs accounted for 24% (1419 hrs) of the lost cutter total.
- Although suffering only two percent of the total loss, CGC MACKINAW was not immune to mechanical failures.

i. The failures suffered by post-SLEP WTGBs involved the emergency shaft seal and forward thrust bearing to the main motor. Recommend Surface Fleet Logistics Center (SFLC) conduct a systematic review of all SLEP design plans to ensure the work performed is consistent across the fleet. This is especially true when changes to WTGBs occur later in the SLEP progression to ensure fleet alignment.

ii. The blower failed on CGCs BISCAYNE BAY and CGC MOBILE BAY. The crew of CGC NEAH BAY vigilantly caught the blower as it started to fail, preventing significant damage to their main diesel engine. A time compliance technical order ensured the remaining vessels in the fleet examined installed blower systems to identify potential points of failure. Knowing the main diesel engines will not receive work during SLEP, we recommend SFLC schedule a thorough inspection of the main diesel engines into the 60-day post-yard dockside availability to include if needed engine rebuilds or overhauls.

iii. A percentage of the lost cutter hours was attributable to failures in the supply chain, specifically purchasing and shipping irregularities. Established business rules must be re-examined and then consistently followed to resupply cutters, either from the fleet logistics center or by commercial vendors, with absolute minimal delay.

b. Schedule cutter maintenance during the Winter Navigation Period. Recommend avoiding the practice of scheduling cutter maintenance during the extended navigation and spring break out seasons. We need every available asset to meet the needs of waterway users during the two peak operational periods. If the need to schedule maintenance during these periods arises, we should overtly inform industry, offering a remedial action plan as a contingency.

Enclosure (3):
To Sector Sault Sainte Marie memo 16150 of 29 May 2018

c. Temporarily relocate CGC ALDER. A WTGB from the Op Taconite area of responsibility will undergo SLEP during each of the next two domestic ice-breaking seasons. To offset the loss of these strategically important icebreaking assets, recommend D9 relocate CGC ALDER during the 2019 and 2020 winter navigation seasons (16 Jan-20 Mar). Losing the cutter for nine weeks simply because it is homeported above the closed Soo Locks is impractical. Easily scheduled from temporary mooring locations (i.e. Escanaba, Milwaukee, St Ignace, Cheboygan, and Sault Sainte Marie) are crew home visits and required maintenance. While assets are lost to SLEP, we should make every practical effort to avail the remainder of our fleet.

d. Dual COs on WTGBs. With a goal of minimizing risk during peak operational periods, recommend building a pool of successful past WTGB skippers to augment assigned command cadres. We repeatedly say operational limits rest with the commanding officer of our WTGBs. We ask these junior officers to operate in navigationally challenging areas, in high stress situations, alongside massive commercial platforms, often with limited visibility for days on end. Thinking outside the box, having another proven leader alongside to share the stress and relieve fatigue is not a bad idea. Recommend we explore this premise with a goal of implementing a two-week trial this coming winter (Dec-Jan or Mar-Apr).

e. Public Affairs Best Practice. Recommend representatives from the district public affairs staff meet with the collateral duty public affairs officers from DOMICE tactical commands. Each year, either as an offshoot of the ice conference or a session specific to domestic ice breaking, rules of engagement, public affairs guidance and media talking points must be formulated, discussed, and agreed upon prior to 15 December. Mission success demands alignment between the public message and its delivery mechanism.

f. Using Unmanned Aerial Systems (UAS) for reconnaissance. In March, a college student used a UAS equipped with a camera to record icebreaking performed at Marquette, MI. The surveillance benefits of UAS to the domestic icebreaking mission are untapped. CG-711 reportedly sponsors a program whereby requesting units receive training and UAS equipment. The Officer in Charge of ANT Duluth is a program participant and Sector Sault Sainte Marie plans to test the capability next winter. Recommend D9 pursue project funding and training for each tactical command, as well as, select cutters (i.e. MACKINAW, WTGB w/ barge).

g. Study the causative factors leading to the increase in floating aids dragged off station by ice. The disruption to the waterway presented by the hazards to navigation detracts from the ice-breaking mission and needlessly delay commercial movements as cutters attend to the wayward buoys. The increased buoyancy of the lighted ice buoy hulls, a decrease in mooring weight, and reductions in mooring lengths are causative factors worthy of reflection. The sheer number of discrepancies experienced during the past three winters commands the development of a corrective action plan before the 2018 fall retrieval.

2. Review Current Communications Capabilities. Domestic icebreaking operations require communications that provide an appropriate level of operational security, but also utilize modern technology to improve tactical communications on the Great Lakes.

a. Formally authorize the use of MS Outlook (e-mail) for routine administrative communications. C2OIX is a cumbersome application that adversely affects the transmission and receipt of operational summaries, tasking messages, movement reports and ice reporting. Many organizations who rely on reported on information do not have a Plain Language Address or access to C2OIX messages. These organizations include NOAA-Great Lakes Environmental Research Laboratory, local National Weather Service offices, and Environment Canada. Since the transition to the Windows 10 operating system, MS Outlook is as secure as C2OIX. Recommend authorizing the use of MS Outlook for sending and receiving unclassified administrative communications associated with DOMICE operations.

b. Increase the bandwidth (size and transmit speed) of our cellular and satellite connection links to meet the transmission needs to accommodate file downloads. Feedback from the fleet indicates we continue to struggle with files downloads of varying sizes. Satellite imagery and meteorological data give commanding officers and tactical commanders decision-making advantages with immediate operational impacts. Cutters need the capability to download the most up-to-date imagery in a timely manner. WTGBs received a much-needed upgrade to 4G connectivity. Recommend extending the upgrade to the rest of the Ninth District's fleet.

U.S. Department of
Homeland Security

United States
Coast Guard



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16155
19 June 2018

MEMORANDUM

From: ~~J. W. Novak, CAPT~~
CG SECTOR Detroit

To: CCGD NINE (dpw)

Subj: 2017 – 2018 OPERATION COAL SHOVEL ANNUAL REPORT

Ref: (a) Domestic Icebreaking Policy and Reporting Requirements, COMDTINST 16151.1D
(b) Ninth District Icebreaking Policy and Procedures, D9INST M16150.3
(c) Operation Coal Shovel Standard Operating Procedures, SECDETINST 16150

1. This report outlines significant events occurring during Operation Coal Shovel for the 2017 – 2018 ice season and is submitted in accordance with reference (b). A detailed summary of Operation Coal Shovel is contained in Enclosure (1).
2. Operation Coal Shovel commenced on December 22, 2017, and concluded on April 8, 2018. In support of Operation Coal Shovel, U.S. Coast Guard cutters conducted a total of 1,129 hours of icebreaking.
3. The Sector Detroit point of contact for this report is LTJG Austin Moran at (313) 568-9508.

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Enclosures: (1) Operation Coal Shovel Statistical Data Summary
(2) Operation Coal Shovel Weekly Summaries
(3) USCGC BRISTOL BAY End of Season Ice Report
(4) USCGC MORRO BAY End of Season Ice Report
(5) USCGC HOLLYHOCK End of Season Ice Report
(6) USCGC NEAH BAY End of Season Ice Report

Copy: Sector Sault Ste Marie
Sector Buffalo
CGC BRISTOL BAY
CGC MORRO BAY
CGC HOLLYHOCK
CGC NEAH BAY

2017-2018 Operation Coal Shovel Statistical Data Summary

I. Winter Assessment

Operation Coal Shovel began on December 22, 2017, and concluded on April 8, 2018, after 109 consecutive days. Despite mild weather conditions in the fall and early winter, harsh cold temperatures in late December brought about rapid ice growth. The swift development of ice, combined with unusually high water levels and unscheduled cutter casualties, created challenging conditions for U.S. and Canadian Icebreakers, as well as commercial vessels transiting the area, until early March 2019.

In late December, a blast of arctic cold temperatures settled upon the region causing rapid ice growth in the St. Clair River and Western Lake Erie, prompting the initiation of Operation Coal Shovel. Freezing temperatures persisted throughout the months of January and February with temperatures largely remaining above freezing in March. When January and February saw periods of above-freezing temperatures, the formation of ice jams in the lower St. Clair River due to the freezing and unfreezing of ice occurred. These temperature fluctuations also made it difficult to maintain established tracks throughout Coal Shovel. While St. Clair River and Western Lake Erie remained relatively ice free throughout March, floating plate ice continued to hinder commercial traffic. Ice continued to melt throughout March and commercial vessels were able to transit unhindered by ice by early April. Operation Coal Shovel came to a close on April 8, 2018.

II. Icebreaking Data

Season Totals:

1. Total number of days for Operation Coal Shovel:
 - a. **109 days** - From December 22, 2017, to April 8, 2018
2. USCG Cutters and Canadian CG ships that participated in Operation Coal Shovel:
 - a. **USCG Cutters:** HOLLYHOCK, BRISTOL BAY, MORRO BAY, NEAH BAY
 - b. **Canadian Ships:** SAMUEL RISLEY, GRIFFON
3. Search and Rescue Response Requests: **0**
4. Urgent Vessel Response Requests: **5**
5. Exigent Community Service Requests: **6**
6. Vessel Direct Assists: **91**

- a. **40** U.S. flag vessels
- b. **51** Canadian flag vessels

7. Waterways Restrictions: 1

- a. In accordance with 33 CFR 162.134(d), Captain of the Port Detroit imposed a one-way traffic pattern on the St. Clair River during most of January and February due to significant ice buildup causing ice jams and high water levels. This restriction required alternating one-way traffic and frequently required icebreaker escorts between Marine City and Light X32.

8. Waterway Closures: 0

- a. Ice conditions and traffic density remained at manageable levels throughout the winter. Icebreakers were able to conduct track maintenance and manage all vessel traffic without the need to close of any waterways.

9. Aircraft Flyover hours ISO of Coal Shovel: 52 hours - 26 flights

- a. Air Station Detroit provided nearly all ice reconnaissance flights for Operation Coal Shovel during the 2017-2018 winter season. Aircrews performed two sorties per week during the heaviest ice weeks, frequently hosting a Sector Detroit Ice Observer.
- b. Coast Guard Auxiliary personal conducted one ice reconnaissance flight for Operation Coal Shovel during the 2017-2018 winter season.

10. Total Tier 1 Waterways Availability: 100%

Availability per Tier 1 Waterway:

	Hours	Hours Closed	Percentage Per Waterway
a. St. Clair River	2,568	0	100
b. Detroit River	2,568	0	100
c. Pelee Passage	2,568	0	100
g. St. Lawrence Seaway	Not included		

11. Beset vessels: 17

12. Vessel Queue System: A vessel queue system was employed between January 5, 2018, and late-January 2018 due to heavy ice in the St. Clair River.

13. Hours of icebreaking total by USCG Cutters: **1,129**

Icebreaking Hours per USCG Cutter:

Cutter	Total Hours
a. USCGC HOLLYHOCK:	20.5 hours
b. USCGC BRISTOL BAY:	204 hours
c. USCGC MORRO BAY:	558.5 hours
d. USCGC NEAH BAY:	346 hours

Icebreaking Hours per Area:

AREA 1A EASTERN LAKE ERIE					
CUTTER	DA	VA	PI	MC	TOTAL
BRISTOL BAY	02	02	13	24	41
NEAH BAY	09	10	01	06	26

AREA 1B LAKE ONTARIO & ST. LAWRENCE SEAWAY					
CUTTER	DA	VA	PI	MC	TOTAL
N/A	00	00	00	00	00

AREA 2A ST CLAIR RIVER & HURON CUT					
CUTTER	DA	VA	PI	MC	TOTAL
BRISTOL BAY	26	12	10	52	100
HOLLYHOCK	00	00	20.5	00	20.5
NEAH BAY	61	52	31	74	218
MORRO BAY	46	35	36	33	150

AREA 2B LAKE ST CLAIR					
CUTTER	DA	VA	PI	MC	TOTAL
BRISTOL BAY	13	04	07	06	30
NEAH BAY	11	12	01	00	24
MORRO BAY	02	00	00	09	11

AREA 2C DETROIT RIVER LT TO LAKE ST CLAIR LT 1					
CUTTER	DA	VA	PI	MC	TOTAL
BRISTOL BAY	08	01	01	15	25
NEAH BAY	00	00	00	02	02
MORRO BAY	27	24	12	46	109

AREA 2D WESTERN LAKE ERIE					
CUTTER	DA	VA	PI	MC	TOTAL
BRISTOL BAY	00	00	00	08	08
NEAH BAY	33	05	03	35	76
MORRO BAY	77	55.5	10	146	288.5

AREA 3A LAKE HURON					
CUTTER	DA	VA	PI	MC	TOTAL
N/A	00	00	00	00	00

AREA 3B SAGINAW BAY					
CUTTER	DA	VA	PI	MC	TOTAL
N/A	0	0	0	0	0

DA = Direct Assistance
VA = Vessel Assistance
PI = Preventive Icebreaking
MC = Miscellaneous

III. Opportunities for Improvement and Best Practices

1. Opportunities for Improvement

- a. One of the most significant challenges to overcome this ice season was the limited number of icebreakers available for icebreaking in the Operation Coal Shovel AOR. Limited icebreaking resources, combined with high water levels, scheduled cutter Charlie periods, unscheduled cutter casualties, rapid ice development and increased commercial vessel traffic, resulted in greater work for fewer icebreaking assets. The most common complaint from the Ninth District icebreaking fleet was the need for Operation Coal Shovel to maintain scheduled cutter Charlie periods and logistics days for PMS, refueling, restocking stores, etc. Operation Coal Shovel did its best to balance the needs of the fleet with mission requirements and competing demands. But, without additional

resources to break ice, conduct ice flushing operations, perform timely commercial vessel escorts, mitigate coastal town flooding and free beset ships, this problem is likely to continue to persist during heavy ice seasons, especially when combined with elevated water levels. Given high water levels, and the fact that 51 Canadian commercial ships were assisted compared to 40 U.S. commercial ships, it is justified and highly recommended that a 3rd Canadian icebreaker be assigned to Coal Shovel in future years. Canadian icebreakers are more reliable, better equipped (larger crews, greater horsepower, etc.) and have significantly fewer logistical needs/requirements than U.S. icebreakers. Fulfilling this recommendation would provide U.S. and Canadian Ice Officers greater operational flexibility in managing icebreaking resources and would provide more opportunities to conduct greater numbers of escorts in less time, pursue preventative icebreaking (flush operations) to avoid ice jams and flooding of coastal towns, among other initiatives. An additional Canadian icebreaker would also allow Coal Shovel Ice Officers the ability to honor scheduled Charlie periods and logistics days for U.S. icebreakers so the crew can rest and perform critical PMS on ship's engineering systems to avoid disabling casualties.

- b. Constant high water levels in the St. Clair River presented another significant challenge this ice season, especially in January and February when ice jams were frequently forming between the coastal towns of East China and Algonac, Michigan. In early-January, Operation Coal Shovel engaged hydraulic engineers and a meteorologist from the U.S. Army Corps of Engineers (USACE) to provide information relative to the effectiveness of breaking North Channel on the St. Clair River for flushing/removing ice jams upriver. The USACE reported that the effectiveness of breaking North Channel is highly questionable and not recommended despite the overwhelming belief in the U.S./Canadian icebreaking fleet that it is effective. The USACE cited evidence from the 1986 ice season when water levels were at a record-high that conducting preventative ice flushing operations in the South Channel of the St. Clair River, otherwise known as the "Seaway 500" (ice flushing operations in a race track pattern around Seaway Island), was highly effective. At no time during the 1986 ice season was North Channel broken yet ice was successfully flushed largely due to the fact that at least 50% (if not more) of the St. Clair River's current exits the South Channel into Lake St. Clair. The USACE reported that the remaining flow of the St. Clair River exits the North Channel into Anchor Bay.

Some of the problems cited by the USACE with breaking North Channel are the following: (1) Anchor Bay is much smaller and shallower than Lake St. Clair so there may be nowhere for the ice to go if Anchor Bay is frozen solid and (2) North Channel is shallower than South Channel so there exists a good possibility that breaking North Channel could inadvertently create a secondary ice jam between Algonac and Anchor Bay thus causing flooding in the City of Algonac. More well-known concerns associated with breaking North Channel are the presence of recreational users on Anchor Bay who would have to be notified of icebreaking operations in North Channel for safety reasons and the residents on Harsens Island who would be without transportation on/off the Island for as long as one-week. Disrupting the ice bridge of the Harsens Island ferry

system requires at least 24-hour notification to the Island community so that residents can prepare and gather food, medications, and other supplies prior to the ferry closure. Air Station Detroit must also be placed on-alert to provide medivac services to Island residents should they be necessary. Generally, this closure also brings with it significant media attention so breaking North Channel is considered a last resort option after preventative ice flushing efforts have been exhausted. It is worth highlighting that ice jams and flood concerns were effectively managed this ice season without the need to break North Channel even with few opportunities to conduct “Seaway 500s.”

To address high water levels, which are forecasted to remain in the upcoming ice season, it is highly recommended that local subject matter experts from the USACE present current and historical water level datum and observations to the general assembly at this year’s Ice Conference to ensure all present, including industry, have a fundamental understanding of water level trends on the Great Lakes System and how they impact the overall icebreaking mission. Even more critical is the USACE also provide a presentation to U.S. and Canadian icebreaker COs on issues/concerns related to breaking North Channel to eliminate the misconception that breaking the North Channel is the easier, more effective method for managing ice buildup in lower St. Clair River. Finally, and arguably most important, it is imperative that Operation Coal Shovel be assigned additional icebreakers to facilitate preventative icebreaking/ice flushing operations in the South Channel to avoid ice jams and flooding concerns in East China and elsewhere. Again, we were severely limited in our ability to conduct preventative icebreaking due to limited icebreakers and this likely led to greater levels of ice buildup than in previous years when more resources were available.

- c. There was a complaint made by industry during the 2017-2018 ice season that Operation Coal Shovel denied a shipper from using commercial icebreaking services in Lake St. Clair and St. Clair River (Tier One waterways). While this was not the case, and the issue was never resurrected for the remainder ice season, it remains worth mentioning because it could be a partial solution to the limited icebreaking resources faced in Operation Coal Shovel’s AOR. The ability for commercial icebreaking services to escort ships through the Detroit/Lake St. Clair River System would alleviate the need for U.S./Canadian icebreakers to do the work permitting them to focus on preventative icebreaking and other tasks. However, for this option to be considered, it is vitally important that District-wide policy be developed to create a process for approving commercial icebreaking in Tier One waterways to avoid undesirable outcomes. Commercializing icebreaking could result in industry taking unnecessary risks in order to escort an extra ship, perform escorts at night or when ice conditions are unpredictable/unsafe (against the recommendation of the Ice Officer) or disrupting other escorts being carried out by U.S./Canadian icebreakers. Other concerns include commercial icebreaking service vessels (or the ships they are escorting) getting beset or an overconfident commercial icebreaking provider exaggerating their vessel’s ability to perform safely under given ice conditions. We certainly do not want to solve one problem only to create another.

- d. A discussion between the Ninth District and Operations Coal Shovel/Taconite to reevaluate vessel queuing criteria and guidelines is highly recommended to ensure all parties are aligned and managing vessel queues consistently. There was also an initiative pursued by the Ninth District that created a prioritization list (with industry feedback) when vessel queues must be established. Ensuring consistent alignment with this new prioritization list and clearly communicating our vessel queue procedures to industry is vital prior to the start of this year's ice season.
- e. Communication is the key to any successful operation and it can always be improved. During vessel queue periods or other busy operational periods, Operation Coal Shovel will pursue afternoon teleconferences or mass emails to ensure industry and the Ninth District are kept informed of progress, existing issues/problems and any challenges on the horizon. Additionally, Operation Coal Shovel will institute a Morning Cutter Call at 0730 each morning as already conducted by Operation Taconite. This call will be used to improve communication and alignment with Ice Officers and Cutters, and ensure Cutters understand the tasking expectations for the upcoming day. It is also recommended that the Ninth District receive input from Operation Coal Shovel Ice Officers prior to releasing any tactics/operational strategy documents (such as the Spring Breakout Plan) to industry. This will ensure solid alignment during ice calls and minimize any misinformation.
- f. Several decisions made by Operation Coal Shovel Ice Officers during this ice season were questioned when Canadian icebreakers were released to assist Algoma ships in/out of Goderich, Nanticoke or Port Colborne when they could have been used more effectively in the St. Clair River. While TACON for Canadian icebreakers is assumed by Operation Coal Shovel, it is important to note that Operation Coal Shovel Ice Officers work closely with Canadian Ice Officers, and there is pressure from Canadian shipping companies for the Canadian Coast Guard to provide icebreaking services to Canadian-flagged ships, as necessary. There is a carefully orchestrated "give and take" that occurs between U.S. and Canadian Ice Officers to accommodate the needs of both countries, and it is important for all involved in the icebreaking mission on the Great Lakes to understand this unique dynamic. It is also this dynamic that makes honoring scheduled Charlie periods and logistics days challenging because we are not directing an all-U.S. fleet of icebreakers.
- g. Operation Coal Shovel seeks to further leverage resources available through Sector Detroit's Command Center during the upcoming ice season. Operation Coal Shovel Ice Officers will work with Operation Taconite's Ice Officer to glean "best practices" and interface with the newly reporting Sector Detroit Command Center Chief to institute new initiatives. Areas for improvement include hourly tracking of water levels in St. Clair River, improved maritime domain awareness of commercial ship traffic, MISLE entry for flooding events, beset ships and vessels delayed due to waterway closures, assisting with daily ice reports and Cutter tasking (thus freeing up Ice Officer for logistical phone calls and preparing for morning teleconference calls) and ensuring Operation Coal Shovel briefing slides are always up-to-date for morning briefings. Additional Assistant Ice

Officers will also be pre-designated and trained (likely 2-3 MSTs from Prevention Department bullpen) to assist Ice Officers with miscellaneous administrative work during the day.

- h. Data collection outcomes/endpoints for icebreaking need to be clearly established/defined and then standard reporting formats (daily, weekly and annual reports) established for Cutters and Operations Taconite and Coal Shovel. Additionally, strict deadlines for reporting must be established and enforced to ensure reliable and timely data reporting for routine updates to Coast Guard leadership. Reports generated by Operations Coal Shovel and Taconite are highly dependent on reports submitted by Cutters so even when one cutter report is delayed or contains errors this results in a “domino effect” of late/inaccurate reports. Once a standard data collection system is in place, training must be provided to Ice Officers and Cutter personnel at the annual Ice Conference or via online webinar(s) or teleconference(s) prior to the 2018-2019 ice season to reinforce understanding, expectations and standardization. Such a data collection system will provide an accurate tool to satisfy Headquarters/LANTAREA/Ninth District data calls during the ice season, reinforce resource requests, and provide support for awards and evaluations.
- i. The furlough of federal civilian employees during the ice season impacted Operation Coal Shovel as Sector Detroit’s Ice Officer, Ms. Tracy Girard, was listed as “non exempt” and, therefore furloughed. Fortunately, funding for the government was approved 1-2 days following the furlough and Ms. Girard returned to work. To rectify the issue, re-designation of Ms. Girard’s billet as “exempt” was sought and secured thus preventing any further furloughs from occurring in the future. Another logistical hurdle solved over the short-term was securing overtime for Ms. Girard when working on weekends and holidays using Ninth District funds. The long-term solution is recoding her billet as a watchstander, which will allow Ms. Girard’s overtime to be paid from overtime funds managed by Headquarters.
- j. Operation Coal Shovel’s SOP shall be updated into an Incident Action Plan template similar to Operation Taconite’s SOP to further align both Operations. In addition, lessons learned from previous ice seasons will be incorporated into the new SOP.
- k. Technology continues to cause delays in uploading real-time information to Homeport. The new Homeport 2.0 does not allow CG personnel to log into Homeport from a non-Coast Guard workstation. An iPad has helped Operation Coal Shovel Ice Officers obtain and track real-time updates for weather, ice conditions and ship movements when not at home or at the office. However, the iPad does not support Coast Guard email, has no ability to upload documents via USB and has no capabilities to utilize VDI to log into a Coast Guard server. TISCOM continues to deny all purchases for non-standard laptops with Windows capabilities, which makes documenting all after-hour and weekend activities extremely challenging unless at the office. While both Ice Officers have VDI capabilities, VDI/severs were not available on numerous occasions.

2. Best Practices

- a. Operation Coal Shovel Team visited Sector Sault St. Marie to become familiar with the layout of the Sector's Command Center and Vessel Traffic Center, and the manner with which Operation Taconite is managed. The Team also visited and received a detailed tour of the Soo Locks.
- b. Operation Coal Shovel Team hosted Canadian Ice Officers at Sector Detroit so they could achieve greater familiarization with our workspaces and ice management practices.
- c. Operation Coal Shovel Ice Officers performed several ride-alongs with U.S. icebreakers to improve working relationships and better understand the issues/obstacles faced by Cutter personnel. The Operation Coal Shovel Team also conducted a ride-along with the Canadian icebreaker, SAMUEL RISLEY, to meet Captain Cork and become more familiar with Canadian icebreaking procedures.
- d. Engaging/inviting hydraulic engineers and a meteorologist from the USACE to visit Sector Detroit early in the ice season was critical to gaining a better understanding of the historical water level trends on the Great Lakes and preventing any unwarranted icebreaking of St. Clair River's North Channel.
- e. Use of Customs and Border Protection cameras provided immediate access for Ice Officers to view ice conditions and vessel traffic on the St. Clair River. All Ice Officers were granted a tour of the Operation Integration Center for familiarization with camera coverage areas and procedures for gaining access to camera feeds.
- f. A formalized roster and ice observer rotation was implemented utilizing ANT Detroit, Sector Detroit Command Center and Coast Guard Auxiliary personnel. Preseason training was conducted for Ice Observers and Air Station personnel.
- g. Use of the Prevention Department's iPad enabled consolidation of all references and provided portable access to weather and ice forecast websites, as well as Marine Traffic AIS tracking during evening and weekend hours.